

Polish Banking Sector Facing Challenges Related to Environmental and Climate Protection

Paweł Niedziółka

dr hab., Warsaw School of Economics, Poland

<https://orcid.org/0000-0002-1659-7310>

Submitted: 19.03.2020 | Accepted: 30.06.2020

Abstract

Purpose: The paper focuses on the comparison of climate and environmental protection activities undertaken in the largest commercial banks in Poland. The second aim is to present conditions for inclusion of environmental and climate risk analysis in the process of monitoring financial stability.

Design/methodology/approach: Banks' standalone audited statements for 2018 were used as a source of data. In defining 8 key areas of environmental risk management within the ESG, the banks' environmental and climate actions were systematised to draw conclusions on the nature of the initiatives taken and on which types of banks in a given area express commitment and whether it is related to the bank's scale, shareholding structure and financial standing.

Findings: The scope of information on a bank's involvement in the environmental and climate protection process is not uniform. In the case of smaller private banks and banks with a dominant Treasury shareholding in the ownership structure, this scope is much smaller than in the case of large and medium-sized private banks belonging to global financial holdings. A particularly important commitment to environmental and climate protection in the sector concerns banks belonging to European capital groups that have signed up to international agreements on economic decarbonisation. The scarce information provided by banks with a dominant Treasury shareholding results from the high level of exposure of these banks to companies from high-carbon sectors, also owned by the Treasury. Commercial banks in Poland place the main emphasis on presenting their direct impact on the environment (reduction of energy and other media consumption, recycling and environmental campaigns).

Research limitations/implications: The research is limited to the commercial banking sector and only to one reporting period. However, there are no constraints to apply the proposed approach to other samples and for longer data series, and then build a methodology of environmental rating.

Originality/value: This article is the first comparative analysis of the involvement of Polish commercial banks in environmental and climate protection. Its results are particularly useful for investors for whom ESG criteria constitute important determinants of decisions.

Keywords: environmental risk, financial stability, commercial bank.

JEL: E52, E58, G01

Correspondence address: Warsaw School of Economics, Banking Institute, 162 Niepodległości Av., 02-554 Warsaw, Poland; e-mail: pniedz@sgh.waw.pl.

Suggested Citation: Niedziółka, P. (2020). Polish Banking Sector Facing Challenges Related to Environmental and Climate Protection. *Problemy Zarządzania (Management Issues)*, 18(4), 32–47. <https://doi.org/10.7172/1644-9584.90.2>.

Polski sektor bankowy wobec wyzwań związanych z ochroną środowiska i klimatu

Streszczenie

Cel: celem badania jest sformułowanie wniosków z analizy porównawczej działań na rzecz klimatu i ochrony środowiska podejmowanych w największych bankach komercyjnych w Polsce, a także identyfikacja uwarunkowań włączenia analizy ryzyka środowiskowego i klimatycznego w proces monitoringu stabilności finansowej.

Metodologia: jako źródło danych posłużyły jednostkowe sprawozdania banków za rok 2018. Definiując osiem kluczowych obszarów zarządzania ryzykiem środowiskowym w ramach ESG, działania banków na rzecz środowiska i klimatu usystematyzowano w celu wyciągnięcia wniosków odnośnie do charakteru podjętych inicjatyw oraz tego, które rodzaje banków w danym obszarze wykazują zaangażowanie i czy ma to związek ze skalą banku, strukturą jego akcjonariatu oraz standingiem finansowym.

Wyniki: zakres informacji na temat zaangażowania określonego banku w proces ochrony środowiska naturalnego oraz klimatu nie jest jednolity. W przypadku mniejszych banków prywatnych oraz banków z dominującym udziałem Skarbu Państwa w strukturze własnościowej zakres ten jest zdecydowanie mniejszy niż w przypadku dużych i średnich banków prywatnych, należących do globalnych holdingów finansowych. Szczególnie istotne zaangażowanie w ochronę środowiska i klimatu na tle sektora dotyczy banków należących do europejskich grup kapitałowych, które przystąpiły do międzynarodowych porozumień w zakresie redukcji emisyjności gospodarki. Skąpa informacja przekazywana przez banki z dominującym udziałem Skarbu Państwa w akcjonariacie wynika z wysokiego poziomu ekspozycji tych banków wobec spółek z sektorów wysokoemisyjnych, należących również do Skarbu Państwa. Banki komercyjne w Polsce kładą główny nacisk na prezentację swojego bezpośredniego wpływu na środowisko (redukcja zużycia energii i innych mediów, recycling oraz kampanie ekologiczne).

Ograniczenia/implikacje badawcze: badanie ograniczone jest wyłącznie do sektora banków komercyjnych i wyłącznie do jednego okresu sprawozdawczego. Nie ma ograniczeń, aby ją zastosować na innej próbie i dla dłuższego szeregu danych, a następnie zbudować metodologię konstrukcji ratingu środowiskowego.

Oryginalność/wartość: przedmiotowy artykuł jest pierwszą analizą porównawczą zaangażowania polskich banków komercyjnych w ochronę środowiska i klimatu. Jego wyniki są szczególnie przydatne dla inwestorów, dla których ESG jest ważną determinantą decyzji.

Słowa kluczowe: ryzyko środowiskowe, stabilność finansowa, bank komercyjny.

1. Introduction

Environmental risks, due to rapid weather changes, the implementation of international agreements to decarbonise the economy and changing consumer preferences as well as the integration of these risks into the investment and credit policies of a growing number of financial institutions are becoming an increasingly important area for financial stability which interacts with the country's development level. This in turn affects banks' risk profiles (Karkowska, 2019).

This paper focuses on climate and environmental protection activities undertaken in the largest commercial banks in Poland. Banks' standalone audited statements for 2018 were used as a source of data. In defining the 8 key areas of environmental risk management within the ESG, the banks'

environmental and climate actions were systematised to draw conclusions on the nature of the initiatives taken and on which types of banks in a given area express commitment and whether it is related to the bank's scale, shareholding structure and financial standing. The second aim of the research is to present conditions for inclusion environmental and climate risk analysis in the process of monitoring financial stability.

2. Literature Review

In March 2018, the European Commission published a document entitled "Action Plan on Sustainable Finance" which sets out 3 main objectives (EU, 2018):

- reorienting capital flows towards financing investments that are part of sustainable development programmes,
- introduction of systems to manage risks arising from climate change, environmental degradation and social problems,
- improvement of transparency and targeting long-term objectives in the area of financial and economic decisions.

The achievement of these objectives requires financial and credit institutions to choose a specific strategy. McKee and Azevedo (2018) point to the need to choose one of the following options:

- to build environmental and climate risk management into the lending process, including, in particular, the extension of the KYC procedure,
- to co-operate with other banks to develop sector-specific standards for environmental risk management – examples of such initiatives are: FEBRABAN in Brazil, Mesa de Finanzas Sostenibles in Paraguay or Protocolo Verde in Colombia,
- to use modern technology for early identification of environmental risk.

The latter strategy is also connected with the initiative called Network for Greening the Financial System (NGFS), which is a global forum of supervisory institutions and central banks and whose task is to mobilise financial institutions to create solutions that mitigate climate risk and support financing of projects that contribute to the energy transformation of the economy. It involves, inter alia, the ECB, which in 2019 identified environmental and climate change risks as the most important ones for banks in the euro area (ECB, 2019).

Commercial banks also join the agreements which are to bring specific environmental and climate protection benefits. For example, 130 banks in September 2019 signed the document entitled "Principles for Responsible Banking", in which the above-mentioned institutions committed themselves to work towards the objectives defined in the Paris Agreement and sustainable development goals. "Principles for Responsible Banking" is a document born out of the UNEP FI (United Nations Environment

Programme Finance Initiative), which is a forum for UNEP's cooperation with the financial sector to mobilise the financial sector for sustainable development (Dettling, 2019).

In practice, the strategies of commercial banks in the area of climate and environmental risks are a combination of 3 components:

- an individually defined credit and investment policy in which the environmental and climate risk management process is embedded,
- a package of initiatives aimed at reducing the negative impact of the bank's operations on the environment and climate,
- maintenance of standards defined in various types of interbank agreements.

Creation and implementation of an environmental and climate strategy requires the definition and decomposition of environmental risks. There are two trends here. The first one emphasises the active role of the bank in creating environmental risk. In its light, one can distinguish (Thompson, 2006; Herb, 2017; Carse, 2000):

- direct risk – the bank in a direct way (as e.g. the owner of contaminated real estate taken over by way of debt recovery or an institution which consumes a relatively large amount of energy, water and other utilities) is responsible for the condition of the natural environment,
- indirect risk – deterioration of the borrowers' standing as a result of costs related to conducting activities detrimental to the environment or as a result of stricter regulations related to environmental protection affecting the quality of the credit portfolio,
- reputation risk, which results from undertaking cooperation with entities whose activities have a negative impact on the natural environment. This is contrary to the concept of sustainable development, which is based on the assumption that profit cannot be the sole determinant of a company's decisions.

The second research trend emphasises the impact of materialisation of environmental and climate change risks on the quality of the credit portfolio. From this perspective, one can distinguish (Bank of England, 2020):

- risk of a direct impact of rapid weather changes on assets that are subject of the bank's collateral and those without which the debtors' operations cannot be continued,
- transition risk – the energy transformation towards a low-carbon green economy will result in an increasing risk of financing industries with a negative impact on the environment,
- risk resulting from claims from investors incurring losses from the energy transformation.

Environmental and climate change risks affect both individual banks and the whole banking system. The direct impact of the bank's activities on the environment is not significant. The impact through credit, investment and pricing policies is much more important as both Greenbaum and

Thakor (2007) and Kemp-Benedict (2018) point out. The effects of these policies have an impact on the quality of credit portfolios, correlating the quality of the portfolio with its profitability and reputation risk. For these reasons, Mazahrih (2011) recommends defined exemplary environmental risk management processes (qualitative aspect) and indicators (quantitative aspect) by means of which it would be possible to assess the bank's exposure to environmental risk. This would make the assessment objective and ensure that the bank in question is compared to the sector. This is particularly important because the level of the bank's exposure (direct and indirect) to environmental protection is positively correlated with its results (supports the financial result) and the bank's value. This thesis was confirmed by Cornett et al. (2016), who – based on a sample of US banks – came to the conclusion that banks showing greater ESG involvement (including reduction of environmental risk) were less affected by the global financial crisis of the first decade of the 21st century. A positive correlation between ESG scoring and the bank's standing was also noted by Chih et al. (2010) and Ciciretti et al. (2014). In 2019, GABV together with the EIB and Deloitte conducted a survey (GABV 2019) on a sample of 100 banks and data from 2007 to 2017, which shows that the market value of banks that, in line with investors' expectations, implemented sustainability principles as well as reported high and stable ESG scoring values. These banks also recorded a higher risk-weighted rate of return than banks with low commitment to ESG objectives. This is due to the inclusion of ESG scoring in the algorithms determining the allocation of capital. The results of Janik's (2017) survey, based on the performance of banks listed on CEE stock exchanges, reveal a bridge between the bank's commitment to environmental issues and the achievement of ESG objectives. Janik showed that banks belonging to ESG indices (RESPECT, CEERIUS and VONIX) have a high and comparable level of commitment to environmental protection and this level is much higher compared to banks which do not belong to the above-mentioned indices. Hence, and given the importance of environmental protection as a component of ESG, it can be concluded that significant environmental commitment of the bank remains in a similar relation to the bank's value as ESG scoring. Taking into account the results of the above-mentioned research, it can be concluded that an increase in the bank's value and abnormal rates of return in the case of banks involved in the implementation of sustainable development objectives, including environmental protection, result from reputational reasons. Therefore, an attempt may be made to exert pressure on the achievement of the objectives of ESG by implementing the regulation of reputation risk, which becomes increasingly quantifiable in the form of measuring the deviation of returns as a result of investors' response to certain information about the issuer (Niedziółka, 2019; Niedziółka, 2013). However the literature contains opinions warning against regulating the process of reputation risk management due to subjectivity in the assessment

of reputation risk, potential overregulation of the banking sector and a loss of credibility of the regulator (Hill, 2019).

The second area of microeconomic interest in environmental risk is the issue of the impact of environmental risk on the quality of credit portfolios and the value of investment portfolios. De Greiff, Delis and Ongena (2018) as well as Grippa, Schittmann and Suntheim (2019) show that climate and weather changes affect assets (collateral or assets of key importance to debtors) whose value and operational suitability determine the quality of credit portfolios. Another problem is the valuation of credit risk associated with exposures to companies generating a significant carbon footprint. This price does not discount the risk of tightening environmental standards and increasing the burden for high emitters in the form of a carbon tax or the need to purchase CO₂ emission allowances. Hence, the literature mentions carbon bubble (Dafermos et al., 2018), which may also be caused by the adjustment of valuations of high-emission companies which are currently based on the assumption of full utilisation of resources. The materialisation of the risk of deterioration in the eco-financial standings of the aforementioned entities in the form of sharp drops in share prices and increased probability of bankruptcy hits not only banks but also investors in the capital markets. An attempt to quantify banks' exposure to risk resulting from exposures to clients representing high-emission industries was made by Alessi, Ossola and Panzica (2019), who concluded that the risk related to climate change is underestimated and that its valuation and reallocation of capital from high-emission companies to entities representing green economy would result in losses to European SIFIs of around USD 30 billion (not including the impact on debt and credit portfolios, only on shares; downgrade taken into consideration).

The above-mentioned authors confirm the possibility of climate risk valuation, but note greenium, i.e. a negative premium (underestimation of value) for companies that pursue ESG objectives, including those related to environmental and climate protection. In that sense, the above-mentioned results are correlated with those obtained by Bolton and Kacperczyk (2019), who came to the conclusion that companies responsible for relatively higher CO₂ emission report higher rates of return compared to entities representing green economy. In other studies (e.g. Derwall et al., 2005), the conclusions are opposite or a relation between rates of return and commitment to ESG objectives is not determined (e.g. Hartzmark & Sussman, 2019). Analysing the above-mentioned research, it can be concluded that while for banks, in valuing their shares, the market is discounting the commitment to the objectives of the ESG, such a clear conclusion cannot be drawn for non-financial companies.

Environmental and climate risks also have a macroeconomic dimension affecting financial stability. Giuzio et al. (2019) define two most important channels for the impact of climate risk on financial stability. On the one

hand, climate change and the accompanying violent weather phenomena (hurricanes, droughts, floods) can have a significant impact on the financial performance of clients of financial institutions and, later on, of those institutions. On the other hand, the financial system is exposed to the effects of implementing international agreements to transform the global economy towards lower gas emissions. An effect similar to unexpected and accelerated tightening of gas emission requirements may be brought about by a demand shock ensuing from changes in consumer preferences. This causes a decrease in the value of stocks (among other things as a result of their fire sale) and a sharp deterioration in the financial standing of companies generating high levels of CO₂ emissions, which are included in the investment portfolios of banks and in their credit portfolios. The essence of the transition risk is also the uncertainty about the scale and timing of the expected CO₂ reduction. Huang et al. (2019) studies conclude that restrictions in the field of environmental protection may contribute to destabilising the financial system if their implementation is not preceded by appropriate stress tests.

Alessi, Ossola and Panzica (2019) also recommend the inclusion of the climatic and environmental risk materialisation scenario in the periodic stress test package for SIFI. Similar demands were formulated in other papers (e.g. Battiston et al., 2017; Battiston & Monasterolo, 2018). These are all the more justified as the exposure of euro area banks alone to high-carbon customers is estimated to be around EUR 720 billion, i.e. 5.6% of corporate clients' portfolio (Giuzio, 2019). A similar requirement is to integrate the different components of climate risk and to include them in the financial stability monitoring system. The identification of different channels for the impact of climate change on financial stability and the definition Key Risk Indicators and their monitoring (NGFS, 2019) play a key role in this process.

However, the energy transformation is an extremely urgent challenge and, according to Campiglio (2015), can be supported by policies typically designed to stabilise the financial system. Charging CO₂ emitters with carbon taxes or charges for emission allowances only partially transfers the negative externalities of emission activities to these entities. There is a pricing mechanism (adapting the price of financing to the growing risk) but it does not provide economic incentives to finance climate and environmental protection projects. This is due to the current trend of deleveraging banks' balance sheets and avoiding exposures with unsatisfactory risk/return ratios (such as those related to renewable energy). Given this problem, Rozenberg et al. (2013) recommend issuance of certificates confirming the production of a certain amount of green energy, which could be treated as liquid debt instruments (to be used in the estimation of liquidity ratios and in operations with the central bank).

Dafermos et al. (2018) recommend the implementation of “green” quantitative easing, whereas Sobolewski (2018) believes that lower capital requirements could be an incentive for financing renewable energy sources.

3. Analysis of Commercial Banks’ Initiatives in Poland for Environmental and Climate Protection

The analysis covered commercial banks in Poland. BGK is also among them due to the fact that in case of corporate clients it is in competition with banks organised in the form of joint stock companies (private and with a dominant share of the State Treasury). It was assumed that all the banks’ initiatives to protect the environment and halt adverse climate changes were reflected in official reporting. It should be noted, however, that the scope of information on the initiatives of individual banks in the area of environmental protection and climate protection is highly differentiated. In order to be able to make a comparison of this commitment, and due to the fact that as at the end of March 2020 not all banks had already published audited financial statements for 2019, the focus was on the audited standalone financial statements for 2018. They became the basic source of data used to draw conclusions on the attitude of Polish commercial banks towards environmental and climate protection issues. 13 largest Polish commercial banks were analysed as presented in the table below:

The data presented in Table 1 indicate that the analysed banks together constitute approximately 85% of the banking sector in Poland. Adding further entities to the list does not significantly increase this value as the smallest of the analysed banks is responsible for approximately 1% of own funds and assets of the entire sector. Therefore, such a selection of the sample entitles leads to conclusions about the whole banking sector in Poland. Banks in Poland are becoming increasingly aware of the importance of environmental risk and the impact of climate change on their operations. However, only in a few institutions environmental protection and the halt of negative climate change took the form of an orderly long-term and published environmental policy, which is not covered by typical ESG reports. These are the banks belonging now or in the recent past to global financial groups: mBank SA, ING Bank Śląski SA, Pekao SA, Santander Bank Polska SA, Bank Handlowy w Warszawie SA and Credit Agricole Bank Polska SA. There are two main dimensions of the impact of commercial banks on the environment and the climate:

- direct dimension, i.e. the measurable impact of the bank on the environment,
- indirect dimension, i.e. exerting influence on the bank’s stakeholders in order to induce them to adopt behaviour that limits their negative impact on the environment and climate.

Bank	Own funds	Own funds/own funds of banking sector	Net result	Net result/ net result of banking sector	Total assets	Total assets/ total assets of banking sector
Bank Millennium SA	8.1	3.96%	0.7	5.38%	79.3	4.69%
mBank SA	15.2	7.43%	1.3	10.00%	137.6	8.14%
ING Bank Śląski SA	13.3	6.50%	1.5	11.54%	137.9	8.16%
Powszechna Kasa Oszczędności Bank Polski SA (PKO BP)	38.4	18.76%	3.4	26.15%	300.4	17.78%
Bank Polska Kasa Opieki SA (Pekao SA)	21.8	10.65%	2.3	17.69%	184.4	10.91%
BNP Paribas Bank Polska SA	10.6	5.18%	0.4	3.08%	106.8	6.32%
BGK*	19.1	9.33%	0.5	3.85%	84.7	5.01%
Getin Noble Bank SA	3.1	1.51%	-0.4	-3.08%	50.7	3.00%
Santander Bank Polska SA	23.8	11.63%	2.2	16.92%	183.9	10.88%
BOŚ SA	2.1	1.03%	0.1	0.77%	18.1	1.07%
Alior Bank SA	6.6	3.22%	0.5	3.85%	73.4	v4.34%
Bank Handlowy w Warszawie SA	7.0	3.42%	0.7	5.38%	49.2	2.91%
Credit Agricole Bank Polska SA	2.6	1.27%	0.9	6.92%	22.0	1.30%
Analysed banks in total	171.7	83.88%	14.1	108.46%	1428.4	84.52%
Commercial banks; sector in Poland	204.7	100.00%	13.0	100.00%	1690.0	100.00%

Tab. 1. The largest commercial banks in Poland as at 31.12.2018. Source: Own study based on annual reports of banks and monthly data on banking sector – December 2019; published by the Financial Supervision Commission, https://www.knf.gov.pl/?articleId=56224&p_id=18.

The area of the bank's direct impact on the environment is primarily expressed in the consumption of paper, electricity, water and other media. Not all of the banks surveyed present these data, and in case of the others, the information is not comparable. Data on paper and media consumption are not presented by BOŚ SA and Alior Bank SA. Comprehensive data in the form of consumption and its dynamics are available in the reports of 9 banks, out of which only 4 institutions have negative dynamics. Bank Pekao SA presents only media consumption. However, only two banks (Santander Bank Polska SA and Bank Handlowy w Warszawie SA) have decided to implement energy saving standards (ISO 5001) or Environmental Management System ISO14001:2015. Bank Millennium SA, mBank SA, ING Bank Śląski SA and Santander Bank SA also calculated the level of CO₂ emission resulting from their activities. The banks strive to ensure that their offices are certified as energy-efficient and the equipment of their outlets is characterised by the use of energy-efficient technologies (this mainly concerns the replacement of lighting with LED).

9 out of 13 banks examined (the exceptions include Alior Bank SA, BGK, BNP Paribas Bank Polska SA and mBank) indicate these aspects in their annual reports. Another area of direct impact of banks on the environment is business travelling. 7 banks (Bank Millennium SA, mBank SA, ING Bank Śląski SA, Santander Bank Polska SA, Getin Noble Bank SA, BNP Paribas Bank Polska SA, Pekao SA) declare implementation of videoconferencing or replacement of their car fleet with a hybrid one as a solution to reduce the negative impact of this activity on the natural environment. Most banks are also active in recycling of raw materials (the exceptions are BNP Paribas Bank Polska SA, BGK, Getin Noble Bank SA, Alior Bank SA and Credit Agricole Bank Polska SA). The majority of banks offer products and services supporting the development of green energy (only Getin Noble Bank SA and Bank Handlowy w Warszawie SA do not inform about it) and 8 banks also use various types of programmes in which they act as intermediaries of green financing. The banks then obtain financing on preferential terms and then lend it in accordance with the criteria established by the provider of that preferential financing. Offering financing on preferential terms does not mean that the bank's income is depleted in this situation.

The bank's indirect involvement in the protection of the natural environment and climate is also connected with the development of pro-ecological behaviour among employees, customers and contractors. The first area of activity is reported by 11 banks (the exceptions are PKO BP SA and BGK), 8 banks actively encourage customers to take care of the environment and only BOŚ SA and Alior SA do not apply environmental criteria in their purchasing policies. Although the initiatives described so far have a positive impact on the environment, they are either neutral in terms of the level of costs incurred by the bank or even contribute to their reduction. They also have an unambiguously positive image and reputation

effect. Indirect activity, which in the short term depletes the bank's income, seems more important and convincing. In the long term, however, it brings reputational benefits and results in an improvement in the quality of the credit portfolio and a decrease in its susceptibility to the risk of a jump in the probability of bankruptcy of high-carbon companies as a result of stricter environmental regulations. The policy of commercial banks in this area largely replicates World Bank, Nordic Investment Bank and European Investment Bank policies. This means moving away from financing coal mines, coal-fired power plants and entities responsible for high level of greenhouse gas emissions. Only 4 banks from the surveyed ones (mBank SA, ING Bank Śląski SA, Santander Bank Polska SA and Credit Agricole Bank Polska SA) have officially announced a move away from financing high-carbon customers. In total, more than 20 European banking groups have already made a similar declaration, with some holding companies declaring only to give up financing for coal mines, while others have both mines and power plants using brown coal or lignite as primary fuel. This is the aftermath of the UN Climate Change Conference in Paris in 2015. The banks declare that they will not finance new coal mines and coal-fired power units, however they will keep their previous contractual obligations towards the mines and power plants. At the same time, Santander Bank Polska SA declares that by the end of 2030 it will have no exposure to coal mines and coal-fired power plants in its portfolio. In the credit policy of some banks (e.g. mBank SA and ING Bank Śląski), there exists an additional criterion, not related to the industry. This is the share of electricity from non-renewable sources in total energy consumption. These banks set a ceiling of 50% in this case. When declaring that they will not cooperate with customers who use too much conventional energy, banks also provide information about the structure of the energy sources they use themselves. Such a practice is currently applied only by 3 commercial banks in Poland, i.e. ING Bank Śląski SA, Santander Bank Polska SA and Credit Agricole Bank Polska SA.

11 out of 13 banks surveyed (BGK and Getin Noble Bank SA are the exceptions) declare that issues related to environmental protection and climate protection are directly included in the bank's credit policy. Another form of integration of environmental aspects into credit policy is the adoption of the ESG-linked formula, where the availability of finance and its price are a function of the borrower's compliance with solutions supporting sustainable development objectives. So far, only PKO BP SA, BGK and Santander Bank Polska SA offer such financing in Poland. In 2019, these entities participated in consortium financing under the ESG-linked formula, which, among other things, means that the financing is accompanied by an annual assessment of the ESG rating, for which an independent, reputable entity is responsible. In the case of the financing in question, which was granted to Energa SA in the amount of approximately PLN 2 bn, the company from Moody's group (Walencik, 2019) plays the

role of an independent ESG rating agency. A separate form of support for the green transformation is the purchase of certificates of origin for electricity, made in order to reduce the carbon footprint of the business. So far, among Polish banks only ING Bank Śląski SA, which is at the same time one of the two Polish banks (next to BNP Paribas Bank Polska SA), has decided to participate in the climate commitment of five banks made during the COP24 summit in Katowice in December 2018. The results of the survey are summarised in Table 2.

Bank	Average external rating (S&P/Fitch scale) as of the end of 03.2019	Environmental policy	Information on paper and media consumption	Energy-saving real estate, equipment and hybrid car fleet	Declaration on the phasing out of carbon finance	Environmental risk within credit policy	Monitoring of structure of utilized energy (RES – conventional fuel)	Environmental criteria in the purchase policy	Monitoring of the exposure in high-emission industries Monitoring of CO ₂ emission by clients
Bank Millennium SA	BBB/BBB+	-	X	X	-	X	-	X	X
mBank SA	BBB+	X	X	X	X	X	-	X	-
ING Bank Śląski SA	A	X	X	X	X	X	X	X	-
Powszechna Kasa Oszczędności Bank Polski SA (PKO BP)	A	-	X	X	-	X	-	X	X
Bank Polska Kasa Opieki SA (Pekao SA)	A-	X	X	X	-	X	-	X	-
BNP Paribas Bank Polska SA	A-	X	X	X	-	X	-	X	-
BGK	A-	-	-	-	-	-	-	X	-
Getin Noble Bank SA	B	-	X	X	-	-	-	X	-
Santander Bank Polska SA	A-	-	X	X	X	X	X	X	-
BOŚ SA	BB-	-	-	X	-	X	-		X
Alior Bank SA	-	-	-	-	-	X	-		-
Bank Handlowy w Warszawie SA	A-	X	X	X	-	X	-	X	-
Credit Agricole Bank Polska SA	A-	X	X	X	X	X	X	X	-

Tab. 2. The involvement of Polish commercial banks in environmental and climate protection. Source: Own study based on standalone financial figures for banks for 2018.

4. Conclusions

The study allows concluding that the scope of information on a bank's involvement in the environmental and climate protection process is not uniform. In the case of smaller private banks and banks with a dominant Treasury shareholding in the ownership structure, this scope is much smaller than in the case of large and medium-sized private banks belonging to global financial holdings. A particularly important commitment to environmental and climate protection in the sector concerns banks belonging to European capital groups that have signed up to international agreements on economic decarbonisation. The scarce information provided by banks with a dominant Treasury shareholding results from the high level of exposure of these banks to companies from carbon-intensive sectors, also owned by the Treasury. Commercial banks in Poland place the main emphasis on presenting their direct impact on the environment (reduction of energy and other media consumption, recycling and environmental campaigns). Most of them offer pro-environmental financing, but it comes from funds that the bank obtains through various government or international programmes. 4 banks declare the lack of financing for new projects related to coal-based energy production. These are the only examples of self-limitation of lending in order to change the structure of the portfolio towards a growth in the green economy.

Another conclusion of the study is that the bank's involvement in the environmental protection process is not linked to the external rating (banks financing the high-carbon economy have high investment ratings). None of the audited annual reports of the banks provide information on the environmental impact of the financed bank customers, i.e. the extent to which the bank indirectly contributes to the energy transformation. Some banks present the structure of their loan portfolio, but here the criterion is the degree of industry concentration rather than scale of greenhouse gases emission.

Information on the banks' environmental protection activities can also be found in documents of various ranks: from CSR reports through management reports on the bank's activities to the annual reports. For these reasons and due to the growing importance of environmental risk, it would be worthwhile to develop a standard for the presentation of the bank's commitment to environmental protection, obliging it to provide certain quantitative data (energy, paper, water, CO₂ emission, etc.). Another postulate, corresponding to the process currently underway in the European Commission (Giuzio et al., 2019) is to present the structure of banks' portfolios according to the criterion of customers' impact on the climate and then to determine a kind of environmental index of the bank. However this requires building a methodology for estimating the impact of specific industries or even individual customers on the climate as a carbon footprint. Due to the fact that individual companies may simultaneously be active in high-carbon and climate-friendly areas, this algorithm should make it possible to determine

the net effect and determine whether a given exposure is a green or brown asset. The application of an objective taxonomy will make it possible to identify the bank's policy, to compare the bank in this respect with other banks and at the same time provide guidance to investors (involved in the purchase of the bank's clients' shares and the bank's shares). The environmental and climate risk analysis proves its impact on individual banks and on the stability of the entire financial system. In each of these areas, potential impact channels can be identified, along with the areas where these risk factors may materialise. However, the issue of estimating the impact on the climate of particular industries or entities remains open in order to be able to estimate measurable losses of banks and their allocation in the system based on selected CO₂ reduction scenarios.

Acknowledgements

This research received no funds.

References

- Alessi, L., Ossola, E., & Panzica, R. (2019). *The greenium matters: Evidence on the pricing of climate risk*. European Commission, Joint Research Centre, JRC 116108. Retrieved from https://publications.jrc.ec.europa.eu/repository/bitstream/JRC116108/jrc116108_alessiosolapanzica_july2019_jrcwp.pdf. <https://doi.org/10.2139/ssrn.3452649>.
- Bank of England. (2020). *Climate change: What are the risks to financial stability*. Retrieved from <https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability>.
- Battiston, S., & Monasterolo, I. (2018, 8 November). *A carbon risk assessment of central banks' portfolios under 2° C aligned climate scenarios*. Working Paper. NGFS workshop "Scaling up green finance: what role for central banks", Bundesbank.
- Battiston, S., Mandel, A., Monasterolo, I., Schutze, F., & Visentin, G. (2017). A climate stress-test of the financial system. *Nature Climate Change*, 7(4). <https://doi.org/10.2139/ssrn.3452649>.
- Bolton, P., & Kacperczyk, M. (2019, 30 October). *Do investors care about carbon risk?* Columbia Business School Research Paper Forthcoming. *Journal of Financial Economics* (JFE), Forthcoming, European Corporate Governance Institute – Finance Working Paper 711/2020. <https://doi.org/10.2139/ssrn.3398441>.
- Campiglio, E. (2015) Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. *Ecological Economics*, 121, 220–230. <https://doi.org/10.1016/j.ecolecon.2015.03.020>.
- Carse, D. (2000). Environmental issues and their implications for financial institutions in Hong Kong. *BIS Review*, (108). Retrieved from <https://www.bis.org/review/r001129c.pdf>.
- Chih, H.L., Chih, H.H., & Chen, T.Y. (2010). On the determinants of corporate social responsibility: International evidence on the financial industry. *Journal of Business & Ethics*, 93, 115–135. <https://doi.org/10.1007/s10551-009-0186-x>.
- Ciciretti, R., Kobeissi, N., & Zhu, Y. (2014). Corporate social responsibility and financial performance: An analysis of bank community responsibility. *International Journal of Banking, Accounting and Finance (IJBAAF)*, 5(4). <https://doi.org/10.1504/ijbaaf.2014.067026>.

- Cornett, M.M., Erhemjamts, O., & Tehranian, H. (2016). Greed or good greeds: An examination of the relation between corporate social responsibility and the financial performance of U.S. commercial banks around the financial crisis. *Journal of Banking and Finance*, 70, 137–159. <https://doi.org/10.1016/j.jbankfin.2016.04.024>.
- Dafermos, Y., Nikolaidi, M., & Galanis, G. (2018). Climate change, financial stability and monetary policy. *Ecological Economics*, 152, 219–234. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0921800917315161>. <https://doi.org/10.1016/j.ecolecon.2018.05.011>.
- De Greiff, K., Delis, M., & Ongena, S. (2018). Being stranded on the carbon bubble, climate policy risk and the pricing of bank loans. *CEPR Discussion Papers*. Retrieved from <https://voxeu.org/article/carbon-bubble-and-pricing-bank-loans>. <https://doi.org/10.2139/ssrn.3125017>.
- Derwall, J., Guenster, N., Bauer, R., & Koedijk, K. (2005). The eco-efficiency premium puzzle. *Financial Analysts Journal*, 61(2), 51–63. <https://doi.org/10.2469/faj.v61.n2.2716>.
- Dettling, S. (2019). *130 banks holding USD 47 trillion in assets commit to climate action and sustainability*. Retrieved from <https://www.unepfi.org/news/industries/banking/130-banks-holding-usd-47-trillion-in-assets-commit-to-climate-action-and-sustainability/#>.
- ECB. (2019). *Banking in a changing climate – Preparing for what lies ahead*. European Central Bank. Retrieved from https://www.bankingsupervision.europa.eu/press/publications/newsletter/2019/html/ssm.nl190515_3.en.html.
- EU. (2019). *EU energy in figures. Statistical pocketbook 2019*. Retrieved from <https://op.europa.eu/en/publication-detail/-/publication/e0544b72-db53-11e9-9c4e-01aa75ed71a1/language-en>.
- GABV. (2019). *Do sustainable banks outperform? Driving value creation through ESG practices*. European Investment Bank (EIB), Global Alliance for Banking on Values (GABV), Deloitte LLP. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu-do-sustainable-banks-outperform-driving-value-creation-through-ESG-practices-report-digital.pdf>.
- Giuzio, M., Krusec, D., Levels, A., Melo, A.S., Mikkonen, K., & Radulova, P. (2019). Climate change and financial stability. In *Financial stability report 2019*. Retrieved from https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart.201905_1~47cf778cc1.en.html#toc1.
- Greenbaum, S.I., & Thakor, A.V. (2007). *Contemporary financial intermediation* (2nd ed.). Amsterdam: Academic Press.
- Grippa, P., Schittmann, J., & Suntheim, F. (2019, December). Climate change and financial risk. *Finance & Development*, 26–29. IMF. Retrieved from <https://www.imf.org/external/pubs/ft/fandd/2019/12/climate-change-central-banks-and-financial-risk-grippa.htm>.
- Hartzmark, S.M., & Sussman, A. B. (2019, December). Do investors value sustainability? A natural experiment examining. *Journal of Finance*, 74(6), 2789–2837. <https://doi.org/10.1111/jofi.12841>.
- Hill, J.A. (2019). Regulating bank reputation risk. *University of Alabama Legal Studies Research Paper*, 3353847. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3353847.
- http://www.citibank.pl/poland/homepage/raport_roczny_2018/files/sprawozdanie_na_temat_informacji_niefinansowych_2018_pl.pdf#zoom=80.
- <http://www.raportroczny2018.pkobp.pl/otoczenie-banku/oddzialywanie-na-srodowisko/>.
- <https://raport.santander.pl/aktualnosci/santander-bank-polska-udziela-pierwszego-w-polsce-kredytu-korporacyjnego-esg-linked/>.
- <https://raport.santander.pl/sdg/cel-13/>.
- <https://raportroczny.ing.pl/zielone-inwestycje/bank-swiadomy-ekologicznie/>.
- <https://www.bankmillennium.pl/o-banku/relacje-inwestorskie/raporty-finansowe/raporty-roczne>.
- <https://www.bgk.pl/o-banku/bank-w-liczbach/>.

- <https://www.bnpparibas.pl/csr/bank-zielonych-zmian>.
<https://www.bnpparibas.pl/raportcsr2018/time20190814100941/>.
<https://www.credit-agricole.pl/o-banku/poznaj-credit-agricole-bank-polska>.
https://www.gnb.pl/storage/file/core_files/2019/5/15/c843dd0202c7e7cac40af7c52b6dc6f8/Oswiadczenie%20na%20temat%20informacji%20niefinansowych.pdf.
<https://www.mbank.pl/raport-roczny/2018/>.
<https://www.mbank.pl/raport-roczny/2018/interesariusze/z-szacunkiem-dla-srodowiska/>.
<https://www.pekao.com.pl/relacje-inwestorskie/raporty-i-sprawozdania/odpowiedzialny-biznes.html>.
https://www.pkobp.pl/media_files/14fd6069-1411-4f3d-ac34-6af63e836b8f.pdf.
- Huang, B., Punzi, M.T., & Wu, Y. (2019, July). Do banks price environmental risk? Evidence from a quasi natural experiment in the People's Republic of China. *ADB Working Paper Series*, 974. Retrieved from <https://www.adb.org/sites/default/files/publication/511356/adbi-wp974.pdf>. <https://doi.org/10.2139/ssrn.3541472>.
- Janik, B. (2017). Value-based banking in Central and Eastern Europe countries: Ecological point of view. *Ekonomia i Prawo. Economics and Law*, 16(3), 313–324. <https://doi.org/10.12775/eip.2017.022>.
- Karkowska, R. (2019). Systemic risk affected by country level development. The case of the European banking sector. *Argumenta Oeconomica*, 2(43), 255–282. <https://doi.org/10.15611/aoe.2019.2.11>.
- Kemp-Benedict, E. (2018). Investing in a green transition. *Ecological Economics*, 153, 218–236. <https://doi.org/10.1016/j.ecolecon.2018.07.012>.
- Mazahrih, B.J.S. (2011). *Incorporation of environmental issues into banks' lending decisions* (Doctoral thesis). Hamilton, New Zealand: University of Waikato. Retrieved from <https://hdl.handle.net/10289/5885>.
- McKee, C., & Azevedo, L.G. (2018). *Sustainable finance: What can the financial sector do to better manage environmental and social risks?*. Retrieved from <https://blogs.iadb.org/bidinvest/en/banks-better-manage-environmental-social-risks/>.
- Network for Greening the Financial System. (2019, April). *First comprehensive report. A call for action climate change as a source of financial risk*. Retrieved from https://www.banque-france.fr/sites/default/files/media/2019/04/17/ngfs_first_comprehensive_report_-_17042019_0.pdf.
- Niedziółka, P. (2013). Agencje ratingowe – instytucje wczesnego ostrzegania przed kryzysem czy podmioty destabilizujące rynki finansowe. *Zarządzanie i Finanse*, 2, 395–405.
- Niedziółka, P. (2019). Ryzyko systemowe oraz reputacyjne w działalności agencji ratingowych. *Gospodarka Narodowa*, 298(2), 127–148.
- Rozenberg, J., Hallegatte, S., Perrissin-Fabert, B., & Hourcade, J.-Ch. (2013). Funding low-carbon investments in the absence of a carbon tax. *Climate Policy*, 13(1), 134–141. <https://doi.org/10.1080/14693062.2012.691222>.
- Scholtens, B., & van't Klooster, S. (2019). Sustainability and bank risk. *Palgrave Communications*, 5(105). <https://doi.org/10.1057/s41599-019-0315-9>.
- Sobolewski, P. (2018). *Jak banki wspierają ochronę środowiska*. Retrieved from <https://www.politykainsight.pl/pi-climate/1775404,1,jak-banki-wspieraja-ochrone-srodowiska.read>.
- Thompson, M. (2006). *Environmental & social risk management in banks*. UNEP Finance Initiative, PWC. Retrieved from https://www.unepfi.org/fileadmin/events/2006/moscow/ceetf_moscow_thompson_2006.pdf.
- UE. (2018). Commission action plan on financing sustainable growth. Retrieved from https://ec.europa.eu/info/publications/180308-action-plan-sustainable-growth_en.
- Walencik, I. (2019). *Dwie kancelarie w pionierskim ekokredycie odpowiedzialnym społecznie*. Retrieved from <http://rynekprawniczy.pl/2019/09/20/allen-overly-i-white-case-w-pionierskim-energetycznym-ekokredycie-odpowiedzialnym-spoecznie/>.
- Zioło, M. (2017). Zarządzanie ryzykiem środowiskowym i jego znaczenie dla stabilności sektora bankowego. *Problemy Zarządzania*, 2(1), 92–106. <https://doi.org/10.7172/1644-9584.66.6>.