SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2023
ORGANIZATION AND MANAGEMENT SERIES NO. 171

CLIMATE PROTECTION AND SUSTAINABLE DEVELOPMENT AS AN INVESTMENT FOR THE FUTURE FROM INDIVIDUAL INVESTORS' PERSPECTIVE

Alina RYDZEWSKA

Silesian University of Technology, Faculty of Organization and Management, Zabrze;
Alina.Rydzewska @polsl.pl, ORCID: 0000-0002-4535-3585

Purpose: This article is aimed at analyzing the importance of investments relating to environmental protection and sustainable development promotion considering the individual investors' perspective.
Design/methodology/approach: This article attempts at answering the question of which investments should be considered "green", what their importance is and what the benefits of investing in environmental protection and sustainable development are, and also what activities can be initiated by individual investors to support eco-friendly and pro-community investments. The following research methods were used: reference work review, secondary source analysis (data concerning the following indexes: iShares Dow Jones Global Sustainability, iShares STOXX Europe 600 Oil & Gas and iShares STOXX Europe 600) and deductive reasoning.
Findings: Achievement of EU objectives relating to reaching climate neutrality by 2050 is connected with the need to mobilize capital which will be targeted at investments relating to climate protection and sustainable development. At the same time, green investments bring about specific benefits for the issuers and investors. To support eco-friendly and pro-community activities, individual investors may initiate specific activities concerning financial and in-kind investments.
Social implications: This article presents forms of supporting green investments by individual investors and households. Increased social awareness results in a question of how to invest one's funds to ensure it is in harmony with eco-friendly, pro-community, and ethical attitudes and values.
Originality/value: The article offers cognitive value as it contributes to the body of knowledge regarding the relevance of green investments in addressing climate change.

Keywords: green investments, environmental protection, sustainable development.

Category of the paper: conceptual paper.

1. Introduction

Environmental protection and sustainable development are one of the most important challenges of today's reality. More and more frequent and extreme flooding, increased numbers of hurricanes and prolonged droughts, as well as rising sea levels pose threats of a global environmental disaster. Higher temperature values result in the disappearance of numerous animal and plant species. In particular, a worrying phenomenon is the extinction of pollinating insects. This threatens plant reproduction, seamless animal food chain and food security of humans. According to the Global Assessment Report by IPBES, unless people stop climate changes soon, the Earth will face an environmental disaster (IPBES, 2019).

Stopping dramatic climate changes and their effects have become a priority. The Paris Agreement, or the United Nations Framework Convention on Climate Change, executed in 2016, for its major objective selected reduction of the global temperature rise by the end of this century below two degrees Celsius when compared to the level before the industrial era and effort to keep temperature rise below 1.5 degrees (https://unfccc.int/sites/default/files/english_paris_agreement.pdf). In order to comply with the 1.5 standard, it is necessary to achieve a net zero level of greenhouse gas emissions by 2050 at the latest. In September 2019, the European Union and many UN member states obliged to undertake relevant activities.

Climate neutrality means achievement of balance between emission of greenhouse gases and their absorption, e.g. by planting forests to bind CO2. A prerequisite is structural transformations, including gradual departure from burning coal, crude oil, and natural gas. This objective, however, may be achieved solely when required eco-friendly investments are made. Worldwide, around EUR 82,500 billion has already been invested in environmentally friendly and climate protection-related investments (Barabanov, Basnet, Walker, Yuan, Wendt, 2021).

The problem presented is important from a theoretical and practical point of view. Its importance has led to the development of new publications on the green economy by various international organizations, national governments, think groups, experts and NGOs. These studies mainly focus on a macroeconomic perspective. However, they do not often address the issue of green investment from the point of view of the benefits and risks of individual economic agents, especially investors. In connection with this article, it was undertaken to answer the question: what investments should be considered as so-called green investments, what is the importance and what are the benefits associated with investments in environmental protection and sustainable development, what actions can be taken by individual investors to promote pro-environmental and pro-social investments

The purpose of this article was to analyze the importance of investments related to environmental protection and the promotion of sustainable development, taking into account the perspective of individual investors. The following research methods were used: literature

review, desk research (data on the iShares Dow Jones Global Sustainability, iShares STOXX Europe 600 Oil & Gas and iShares STOXX Europe 600 indices) and deductive reasoning.

2. Literature review

The literature on the subject does not explicitly define green investments. They are referred to as investments in climate protection and sustainable development, and are also called green investments or green investments. The distinguishing feature of the investments in question in relation to conventional ones is that they supplement classic financial criteria (such as amount, time, risk, rate of return), with categories of ecological, social and ethical evaluation.

Inderst, Kaminker and Stewart, conducted an analysis on the definition of green investments based on various criteria, such as asset positions, investment size. Given the lack of consensus on the use and definition of the term "green," they concluded that an open and dynamic approach to definitions and standards should be used (Inderst, Kaminker, Stewart, 2012).

Green investments are also approached as green investments, referring to social investments made to improve the environment (individual environmental donations, socially responsible businesses, etc.). Green investments, or socially responsible investments, are in line with the concept of ecological civilization. Other authors define green investments as those investments that aim to reduce greenhouse gases and air pollutants, without significantly reducing the production and consumption of non-energy products (Utz, 2015). Green investments can also be considered in a broad sense. They are treated as environmental, social, and governance investing, responsible investments, and socially responsible investments (Escrig-Olmedo, Rivera-Lirio, Munoz-Torres, 2017).

Green investments are primarily aimed at influencing environmental improvements. They also affect the activities of those making the investments, namely companies and investors (Yen , 2018).

When analyzing the results of studies on the changes that are associated with pro-environmental investments in companies, I most often refer to the results of operations. Thus, the analysis of data obtained from 16,119 companies, indicated the occurrence of a positive relationship between corporate social responsibility (CSR) and the financial performance of companies (Mikolajek-Gocejna, 2016) emissions can in an effective way manage financial performance (Ganda, Milondzo, 2018). Based on a study by Ghosh, Sarmah, Kanauzia, it was found that investments in green technologies can lead to a reduction in the total cost of the supply chain, as well as carbon emissions (Ghosh, Sarmah, Kanauzia, 2020). On the other hand, according to Atif, Alam, Hossain, the implementation of sustainable investments by companies lowers energy consumption and reduces carbon emissions,

and positively affects financial performance by increasing operational efficiency and taking advantage of new opportunities (Atif, Alam, Hossain, 2019).

The implementation of green investments also influences household behavior. Promoting sustainability and taking environmentally friendly measures are causing changes in consumer decisions, as more and more people are choosing green products over traditional ones (Xing, Xia, Guo, 2019).

In conclusion, the implementation of green investments has certain consequences in the activities of businesses and consumers. According to what we have been able to analyze, there is a lack of studies analyzing the benefits for investors associated with investments in green ventures. The literature also lacks indications for households recommending behaviors that support green investments. In addition, the implications for businesses focus mainly on the impact of sustainability investments on business performance, without a more in-depth analysis of the drivers of improved business performance.

3. Research methodology

The purpose of this article is to analyze the importance of investments related to environmental protection and the promotion of sustainable development, taking into account the perspective of individual investors.

In connection with this article, it was undertaken to answer the question: what investments should be considered as so-called green investments, what is the importance and what are the benefits associated with investments in environmental protection and sustainable development, what actions can be taken by individual investors to promote environmental and pro-social investments?

The following research methods were used: literature review, desk research (data on the iShares Dow Jones Global Sustainability, iShares STOXX Europe 600 Oil & Gas and iShares STOXX Europe 600 indices) and deductive reasoning.

In recent years, a number of new instruments have developed that are defined as pro-environmental investments. Due to the lack of a clear definition of green invetments, investors face difficulties in identifying instruments related to environmental protection and sustainability. The European Union has reached a common agreement and in 2020 supported regulations defining sustainable activities, however, they are mainly useful for entities applying for funds for green investments. On the other hand, they are not necessarily clear for those wishing to invest in green projects. The criteria that are most often used to classify instruments as pro-environmental are presented below, also in a later article.

The first criterion used when selecting investment criteria is the ESG marking. This acronym signifies factors used to create ratings and non-financial assessment of an organization. They have three components: E for Environment, S for Social responsibility and G for Governance. The ESG criteria are used to identify the company, states or projects ensuring favorable environmental and social benefits (e.g. "best in class"). Relating to investment in entities' securities, this criterion enables to identify the entities whose strategies and ongoing decisions consider environmental, social, and governance aspects. Their level may shape the ability to finance new investments from funds provided by investors for whom the sustainable development policy is important. However, any activities non-compliant with the ESG idea, including workplace discrimination, emission of environmentally harmful gases or funding political campaigns may compromise the company reputation in the stakeholders' eyes. In this way, environmental marking ensures certain confidence relating to the wallet and funded projects.

The second type of eco-friendly investment identifiers includes the so-called exclusion criteria. They are identifiable determinants used to eliminate selected sectors, companies or states from the so-called green investment directions. Exclusion criteria may refer to the environment, i.e. comprise factors detrimental for climate (e.g. coal mining), to the social aspects, i.e. violating human rights, child labor, or may be connected with unacceptable ethical and political measures, e.g. weapon supply agreements. In certain areas, the minimum acceptance level for adverse factors may be adopted.

Another criterion is the assessment of entities' measures towards climate improvement. This assessment is connected with analyzing information relating to the hazard caused by them to the natural environment published by business entities. To present the information, the entities must keep relevant records and ensure data reporting concerning the factors exerting adverse impact on the climate. Such book-keeping may comprise information on emissions of carbon dioxide or other greenhouse gases and water consumption. To collect data concerning companies' impact on the environment, non-profit organizations are created, e.g. Carbon Disclosure Project (CDP). This organization collects, in the investors' name, data and information on CO2 emission, climate risk as well as the companies' reduction goals and strategies using standardized questionnaires.

The criterion applied to assess instruments as eco-friendly investments is the organization's participation in creating sustainable development indexes and instruments using sustainable indexes in their formula. During the last twenty years, products with sustainable development indexes appeared on close to all most important stock exchanges. They include e.g. MSCI ESG Index, MSCI Global Environmental Index, MSCI Global Alternative Energy Index, MSC Global Energy Efficiency Index, MSC Global Green Building Index, MSC Pollution Prevention Index, and MSCI Global Sustainable Water Index. Similar offerings can be found in S&P indexes, i.e. S&P Eco Global Index and S&P ESG Index. In STOXX, this is STOXX® Global ESG Leaders Index. The Warsaw Stock Exchange has WIG ESG index. It was created based

on the wallet value of companies considered socially responsible, i.e. the ones complying with the socially responsible business rules, including but not limited to relating to the environmental, social, economic, and governance aspects. Including shares in ESG indexes gives the issuers the ability to obtain significant funds for green transformation. This requires reporting ESG financial data (i.e. environment, society and governance). Individual investments or project funding should be described in detail, and relevant reports should be published.

As stems from the presented analysis, green investment identification is problematic due to the absence of legislative solutions. However, the most important aspect of investing in sustainable products is that they direct funds towards sustainable development.

4. Results

Investment in and issuance of instruments connected with the environmental protection and sustainable development may have versatile favorable effects (Chen, Chen, Zheng, Li, 2023). Generally speaking, they may be analyzed from the perspective of issuers and of investors.

The benefit for the sustainable instrument issuers is primarily obtaining funds for eco-friendly investments (Nawrocki, Szwajca, 2021). Transformation in the so-called "green" direction requires long-term investments which will bring return a long time later (Martinez-Oviedo, Medda, 2019). Hence the problem of obtaining funds. However, the issuance of green bonds or other securities enables to obtain funds for those activities.

The positive outcome is also the results of eco-friendly and/or pro-community projects. Following a green transformation, a company should experience measurable benefits, including lower costs, improved risk management and relations with the local community, employees, suppliers, and banks funding it. (Siedschlag, Yan, 2021), This means that the company's developmental foundations and perspectives are better in the longer term which should translate into financial results and support the appraisal.

Analyzing the benefits of issuing instruments which are considered green investment, this project contributes to the company reputation. Investors perceive such business entities as eco-friendly and pro-community institutions. They are a more and more important investment direction. The studies by Ernst&Young reveal that one fourth of people born in 1981-1996 perceive sustainable investing as the most important factor when selecting investment products nowadays (https://www.ey.com/en_gl/sustainability-financial-services).

From the investors' perspective, investments in projects and business models connected with the climate protection and sustainable development are more and more perceived as an opportunity to earn ensuring compliance with ethical rules and standards at the same time

(Martin, Moser, 2016). It is disputable, however, if investment in financial instruments which are climate- and society-friendly entails lower effectiveness (rate of return).

According to the studies by the Federal Office for the Environment (FOEN) among 2000 respondents, investment in environmentally friendly financial instruments did not bring any inferior profits. On the contrary, at least one half of respondents declared that they were higher (CSSP& Southpole, 2016). Other analyses indicate that the profitability of sustainable funds is comparable to the profitability of traditional investments in shares though the former entail lower risk. The analyses by Morgan Stanley (Stanley, 2019) among entities trading in securities indicated that the profits from the so-called green investments do not differ significantly from the traditional ones but they are exposed to fewer fluctuations than the instruments valued based on the prices of crude oil or other fossil fuels.

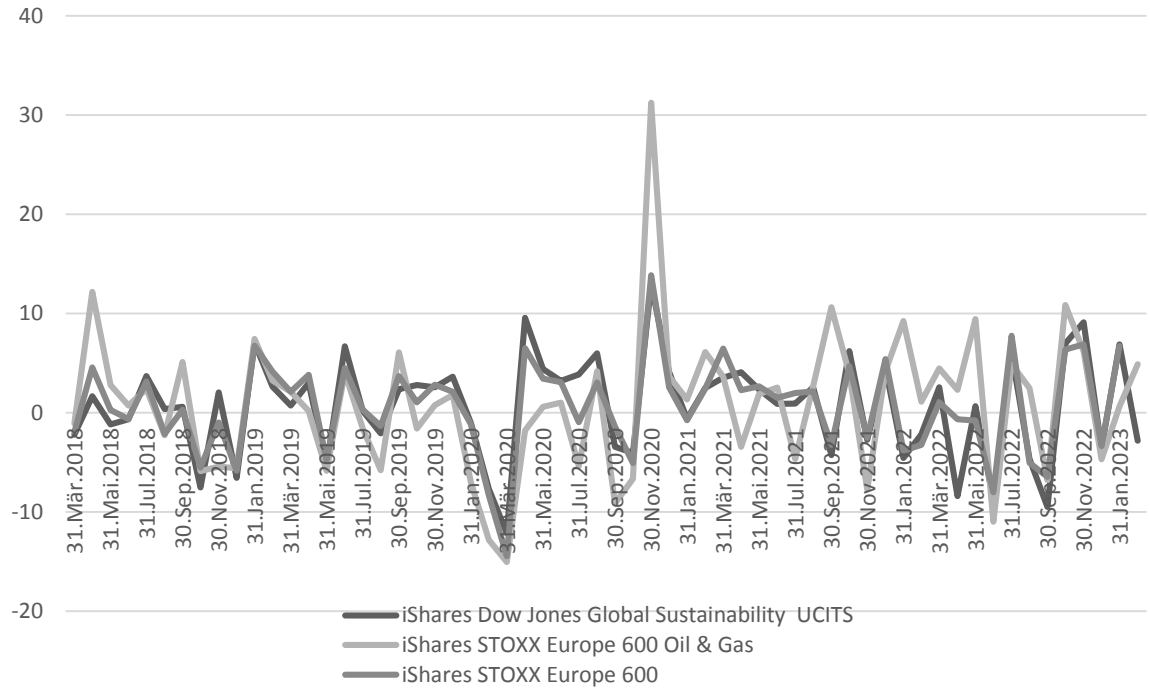

Figure 1. The monthly rates of return for iShares Dow Jones Global Sustainability UCITS ETF, iShares STOXX Europe 600 Oil & Gas UCITS ETF (DE) and iShares STOXX Europe 600 ETF (for the period from 31/03/2018 to 31/01/2023).

Source: own compilation based on data https://www.ishares.com/de//produkte/ [obtained on 05/03/2023].

Similar conclusions can be drawn analyzing monthly rates of returns for three instrument types. Figure 1 depicts monthly rates of returns for the following funds: sustainable development iShares Dow Jones Global Sustainability), in crude oil sector shares (iShares STOXX Europe 600 Oil&Gas) and the gas sector shares, and in the shares of 600 largest European companies (iShares STOXX Europe 600). That is data from the last five years, i.e. from March 2018 to January 2023.

According to the diagram, the rates of return for individual instruments displayed a similar trend. The largest fluctuations were observed for the rates of return for the funds of the crude-oil sector company shares. The lowest fluctuation could be seen for the rates of return for sustainable funds. Moreover, the rates of return for iShares Dow Jones Global Sustainability and iShares STOXX Europe 600 are highly convergent (the correlation coefficient is 0.93). This means that investments in sustainable funds are not only characterized by profitability comparable to standard instruments, but also entail lower risk.

To sum up, investments in environmental protection and sustainable development are beneficial both for the issuers and for the investors. From the macroeconomic perspective, the funds obtained from the capital providers are used to finance projects and activities aimed at improving the environment and impact the community.

5. Discussion

Money transformed within a financial system is a lever of environmental protection measures. Performance of eco-friendly measures, including e.g. transformation of power engineering and transport to achieve climate neutrality, is based on access to funds (Rydzewska, 2022, p. 251). Green investments are a source of capital when funding environmental protection and sustainable development projects, and also bring specific benefits for issuers and investors.

Business entities issuing instruments constituting green investments get the opportunity to obtain funds for eco-friendly and pro-community goals. In the longer term, the green transformation offers measurable benefits, including lower costs, improved risk management and relations with the local community, employees, suppliers and banks funding it. Investors investing in green investments may get rates of return comparable to the traditional instruments, with a lower risk and in harmony with their eco-friendly, pro-community and ethical values.

The processes supporting eco-friendly investments should involve not only institutional but also individual investors. For such a phenomenon to occur, households may take different measures. Figure 2 shows measures to be taken to that aim. They may refer to the banking system, to investments in securities indirectly and directly, to indirect financial investments and to direct in-kind investments.

The first area supporting eco-friendly investments is the banking sector. In this respect, households should analyze the banking offer and if the products included in it are connected with sustainable development. The offer should refer not only to securities advisory, but primarily to banking instruments, including special eco-friendly saving offers (bank deposits, passbooks) as well as credits and loans for eco-friendly purposes. Thanks to such savings, the investors may allocate their funds according to the ethical attitudes and values

related to the environmental protection. The loans and credits will allow funding private projects related to the environment improvement (e.g. green energy sources).

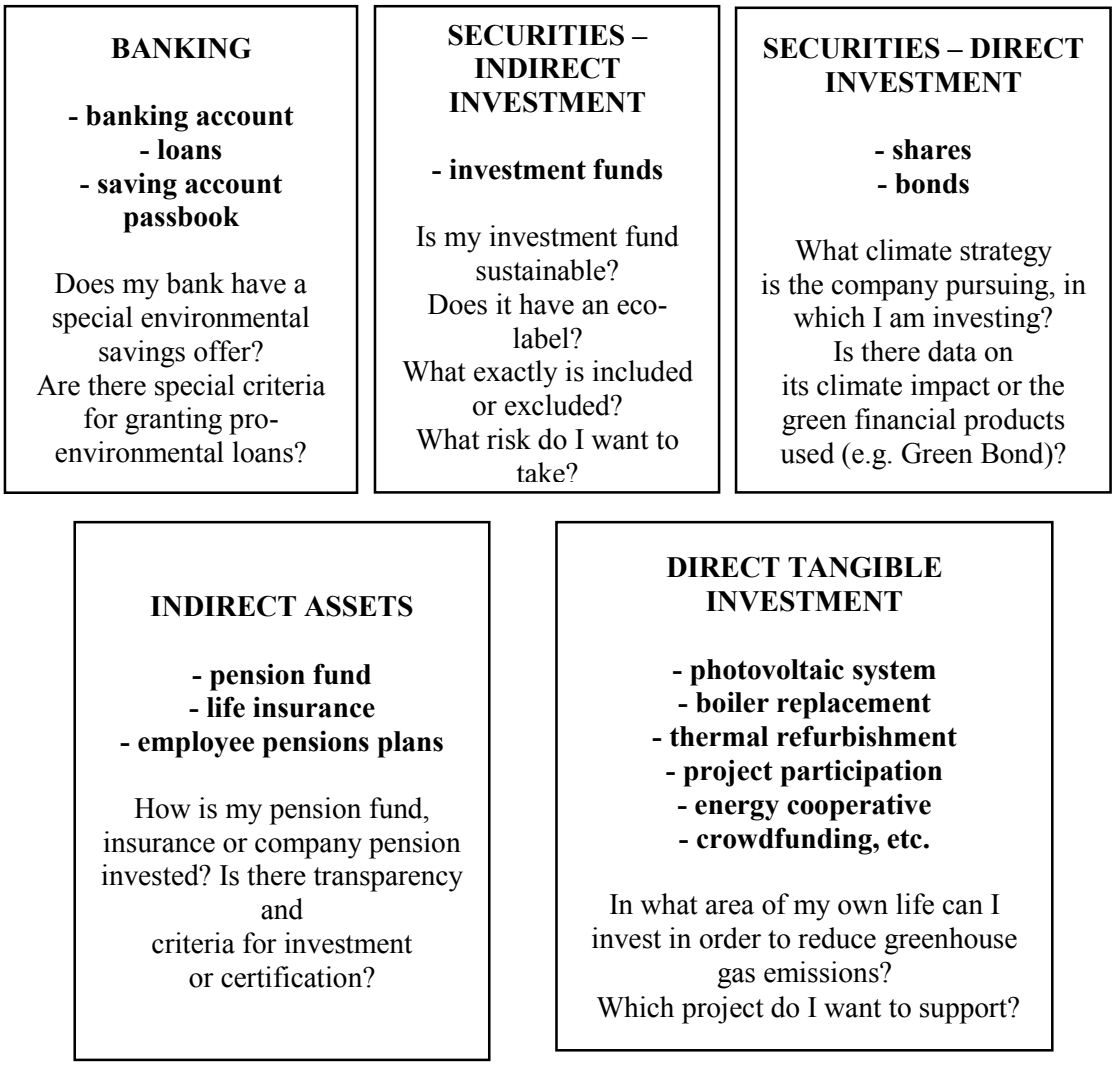

Figure 2. Forms of supporting investments in environment protection and sustainable development by individual investors.

Source: own work.

The second area is investments in securities indirectly, e.g. by means of sustainable development investment funds. By issuing participation units, those funds obtain finance from capital providers and invest them in shares, venture capital projects, private equity ones, etc. However, the investments must conform to the principles of sustainable development and ESG standards comprising aspects relating to the environmental protection (Environmental), social responsibility (Social) and management, corporate governance and counteracting corruption (Governance). To recognize such funds, investors may use digital platforms presenting their offer (e.g. Cleanvest platform).

The third area is direct investments in securities, usually shares or debt securities of specific business entities. However, for those investments to be related to sustainable development, they must refer to companies carrying eco-friendly activities and/or reducing any operations

detrimental for the climate in their corporate strategy. The problem is the identification of such business entities. They are selected, as it was already mentioned, based on the criteria of identifying activities conforming to ESG, criteria of entities' exclusion (e.g. in connection with the environment degradation, support for war activities), publication of reports and information on sustainable development and participation in creating sustainable development stock exchange indexes. Thanks to that, individual investors may look for new investment opportunities compliant with their values and financial expectations.

The fourth area refers to indirect financial investments. This means that when selecting retirement funds, insurance companies or company pension schemes, investors should find out what projects their funds are allocated to and if they are environmentally friendly. Moreover, it is important to learn the criteria of instrument selection for the investment and if they are certified. When selecting retirement and investment funds, exclusion criteria are also important, meaning elimination of directions detrimental from the sustainable development perspective.

The last area are the direct in-kind investments. Those activities are connected with individual decisions concerning everyday life, including purchase and/or installation of eco-friendly solutions, e.g. solar panels, biomass heating system, e-car or electric bike. They may also refer to common social projects, including energy cooperatives (participative solar power plants) where the residents fund or co-fund eco-friendly projects. This area comprises also common crowdfunding initiatives. This instrument involves collecting funds from a great number of small investors (mainly Internet users) and using them to finance projects. With respect to green investments, this includes numerous projects related to climate protection and pro-community initiatives.

6. Conclusions

Based on the analysis carried out in this study, it can be concluded that green investments are associated with certain benefits. For companies, they mean funds to finance environmental protection measures. They also improve business performance through cost savings and better risk management. They improve a company's reputation by improving relations with the local community, employees and contractors. For investors, on the other hand, green investments are a form of financial instruments that allow them to obtain rates of return comparable to traditional instruments, with lower risk. In addition, they are a direction of capital allocation that is consistent with pro-environmental, pro-social and ethical values. A survey conducted by Ernst&Young shows that about a quarter, so-called millennials, see sustainable investing as the most important factor in choosing investment products.

In conclusion, the problem of green investment is becoming increasingly urgent and important. In order to achieve the EU's environmental goals of achieving climate neutrality by 2050, it is urgent to mobilize more and, above all, private capital that will be channeled into investments related to climate protection and sustainable development. This also applies to individual investors, who can support pro-environmental and pro-social activities through their allocation choices in financial and physical investments. Households as individual investors have a number of options in this regard. These include decisions to choose pro-environmental banking instruments; to invest directly in securities (stocks, bonds) of companies operating in accordance with sustainability and ESG standards; to invest indirectly in sustainability investment funds or pension funds. The last option is in-kind investments related to daily operations, such as the purchase and installation of green solutions, such as photovoltaic panels, a biomass heating system, an e-car or an electric bicycle.

The considerations conducted in the paper and the conclusions formulated:

- contribute to the development of theory on instruments supporting climate protection actions, including but not limited to financial instruments included in the so-called green investments,
- in the management aspect, they indicate the need to improve the processes related to the development of legal frameworks, technological and expert support, education and development of financial instruments for activities related to sustainable development,
- from the social point of view, they indicate the need for further support for activities, including those of a financial nature, in the field of pro-ecological activity, due to their social importance.

A limitation in this article is the absence of data on the developmental trends of green investments and the directions of using funds for investments relating to the environmental protection and sustainable development. It should be emphasized, however, that the green finance notion is a relatively new one, developing both in the theoretical and in the practical aspect. The paper may therefore serve as a basis for further analysis relating to the development of instruments used to finance pro-ecological and pro-community investments.

References

1. Atif, M., Alam, M.S., Hossain, M. (2019). Firm sustainable investment: Are female directors greener? *Business Strategy and the Environment, 29*, pp. 1-21.
2. Barabanov, S., Basnet, A., Walker, T., Yuan, W., Wendt, S. (2021). Firm- and country-level determinants of green investments: an empirical analysis. *Managerial Finance, 47(11)*.

3. Brondizio, E.S., Settele, J., Diaz, S., Ngo, H.T. (ed.) (2019). *Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn, https://doi.org/10.5281/zenodo.3831673.
4. Chen, M., Chen, R., Zheng, S., Li, B. (2023). Green Investment, Technological Progress, and Green Industrial Development: Implications for Sustainable Development. *Sustainability, 15(4)*.
5. *Clean Energy Investments Trend* (2018). Bloomberg NEF. Retrieved from https://data.bloomberglp.com/professional/sites/24/BNEF-Clean-Energy-Investment-Trends-2018.pdf.
6. CSSP und Southpole (2016). *Klima freundliche Investitionstrategien und Performance. Studie im Auftrag des Bundesamts fur Umwelt (BAFU).* Vaduz-Zürich.
7. Escrig-Olmedo, E., Rivera-Lirio, J.M., Munoz-Torres, M.J., Fernandez-Izquierdo, M.A. (2017). Integrating multiple ESG investors' preferences into sustainable investment: A fuzzy multicriteria methodological approach. *Journal of Cleaner Production, 162*, 1334-1345.
8. Ganda, F., Milondzo, K.S. (2018). The Impact of Carbon Emissions on Corporate Financial Performance: Evidence from the South African Firms. *Sustainability, 10, 2398.*
9. Ghosh, A., Sarmah, S.P., Kanauzia, R.K. (2020). The effect of investment in green technology in a two echelon supply chain under strict carbon-cap policy. *Benchmarking: An International Journal, 27*, pp. 1875-1891.
10. https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
11. https://www.ey.com/en_gl/sustainability-financial-services.
12. https://www.ishares.com/de//produkte/, 5.03.3023.
13. Inderst, G., Kaminker, C., Stewart, F. (2012). Defining and Measuring Green Investments: Implications for Institutional investors' Asset Allocations. *OECD Working Papers on Finance, Insurance and Private Pensions.* Paris, France: OECD Publishing, p. 24.
14. Martin, P., Moser, D. (2016). Managers' green investment disclosures and investors' reaction. *Journal of Accounting & Economics, 16(1)*.
15. Martinez-Oviedo, R., Medda, F. (2019). Real Natural Assets: The Real Green Investment Alternative. *The Journal of Alternative Investments, 21(3)*.
16. McCollum et al. (2018). Energy investment needs for fulfilling the Paris Agreement and achieving the Sustainable Development Goals. *Nature Energy, Vol. 3*. Retrieved from: https://www.nature.com/articles/s41560-018-0179-z.epdf.
17. Mikołajek-Gocejna, M. (2016). The Relationship Between Corporate Social Responsibility And Corporate Financial Performance–Evidence From Empirical Studies. *Comparative Economic Research, 19*, pp. 67-84.
18. Nawrocki, T.L., Szwajca, D. (2021). A Multidimensional Comparative Analysis of Involvement in CSR Activities of Energy Companies in the Context of Sustainable Development Challenges: Evidence from Poland. *Energies, 14(15)*.

19. Rydzewska, A. (2022). Green finance to combat climate change. *Zeszyty Naukowe Politechniki Ślaskiej, Organizacja i Zarządzanie, no. 161*.
20. Siedschlag, I., Yan, W.J. (2021). Firms' green investments: What factors matter? *Journal of Cleaner Production, 310*.
21. Stanley, M. (2019). *Sustainable Reality: Analyzing Risk and Return of Sustainable Funds*.
22. *The Report of the Global Commission on the Economy and Climate* (2018). Retrieved from: https://newclimateeconomy.report/2018.
23. Utz, S.W. (2015). Tri-criterion modeling for constructing more-sustainable mutual funds. *European Journal of Operational Research, 246*, pp. 331-338.
24. Xing, G., Xia, B., Guo, J. (2019). Sustainable Cooperation in the Green Supply Chain under Financial Constraints. *Sustainability, 11*, *5977*.
25. Yen, Y.-X. (2018). Buyer–supplier collaboration in green practices: The driving effects from stakeholders. *Business Strategy and the Environment, 27*, pp. 1666-1678.