
THE ROLE OF ECOLOGICAL AWARENESS IN CONSUMER DECISION-MAKING REGARDING SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF LOGISTIC SOLUTIONS

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Abstract: *Ecological awareness plays a crucial role in consumer decision-making, especially concerning logistic solutions such as pickup points instead of traditional courier delivery. This study examines the influence of ecological awareness on consumer preferences in the context of alternative delivery methods, with a focus on sustainable development. Through a literature review and analyzing the results provided in reports, the article identifies factors shaping ecological awareness and its relationship with logistic choices. The findings of this study are significant for logistics companies and retailers, aiding them in understanding how to promote sustainable delivery methods and adapt their offerings to meet consumers' growing environmental expectations.*

Ecological awareness has emerged as a pivotal factor influencing consumer decision-making processes, particularly in the realm of logistics and delivery solutions. This study delves into the intricate interplay between ecological consciousness and consumer preferences, specifically exploring how these dynamics shape choices related to sustainable development within the logistics sector.

By conducting a comprehensive literature review and analyzing data obtained from numerous reports, this study sheds light on the multi-faceted relationship between environmental awareness and logistics choices, mainly in Poland. Explores the various factors that contribute to the formation and evolution of environmental awareness among consumers, from environmental education to social norms and ethical considerations.

Moreover, this study elucidates the significant impact of ecological awareness on consumer preferences for alternative delivery methods, such as utilizing pickup points instead of conventional courier services. It reveals how consumers increasingly prioritize sustainability and environmental responsibility when making logistical decisions, reflecting a broader shift towards eco-conscious consumption patterns.

The insights gleaned from this research hold profound implications for logistics companies and retailers alike. Armed with a deeper understanding of consumer behavior and preferences, these entities can devise more effective strategies to promote and implement sustainable delivery solutions. By aligning their offerings with consumers' growing environmental expectations, they can not only enhance their competitive edge but also contribute to the broader imperative of fostering a more sustainable future.

Keywords: *Ecological awareness, consumer preferences, logistic solutions, sustainable development, pickup points.*

Introduction

Environmental awareness is the ability of consumers to understand and appreciate the impact of their purchasing choices on the natural environment and community. It is an integral part of the decision-making process because it influences consumers' preferences, values and goals. Understanding consumers' growing environmental expectations undoubtedly allows companies to adapt their offerings, offering products and services that are consistent with their customers' values. This, in turn, can lead to increased satisfaction and building a stronger brand. As a result, companies that quickly respond to these changing trends and implement appropriate strategies gain a competitive advantage on the market. By adopting a sustainable approach to business, they not only gain the trust of their customers, but also actively contribute to building a more sustainable future.

Logistics companies play a key role in adapting to the growing customer expectations that fit into the concept of sustainable development, especially in the aspect of customer service. The introduction of many initiatives and environmentally friendly solutions allows companies to increase their competitiveness on the market, but also contribute to long-term sustainable development and support for greener practices throughout the logistics industry.

The role of sustainable development

Ecological threats are one of the greatest problems of humanity in the 21st century. Economic development, mass production, excessive consumption and population growth contribute to the unfavorable impact of humans on the natural environment. Already in 1992, at the Earth Summit in Rio de Janeiro, environmental threats were recognized as a global problem (Nakonieczna-Bartosiewicz, 2022). Thus, the formal sanctioning of the concept of sustainable development is an incentive for significant changes in social behavior and increasing care for the state of the environment.

Sustainable development is one of the most important topics of the modern era. Much debate has focused on how sustainable consumption can contribute to mitigating negative environmental impacts, as well as what motivates consumers to engage in green behavior (Ern et al., 2022; Khan et al., 2020). Thus, the concept of sustainable development was created as a result of a growing reflection on the nature of the relationship between humans and the environment (Nakonieczna-Bartosiewicz, 2022, p.17).

The term "sustainable development" has been the subject of discussion for many years in many areas: scientific, political, social and media. It undoubtedly gained political significance in 1987, when the report of the World Commission on Environment and Development (the so-called Brundtland Commission) entitled *Our Common Future* was published. The authors of the document then defined the concept of sustainable development as "...development that meets the needs of current generations without compromising the ability of future generations to meet their needs" (*Our Common Future*, 1987, Stanny and Czarnecki, 2011).

Later, the idea of sustainable development began to be perceived as a compromise of three dimensions: environmental (ecological), economic and social, determining the well-being of current and future generations. The economic dimension is expressed in the pursuit of meeting current needs, taking into account securing the resources necessary to meet the needs of future generations. The ecological dimension aims to establish the boundaries of the natural system for human activities and not to exceed them. However, the social dimension seeks to seek the ability to solve major social problems (Purvis, Mao & Robinson, 2019; Nakonieczna-Bartosiewicz, 2022).

In 2015, the UN adopted the 2030 Agenda for Sustainable Development, and within it established the Sustainable Development Goals. By integrating the goals of the 2030 Agenda for Sustainable Development into their strategies and actions, companies can not only support global sustainability efforts, but also gain a competitive advantage by building a positive brand image and engaging in sustainable social and ecological development.

Sustainable development means responsible management of natural resources, supporting social equality, promoting economic growth based on innovation and efficient use of resources, and ensuring that actions taken do not negatively impact the future of the planet and humanity. Sustainable development is a concept that has an increasingly visible impact on the global economy. Environmental and social issues are becoming more and more important to

consumers, and the climate crisis is accelerating the need for changes in the existing business models of many companies.

Nowadays, there are four pillars of sustainable development:

- human dimension,
- social dimension,
- environmental dimension,
- economic dimension (Figure 1).



Figure 1. Four pillars of sustainability

Source: Future Learn, *The four pillars of sustainability*, 2017, <https://www.futurelearn.com/info/courses/sustainable-business/0/steps/78337> (29.04.2024)

The clothing industry, especially fast fashion, is most often indicated as an area of excessive overproduction, which results from the desire to present the entire collection in all stores, despite the knowledge that only a small part of all presented models will be sold. This approach is far from corporate social responsibility (AlgotiQ). Consumers are concerned not only about the amount of waste produced by the clothing industry, but also about insufficient transparency in supply chains. In response to these concerns, many clothing companies have begun to implement sustainability strategies, reducing production rates and increasing the use of recovered materials.

The European Union also comes to the rescue and has been introducing numerous environmental protection standards for years to promote ecology and sustainable development. The organization's strategic goal is not only to create a resource-efficient and low-emission economy. The European Green Deal is a set of political initiatives of the European Commission whose most important goal is to achieve climate neutrality in Europe by 2050. The European Union aims to become a world leader in ecological solutions, both in terms of financing and technology (Patrzałek, 2017; ConQuest Consulting, 2022).

The importance of consumers' ecological awareness

The concept of "ecological awareness" is quite a broad area related to both the context of threats to the health and life of living organisms, the need to counteract inappropriate attitudes

and behaviors, as well as the knowledge that people have about the threats resulting from the degradation of the natural environment. This last, narrower aspect will be the focus of these considerations.

Thus, the concept of "ecological awareness" in the context of sustainable development can be defined in several areas:

- Individual awareness: which is ecological awareness in the context of an individual and refers to the ability to understand the impact of one's actions on the natural environment and to take actions to reduce the negative environmental impact. This includes awareness of everyday decisions such as product selection, energy use and waste segregation.
- Public awareness: refers to society's understanding of general environmental problems and the need to take collective action to protect the environment. This includes spreading knowledge about sustainable development, promoting pro-ecological practices and, for example, involving local communities in ecological projects.
- Business awareness: is the understanding by companies of the consequences of their actions on the environment and the desire to minimize the negative impact on the environment by implementing sustainable business practices. This means taking care of energy efficiency, reducing CO₂ emissions, reducing the amount of waste, and responsible use of natural resources.
- Political awareness: refers to political decision-makers' understanding of the need to take legislative action and create policies that favor sustainable development. This includes promoting a legal framework for environmental protection, supporting environmental innovation and promoting international cooperation to solve global environmental problems.

In each of these areas, environmental awareness plays a key role in promoting sustainable development and building a better, more sustainable environment for future generations.

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Thus, the concept of "ecological awareness" in the context of sustainable development can be defined in several areas:

- Individual awareness: This encompasses ecological consciousness at the individual level, involving the ability to comprehend the impact of one's actions on the natural environment and to undertake measures to mitigate adverse environmental effects. It includes being mindful of everyday decisions such as product selection, energy usage, and waste management.
- Public awareness: This pertains to society's broader understanding of environmental issues and the imperative for collective action to safeguard the environment. It involves disseminating knowledge about sustainable development, advocating for pro-environmental practices, and engaging local communities in ecological initiatives.

- **Business awareness:** This refers to companies' understanding of the environmental repercussions of their operations and their commitment to minimizing adverse environmental impacts by adopting sustainable business practices. It encompasses prioritizing energy efficiency, reducing CO2 emissions, minimizing waste generation, and responsibly utilizing natural resources.
- **Political awareness:** This denotes the recognition among political decision-makers of the necessity for legislative interventions and policy formulations conducive to sustainable development. It includes advocating for a regulatory framework for environmental preservation, fostering environmental innovation, and promoting international collaboration to address global environmental challenges.

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Consumers' ecological awareness plays a key role in shaping consumer behavior, influencing companies' business strategies, and determining the products available on the market. Eco-conscious consumers often prefer greener products and services, thereby shaping market demand. Companies that recognize ecological aspects often adjust their business strategies, incorporating changes in production processes, the utilization of greener/raw materials, and the promotion of sustainable business practices, etc. Consumers can also play an educational role in society. Through their choices and behaviors, they inspire us to make more ecological decisions. Additionally, such preferences may also influence political decisions and government regulations regarding environmental protection. Thus, consumers' ecological awareness has a significant impact on shaping the market and society as a whole.

Ecological behavior of consumers

In the face of the growing climate crisis, consumers are becoming increasingly aware of the impact their purchasing decisions have on the environment. Modern consumers not only seek products with a lower environmental impact but also expect companies to act responsibly. Numerous reports are created to analyze changes taking place in the market. Some of these reports will be mentioned in this discussion.

The first report discussed is the ESG Monitor 2023 study, which involved over 12,000 respondents from 12 countries around the world. This is the third edition of the report, and the second one to cover Poland. The aim of the report is to monitor awareness and interest in ESG issues, especially in the context of consumer behavior and their perception of ESG-related activities of governments and companies (SecNewgate, 2023).

Globally, 67% of people participating in the survey declare interest in ESG. The most enthusiastic respondents are in the United Arab Emirates, Italy, and Colombia - with over 80% in each of these countries. The least interest in ESG aspects is in Great Britain (49%) and Germany (54%).

36% of Poles have heard about aspects related to ESG. Despite a slight increase compared to previous years, Poland still lags well below the global average, which amounted to 53% in 2023. In Hong Kong, which ranks first, public awareness of ESG aspects is 85%. 73% of surveyed Poles believe that taking actions in the ESG area is important from the point of view of enterprises (SecNewgate, 2023).

The report reveals that consumer expectations are changing positively, albeit slowly, and customers expect companies to take actions that consider their impact on the planet. Therefore,

companies should observe and respond to generational changes when communicating ESG-related issues.

Among the positive aspects, it is clear that understanding of ESG activities is increasing, and numerous organizations are being established to support companies in increasing their competencies in the field of sustainable development and communicating in an accessible way.

In turn, research conducted by Deloitte shows that 56% of respondents in Poland admit to having changed their behavior and consumer habits due to environmental and climate concerns. Nearly 80% of respondents try not to waste food, and 72% buy only necessary products. 48% of respondents state that they limit the use of high-emission transportation and consider cycling and public transport to be the most environmentally friendly means of transportation.

62% of respondents consider products made from recycled materials to be the most sustainable, and for 50%, the lower energy requirement for their production is important (Deloitte, 2023). An increasing number of consumers are becoming aware and are making their purchasing choices carefully. However, it's important to note that many people still lack knowledge about sustainable development. Therefore, in the coming years, dialogue with consumers, transparency, and readiness to answer emerging questions will become even more important.

Among numerous studies, there are also those concerning educational and marketing issues related to customers. The results showed (Chen et al., 2023; Ali et al., 2023) that social media has a significant and positive impact on shaping and influencing youth's green consumption behavior, resulting in an increased willingness to engage in sustainable practices. Therefore, we cannot overlook the generational differences among individual customer groups and the methods and forms of communication with them.

The role of logistics in shaping consumers' ecological awareness

The development of the Internet and the popularity of online shopping have multiple underlying reasons. What was considered important and valuable to buyers until recently may no longer hold the same significance today. E-commerce stands as a dynamically evolving distribution channel, serving as the primary source of sales and customer outreach for many enterprises. Undoubtedly, e-commerce offers a plethora of solutions that cater to the diverse needs of consumers. Alongside ensuring a wide range and availability of products, logistics-related issues also play a crucial role

E-commerce provides advantages over stationary retail on many levels. They concern primarily the possibility of communicating remotely, high flexibility, or cooperation with business partners in the value chain (Majchrzak-Lepczyk, 2019, 2023). Expanding the product range, introducing new solutions for payment or delivery methods, as well as the increasing use of modern technology in the service process significantly influences the change in consumer behavior. M. Ayobami Raji et al. (2024) in their research focused on the transformative role of personalization based on artificial intelligence (AI) and its impact on market trends, also in the aspect presented in these considerations. The technological potential is clearly emphasized online and supported by customers' willingness to use it.

Among many consumers, ecological awareness significantly shapes their purchasing decisions and expectations regarding logistics customer service. Consequently, logistics customer service emerges as a pivotal component of effective supply chain management, aiming to ensure customer satisfaction throughout the order fulfillment process. Against the

backdrop of e-commerce's rapid expansion and the proliferation of delivery options, understanding the environmental impact of logistics and consumer choices becomes imperative.

This trend is corroborated by research indicating a growing number of individuals considering ecological factors when making purchasing decisions (Kavas, 2020; Pal Sharma, 2021; Chen et al., 2023). Ecological awareness extends beyond product selection to encompass packaging, delivery methods, and waste generated throughout the purchase and consumption process. H. Fassou Haba, Ch. Bredillet, O. Dastane (2023) conducted biometric analysis related to green consumers, highlighting the escalating interest in ecological consumers, particularly over the last decade, as evidenced by the surge in publications on the topic.

Packaging is a crucial element in the supply chain, and its environmental friendliness is playing an increasingly significant role in consumers' final choices (Fig. 2). Many individuals prefer products packaged in biodegradable or recyclable materials. Such preferences lead to a reduction in packaging volume and a decrease in generated waste. Additionally, returns of products purchased in e-commerce are increasingly being conducted using the original packaging in which the product was sent to the consumer, thus promoting the use of reusable packaging.

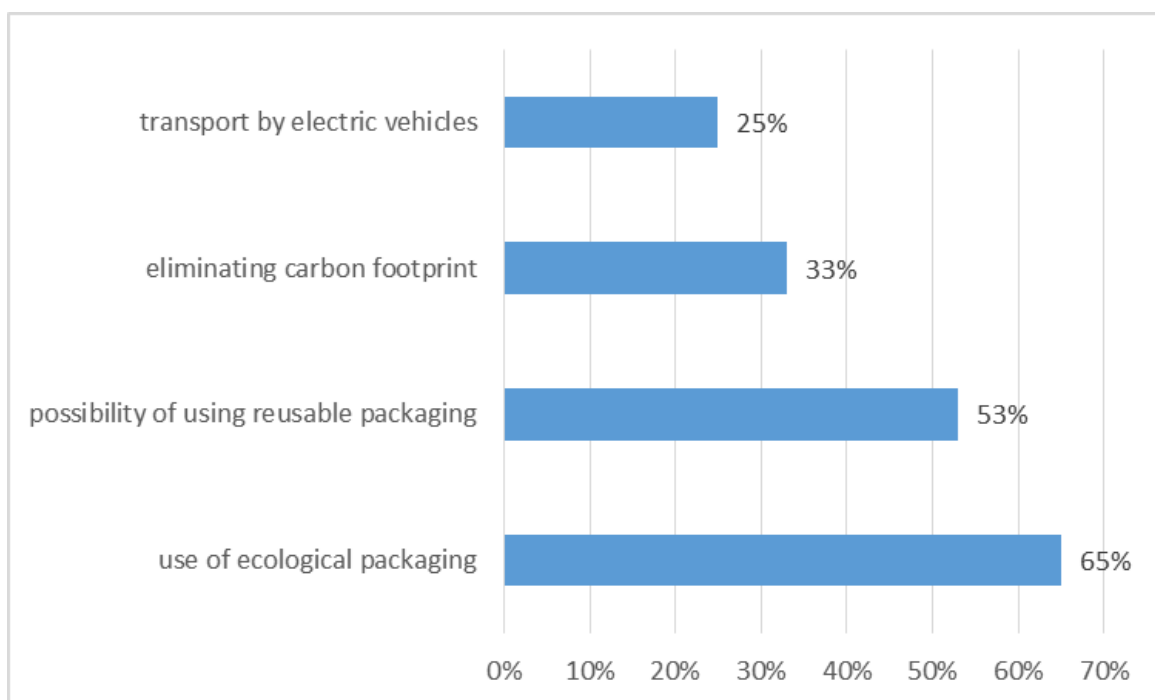


Figure 2. The most important areas related to ecological forms of delivery or return of goods

Source: Own study based on: Gemius, *Polskie Badania Internetu, iabPolska, Raport: E-commerce w Polsce 2023*

The choice between courier delivery and self-collection has significant environmental consequences. An increasing number of individuals are opting for self-collection to reduce CO2 emissions associated with transportation. Delivery by courier companies, known as the 'last mile,' represents the most expensive and challenging aspect of goods delivery. All indications suggest that challenges related to last-mile services will escalate in the future (Polityka Insight, Foundation for the Promotion of Electric Vehicles, 2022).

The transition of logistics companies to zero-emission transport undoubtedly presents an opportunity for reducing operating costs in the long run. However, in the short term, it poses a serious financial and organizational challenge, necessitating fleet replacement and, in some

cases, even logistics process alterations. This likely entails high initial costs and operational hurdles for many enterprises.

Additionally, logistics companies in Poland are implementing solutions aimed at enhancing delivery efficiency (Fig. 3). The frontrunner in terms of innovative and environmentally friendly solutions is Inpost. The company is deeply involved in extensive activities supporting sustainable development, continuously monitoring the market, introducing numerous innovations, and conducting extensive research.

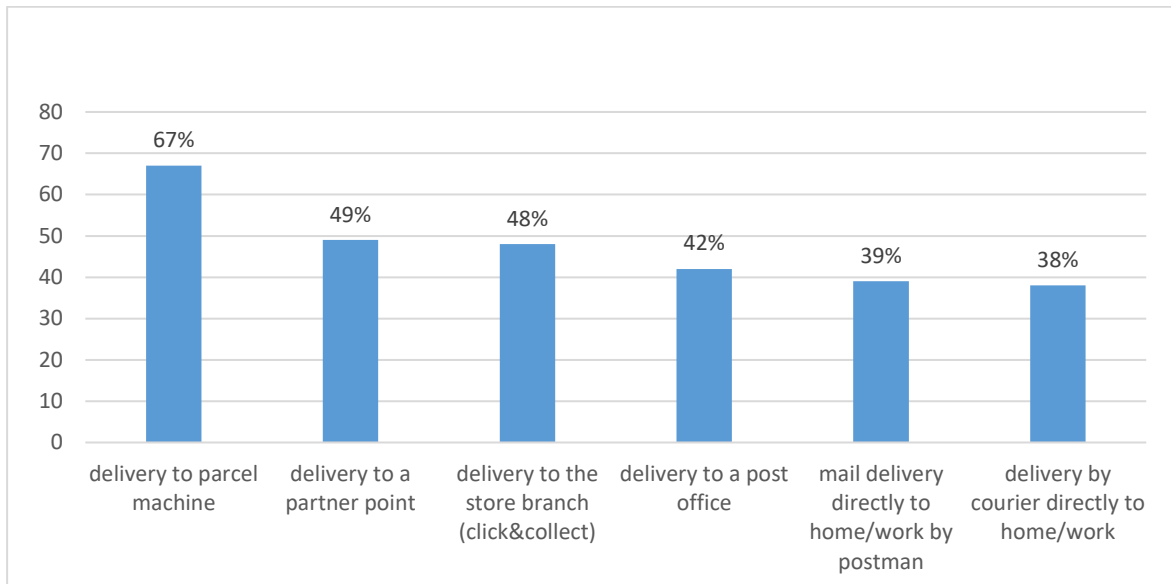


Figure 3. Customers' perception of delivery methods through the prism of ecology

Source: Own study based on: Gemius, *Polskie Badania Internetu, iabPolska, Raport: E-commerce w Polsce 2023*

In annual survey conducted by Gemius, respondents were queried about their perceptions of delivery methods from an ecological standpoint. As illustrated in the chart above, delivery points located outside of residential areas (PUDO¹) are the most favored. PUDO points can encompass shops, service points, parcel machines, or kiosks. Opting for PUDO in logistics provides customers with flexibility in choosing delivery locations and shipment send-off or receipt times. These choices undeniably contribute to reducing carbon dioxide emissions, courier working hours, service expenses, or the use of transportation means. According to Inpost data, the carbon footprint of each parcel delivered via a parcel locker is up to 75% lower than that of a traditionally home-delivered parcel (Inpost). When utilizing this delivery method, it is imperative for customers to receive comprehensive service from shipment to receipt. The customer experience commences at the ordering stage, and the receipt itself is a consequence of preceding choices.

In the context of the burgeoning popularity of e-commerce, many consumers also recognize the benefits of curbing CO₂ emissions by minimizing trips to brick-and-mortar stores. Online shopping likewise enables better control over packaging volume and generated waste.

Sustainable development in logistics is currently a prominent topic influencing the operations of courier companies and other entities across supply chains. Among the key aspects pertaining to sustainable development in the Polish market, it is evident that courier companies

¹ Pick-Up, Drop-Off

are increasingly transitioning from traditional fuels to electricity in their vehicle fleets, thereby aiding in greenhouse gas emission reduction.

Pro-environmental endeavors also encompass optimizing delivery routes to diminish fuel consumption. However, employing applications to real-time route adjustments facilitates the avoidance of traffic congestion and unnecessary downtime.

Firms have begun to promote recyclable packaging and what is known as circular packaging, which can be returned to the courier company after delivery for reuse. Prioritizing eco-friendly packaging is crucial for both carriers and e-store owners.

Logistics actively supports the adoption of energy-saving technologies in transportation and storage. Electric delivery vehicles, intelligent warehouse management systems, and energy consumption optimization exemplify pro-ecological initiatives. Leveraging data and analyzing logistics processes facilitate identifying areas for greater energy efficiency.

In conclusion, several key insights can be drawn:

- There is a noticeable increase in societal ecological awareness, with a significant portion of consumers desiring their purchasing decisions to align with sustainable development principles.
- Technological advancements enable the implementation of innovative logistics solutions that mitigate negative environmental impacts. Examples include electric and hybrid delivery vehicles, optimized delivery routes, and the utilization of intelligent warehouse management systems.
- Legal requirements play a pivotal role, as companies must adapt to evolving regulations concerning environmental protection and CO₂ emissions reduction.
- The rise in e-commerce transactions translates to a surge in deliveries. Courier companies must adapt to this trend while striving to minimize their environmental footprint by employing more efficient and ecological delivery methods.
- Public awareness exerts pressure on companies to undertake more responsible environmental actions. Consumers increasingly prefer businesses engaged in pro-ecological endeavors and employing sustainable business practices.

These factors underscore the increasingly crucial role of logistics in shaping consumers' ecological awareness. Firms should remain flexible and innovative to meet evolving consumer expectations and changing market demands. The implementation of green logistics practices is becoming ever more imperative for companies to succeed in today's business landscape.

Logistics serves as a pivotal element in environmental protection and sustainable development efforts. Its role involves effectively managing the supply chain, leveraging modern technologies, and educating employees and communities.

Conclusions

The formal recognition of sustainability as a global priority has ushered in a new era for business policies and strategies worldwide. The evolution of consumers' ecological awareness and the resultant shifts in company strategies are responses to escalating social expectations and legal regulations. Consumers are increasingly basing their choices on the assessment of products' environmental impacts, compelling companies to embrace greater ecological responsibility and transparency in their operations. Amidst global ecological challenges, both companies and individual consumers are emerging as pivotal players in the journey toward sustainable development.

Ecologically conscious investors may favor directing their financial resources toward ventures and companies aligned with sustainable development principles. This trend could incentivize companies to adopt more sustainable business practices. The growing ecological awareness among consumers may further drive corporate responsibility in areas like Corporate Social Responsibility (CSR), encompassing environmental protection, equitable treatment of employees and local communities, and transparency in business operations.

The European Union, as a frontrunner in ecological transformations, has spearheaded numerous initiatives, including the European Green Deal, aimed at achieving climate neutrality by 2050. The implementation of these initiatives significantly influences European companies, compelling them to embrace new technologies and business models that align with society's ecological expectations.

Studies like the ESG Monitor 2023 demonstrate the ongoing global interest in Environmental, Social, and Governance (ESG) issues. While awareness of ESG issues in Poland still lags behind the global average, there is a discernible uptick in interest in these matters. Polish consumers are becoming increasingly discerning regarding brands' ecological awareness.

These realms collectively form a crucial context for understanding the impact of ecological awareness on various aspects of social and economic life. Considering them can enrich the analysis of ecological awareness's influence on society and the economy.

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