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## Green Choices: A Comprehensive Review of Pro-Environmental Consumer Behaviors

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**Abstract:**

**Purpose:** The aim of the article is to identify the main research directions and to review the research methods used to examine pro-ecological consumer behaviors, as well as to propose the future lines of research.

**Design/Methodology/Approach:** The basic research method was critical analysis of literature of the subject, aimed at identification of key problems and research methods used to examine pro-ecological consumer behaviors. This methodology included searching for source materials, their selection, analysis, and synthesis. Critical analysis was applied to articles from such databases as, Elsevier, ProQuest, Springer, Google Scholar. Studies dedicated to pro-ecological consumer behaviors were divided into six groups. The method most frequently applied by researchers were multi-equation econometric models (mainly in structural form). They enable analysis of complex phenomena, consisting of diverse components. Such model makes it possible to consider the correlations between these. They may serve as a basis for interesting conclusions on the reality being examined, as well as the impact and role of its individual components.

**Findings:** Pollution of the environment, increasing consumer demands, activity of the competition result in a growing demand for verification of environment-friendly attitudes of consumers and products manufactured with respect for various aspects of the natural environment. Researchers are examining relations between growing consumption and the related increasing wastage of food and other goods and alternative forms of transport and climate changes. These issues are also analyzed in the context of green economy and sustainable development.

**Practical implications:** The article provides valuable information that can be used by different groups to promote and support more sustainable consumption practices, which is crucial for the protection of the environment and the future of our planet. Businesses can better understand different consumer segments and tailor their products and communications to specific target groups that show different levels of commitment to environmental action. The results of the research can help formulate policies and regulations that will support environmentally friendly consumer behaviour. Governments can create funds and grants for companies that develop eco-friendly products and technologies, which will contribute to the green economy.

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*NGOs can work to make companies more transparent on environmental issues, which will help consumers make informed purchasing decisions.*

**Originality/value:** *The growing scientific interest in these issues illustrates their importance.*

**Keywords:** *Consumers, pro-ecological behaviors, ecological awareness, research methods, research methodology.*

**JEL codes:** *D01, D11, L22.*

**Paper type:** *Research article.*

## **1. Introduction**

One of the crucial social and economic problems is the progressing pollution of the environment and its negative consequences, which we are facing. Consumers are particularly responsible for the condition of the natural environment, as their pro-ecological attitudes may improve the situation. A prerequisite in this regard is ecological knowledge, which shapes ecological awareness (Wierzbinski *et al.*, 2021).

A change in consumer behaviors and popularization of ecological lifestyle is the main way of preventing negative phenomena, which result from the global ecological crisis (Witek, 2014a). The pro-ecological attitudes and behaviors influence the consumers' buying decisions.

Pollution of the environment, increasing consumer demands, activity of the competition result in a growing demand for verification of environment-friendly attitudes of consumers and products manufactured with respect for various aspects of the natural environment (Witek, 2014b; Noja *et al.*, 2021; Tyagi *et al.*, 2023).

Researchers are examining relations between growing consumption and the related increasing wastage of food and other goods (Pong, 2021) and alternative forms of transport (Reynolds, 2021) and climate changes. These issues are also analyzed in the context of green economy and sustainable development (Reisch *et al.*, 2021).

On the one hand, pro-ecological behaviors may be analyzed from the perspective of the rational choice theory. Its creators, J.M. Buchanan and G. Tullock (Heaney *et al.*, 2019), assumed that rationality of decisions made by an individual may also be understood as willingness to act in order to maximize usefulness.

While in the area of pro-ecological behaviors we can find some, which are motivated by impulses or inertia, due to the complexity of the resource that comprises the natural environment and inability to grasp the effects of human activity on this

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resource (as these are often delayed), the decisions in this regard most often fit the framework of the rational choice theory (maximization of usefulness).

However, Kaiser *et al.* (1999) showed that pro-ecological behaviors can go beyond the rational choice theory. These authors have underlined that the rational choice theory fail to sufficiently explain behaviors that are at least partially moral, such as pro-ecological behaviors.

Their research shows that pro-ecological behaviors are influenced by knowledge of the environment, environmental values, as well as a sense of responsibility for the environment.

On the other hand, pro-ecological consumer behaviors fit into the consumer behaviors theory, which is one of the main theoretical approaches in marketing (Singh, 2019). Consumer recognition of importance of care for the natural environment, in the context of environmental threats, is reflected in a change of values, attitudes, the structure of needs, conditions and methods of satisfying these needs, as well as transformations of buying behaviors (Rodriguez-Ibeas, 2017).

Pro-ecological consumer behaviors are a consequence and an illustration of various social and consumer trends, including mainly conscious consumption, ecologization of consumption, or even deconsumption (Saleem, *et al.*, 2018). These are also related to climate changes, experienced by a growing part of the human population (Ertz and Sargöllü, 2018). Continuous updating of data on pro-ecological attitudes is justified due to the changing market conditions (Radzymińska *et al.*, 2015).

The current state of research on correlations between pro-ecological attitudes and behaviors and their methodology require a modernized approach. While in the literature on pro-ecological attitudes, such attitudes are combined with behaviors, the results of empirical research fail to provide clear answers with regard to the nature, strength and direction of these correlations.

The aim of the article is to identify the main research directions and to review the research methods used to examine pro-ecological consumer behaviors, as well as to propose the future lines of research. For this purpose, the set of research problems defined included:

- pro-ecological activity of consumers in their everyday lives, including the typology of their behaviors,
- research problems and research methods they exemplify, to examine pro-ecological consumer behaviors.

The further part of this article is structured as described below. Chapter two presents the methodology of the systematic literature review. Definitions and categories of

consumers have been presented in chapter three. The following part of the article has been dedicated to presentation and discussion of the results.

Analysis of secondary data leads to reflection that research on pro-ecological consumer behaviors encompasses a very broad range of issues, the studies are conducted in different periods and different countries, using various research methods and techniques. The methods of reaching respondents also vary.

Therefore, the final part of the article indicates the need for cooperation between researchers from different academic centers in order to conduct comparable research studies. On the basis of the literature analysis conducted, conclusions were formed, including the limitations and implications with regard to future lines of research.

## **2. The Research Material and Method**

The basic research method was critical analysis of literature of the subject (Webster and Watson, 2002), aimed at identification of key problems and research methods used to examine pro-ecological consumer behaviors. This methodology included searching for source materials, their selection, analysis and synthesis.

A critical literature review consisted of identification of a research procedure, which is useful in works based on comparisons, in which the authors aim at identifying the similarities, differences and correlations between concepts, beliefs, opinions and methods. A critical analysis allows for identification of weaknesses in conceptual categories, theoretical and methodological concepts presented in the sources analyzed.

In literature (Zdonek *et al.*, 2016) the following stages of a critical literature review have been distinguished: formulating of the problem, gathering of data, assessment of data, analysis and interpretation of data and presentation of data and identification of further lines of research.

Thus, a critical literature review serves both cognitive and utilitarian means (Cisek, 2010). In the former case, the method may serve as a starting point and a basis for the proper research (identification of cognitive gaps). In the latter - through analysis, synthesis and assessment of the existing resources makes it easier to use the scientific achievements in specific practical action and provides arguments for right decisions (Andrews and Harlen, 2006).

The publications assessed were analyzed in accordance with the following plan: selection of the purpose of the study, selection of the criteria, and the methods applied. All studies were divided into several sub-categories to allow for a detailed analysis of the methods and lines of research on pro-ecological consumer behaviors. Critical analysis was applied to articles from such databases as: Elsevier, ProQuest, Springer, Google Scholar.

The article search was conducted independent of the time limitations, but it was limited to publications in periodicals and conference materials. More than 1000 articles were chosen for the purpose of the preliminary assessment and then subjected to a selection process (on the basis of the selected keywords, abstracts and titles).

The following keywords were used in the search: "pro-ecological behavior of consumers", "pro-ecological behavior" consumers research methods, "pro-environmental behavior of consumers", "pro-environmental behavior" consumers research methods. Ultimately, in-depth analysis included more than 100 articles.

The synthesis of the research materials collected allowed for a typology of consumers and identification of main lines of research, as well as research methods used to examine pro-ecological consumer behaviors, and to propose the further line of research.

### **3. Consumer Definitions and Typology**

In the last 30 to 40 years, there has been a growth of interest of consumers in the natural environment, the impact of its condition on their life quality and the resulting necessity to protect its values and resources. As a result, the traditional motive (the economic criterion) of consumer behaviors on the market has been gradually replaced by environmental values.

Behaviors of this kind are referred to as the ecological lifestyle or green consumerism (Warde, 2005). Polish sociologists refer to these consumers as the ECO generation (Grzega and Kieźel, 2017). Consumers living in this manner comply with the following rules (Matel 2016):

- they do not buy products that may lead to diseases,
- they do not buy products, which require too much natural resources (especially non-renewable resources) and energy in the production process,
- they do not buy products, which pollute the environment in the production, use and waste removal phase,
- they buy products with eco-friendly labels, indicating that the product is ecologically safe,
- they buy biodegradable products in packaging adapted for return or recycling; on the other hand, they avoid purchasing unnecessary and overly sophisticated products (e.g. packaging, cosmetics).

According to literature, a pro-ecological consumer “avoids products that are harmful to the environment, identifies and selects the eco-friendly labels on products, is willing to search for stores offering eco-friendly products, which can be recycled, and pay for them more than for competitive products containing no environmental information” (Trudel, 2018).

The basic criteria, typical for such consumer, are knowledge of the natural environment, the mechanisms and regularities of functioning of its individual ecosystems, as well as individual interactions between humans and the natural environment and personal opinions and experiences.

As a result, ecological awareness is shaped, which is a prerequisite of a change in consumer habits and lifestyles (Pizło and Mazurkiewicz-Pizło, 2017). In other words, ecological awareness shapes the patterns of consumer behaviors, aimed at protecting the natural environment (Trudel, 2017). Therefore, it can be stated that ecological/ environmental awareness may be treated as a precursor of pro-ecological behaviors (Papadas *et al.*, 2017).

If we take into account the level of ecological awareness and the resulting consumption model, the population of consumers can be divided into several categories, as illustrated by Table 1. The proper specification of the segmentation criteria makes it possible to identify the segments and to fully understand the actions of each segment members.

This, on the other hand, helps in making decisions on reaching individual segments to encourage their members to change their behaviors and commit to sustainable consumption.

**Table 1.** Typology of consumers according to various criteria (the consumer segmentation criteria)

Study/ authors	Segmentation criteria	Segmentation models
A.M. Finisterra do Paço, M.L.B. Raposo,(2010) A. Diamantopoulos, B.B. Schlegelmilch, R.R. Sinkovics, G.M. Bohle,(2003) B. Emery,(2012) Agencja badawcza Roper Sarch Worldwide	<b>Commitment of consumers to the concept of sustainable development</b>	a) <b>truly green (17%)</b> – pro-ecological activists or strong supporters of environmental protection, seeing no barriers in engaging in sustainable behaviors and are most willing to cooperate in sustainable initiatives; b) <b>“not me” green (21%)</b> – displaying a strong eco-friendly attitude, but not a behavior, as they feel that the problems of sustainable development are too great, and therefore they engage in easy actions, such as recycling; c) <b>green going with the flow (16%)</b> – a moderate attitude resulting in easy behaviors, such as participation in the system of regular collection of waste from their property, less concerned about such ecological problems as global warming; d) <b>dreamy green (13%)</b> – limited pro-ecological behaviors, but much above the average; they would like to follow the eco-path, but the most important barriers preventing them from engaging in pro-ecological behavior is lack of knowledge and

		<p>means; they may become more pro-ecological, if they are given the opportunity;</p> <p>e) „<b>business first</b>” <b>green (21%)</b> – below the average in comparison with the total population with regard to interest in environmental protection and the associated protection; they believe that corporations and industries should engage in pro-ecological behaviors and they underline the barriers preventing them from taking the initiative;</p> <p>f) <b>non-green (11%)</b> – familiar with the issues of environmental protection, but displaying a cynical and distrustful attitude towards the issue, they may be hostile towards pro-ecological initiatives.</p>
<p>Department for Environment, Food and Rural Affairs (2008)</p>	<p><b>Pro-ecological behaviors</b></p>	<p>1. <b>Positive green (18%)</b> – most motivated to engage in environment-friendly behaviors, ready for bigger expenses, buying local products, made ethically and coming from fair trade, they use recycling, save energy and water. 75% of them would be greater to sacrifice more for the sake of environmental protection.</p> <p>2. <b>Waste observers (12%)</b> – more inclined to avoid generating waste than to reduce any other types of their own negative impact on the environment. 75% are satisfied with their level of commitment, focused on saving energy and water at home, having a car consuming less fuel and buying local products.</p> <p>3. <b>Interested consumers (14%)</b> – a broad pro-ecological attitude, but less conviction. They negate the possibility of limiting future development and the emerging ecological crisis through proper pro-ecological behavior in everyday life. However, two-thirds of them would like to do more for the environment, they have a pro-environmental attitude towards traveling, they do their best to avoid using their cars and choose to travel by plane more often than the remaining segments.</p> <p>4. <b>Supportive by-standers (14%)</b> – they do not see themselves as acting on behalf of the environment; there is the most substantial difference between their declared pro-ecological attitude and their actual behavior.</p> <p>5. <b>Cautious participants (14%)</b> – their views are close to the population average, they are aware of environmental problems, but display a pessimistic view; their pro-ecological behaviors are focused on saving energy and water, and they expose the reasons for their ecological passiveness, such as</p>

		<p>their lifestyle, identity or habits. They may have a sense of guilt, but 50% of them do nothing or very little for the environment.</p> <p>6. <b>Looking for excuses (10%)</b> – the least knowledge of environmental problems. They believe that climate changes are exaggerated and will occur in a very far perspective; most also believe they have no impact on the environment and it is not a priority to them. They believe ecology to be a troublesome alternative lifestyle. While they do little for the environment, they are happy with it and want no changes.</p> <p>7. <b>Honestly not committed (18%)</b> – showing an overall lack of interest and concern about the environment, they have no excuses for their behavior and do not want to be informed how they could change that.</p>
<p>J.A. Ottman (2011), R. Dahlstrom (2011), J. Makower (2009) Natural Marketing Institute (NMI) in Pennsylvania</p>	<p><b>The environmental/ecological criteria/motives for pro-ecological behaviors</b></p>	<p><b>LOHAS</b> – those with the highest ecological awareness, perceiving the correlation between health and environmental protection, using products, which are good for them and for the entire planet. They are leaders in such behaviors as saving energy and water, they use plastic bags many time and lobby with the authorities to introduce laws that will protect the natural environment.</p> <p><b>Naturalists</b> -they are concerned about the negative impact of chemicals on food and cosmetics. They buy ecological food. They view themselves as committed to the concept of sustainable development. They are susceptible to education in this regard.</p> <p><b>Vagabonds</b> - they mainly pay attention to fashion and boycott enterprises of questionable ecological reputation; however, they mostly use information from the media and not from their own analysis. They are eager to engage in simple pro-ecological behaviors (such as recycling and energy saving), but much less willing to display advanced behaviors.</p> <p><b>Conventional</b> – they are motivated to display pro-ecological behaviors due to practical reasons (e.g. purchasing refrigerators of higher energy class to save on energy in the future). For the same reasons, they engage in recycling or try to find applications for used products.</p> <p><b>Uninterested</b> – the least ecologically responsible consumers</p>
<p>Wilk (2015)</p>	<p><b>Consumption model/</b></p>	<p><b>Non-ecological</b> - lack of ecological knowledge and awareness, economic wealth is the basis of life</p>



	<b>consumer traits</b>	<p>quality. Consumption is higher than the needs Consumerism, predatory economy and careless “production” of pollution, purchase of products under the pressure of advertising, fashion, societal pressure.</p> <p><b>Moderately pro-ecological</b> - the basic ecological knowledge, ecological awareness at the average level; willingness to be perceived as a pro-ecological person. Saving of resources entirely due to economic reasons, minimum pollution solely due to fear of financial consequences of environmental pollution, ecological products are rarely purchased, and if ever - under pressure of others, without an internal belief in rightfulness of the choice made</p> <p><b>Pro-ecological</b> - vast ecological knowledge and high level of ecological awareness Pro-ecological lifestyle and a clean environment are significant components of quality of life, everyday action to support environmental protection - saving of resources, minimizing pollution, segregation and recycling of waste, purchase of durable, eco-friendly products, purchase of food made using ecological methods</p> <p><b>Fully pro-ecological</b> – a return to nature, substantial saving of natural resources, minimization of pollution, purchase of durable products reduced to the necessary minimum and purchase solely of pro-ecological foods</p>
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*Source: Own compilation.*

The evolution in consumer behaviors is expressed as a shift from the consumer society concept to sustainable consumption/ deconsumption, in which care for the natural environment is a significant argument (Finisterra do Paço and Raposo, 2010).

Ecologically responsible consumers limit their consumption and the quantity of goods consumed, they prefer durable and cheap products, they are willing to share these with others; they purchase products that are subject to recycling and participate in trainings to find out how to use the products purchased in an eco-friendly manner (Diamantopoulos *et al.*, 2003).

The growing awareness of negative effects of excessive consumption serves as a basis for emergence of a new phenomenon in consumer behaviors - deconsumption. It consists of a conscious limiting of consumption to a rational scale, that is, the scale adapted to the natural, individual, physical and emotional traits of the consumer (Emery, 2012). Deconsumption is a significant component of changes in consumption patterns. These include (Kielczewski, 2015):

- the sense of responsibility of consumers for their choices
- increased demand for material and energy saving products,
- increased demand for goods that are safe for human health (including ecological food)
- limiting of consumption of non-renewable environmental resources,
- minimizing of waste, which is a burden to the environment,
- consumption of the so-called ecological goods (mainly food), or foods, which are not complemented with surrogates (imitations), such as artificial protein, artificial skin, wood or glass imitations,
- consumption of goods that do not originate from non-humanitarian animal farms (e.g. poultry farms, fur animal farms), as well as slavery-like or low-paid human labor
- withdrawal from gadget consumption.

#### **4. Conclusions**

On the basis of the literature review conducted, it can be stated that the interest in protection of the natural environment as an important public good is growing. The significant factors, distinguished in scientific publications, are the values and ideas shared by consumers. The literature dedicated to pro-ecological consumer behaviors uses a description of attitudes related to values, norms and beliefs, related to the environment, and pro-ecological action.

In some of the publications (Dąbrowska *et al.*, 2016), the role of marketing activity is underlined as motivating consumers to adapt the expected consumption pattern. Another widely discussed issue is the problem of packaging and its role in waste segregation, with particular emphasis on plastics (Rashed and Shah, 2021).

One of the factors that reduce pollution is modification of consumer behavior patterns, influenced by various activities of enterprises in the field of social marketing, green marketing and CSR (Reynolds, 2021) At the same time, it has been indicated that modern technologies are an important communication tool, allowing for optimization of individual management, using advanced applications, and professional management, related to agglomerations (Singh, 2019).

Another category of information distinguished in the publications consists of data on labels of various products - foods or household appliances (Saleem *et al.*, 2018). The research results allowed for identification, e.g., of conscious consumers, who read product labels, are interested in ethical aspects of production (particularly of food) and non-aware consumers, who lack interest in ecological issues.

Label information, concerning ethical aspects of animal production, made consumers consciously choose those products, which contained a warranty of production under conditions raising the well-being of animals (Pong, 2021).

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The available literature also presents interdisciplinary analyses, containing terms used to describe value norms, which are used in the interpretation of “buying motives” (Syaekhoni *et al.*, 2017). This author uses health, hedonism and “positive environmental impact” and “food safety” to verify the “impact of ecological labels”.

The research conducted confirmed the readiness of consumers to pay more for ecological products indicated. However, the fact that the study was conducted using online questionnaires and referred to the presumable, declarative action, results in its low practical value.

The interdisciplinary nature of studies on pro-ecological consumer behaviors encourages researchers to analyze demographic and psychographic traits when searching for differences in the attitudes of men and women.

They make efforts to use individual demographic traits to identify homogeneous groups of consumers sensitive to ecological consumption issues (Whitmarsh and O'Neill, 2010). On the other hand, other studies failed to employ other demographic factors, such as lifestyle, education or economic comfort (underdeveloped term).

The selected studies of pro-ecological consumer behaviors, presented in the article, were conducted mainly using multidimensional statistical analysis methods. Such methods are used to analyze many objects, described with many characteristics. These characteristics represent the variables that specify the properties of the examined objects.

Selection of the method depends of the aim of the study. It may involve transformation of a number of correlated variables into non-correlated factors (exploratory and confirmative factor analysis), identification of classes of similar objects (cluster analysis), as well as examination of correlations between quantitative variables describing objects (regression analysis in the static or dynamic version, single- or multiple equation models - the so-called structural models).

If the variables analyzed include qualitative variables, variance analysis is employed (independent qualitative variables) or discrimination models (dependent qualitative variables - logit or tobit models).

In the literature review discussed, researchers used the following multidimensional statistical analysis methods:

- factor analysis,
- cluster analysis,
- non-linear regression model,
- dynamic regression models,
- multidimensional structural models,
- variance analysis,

- logit models,
- tobit models,

Some individual studies employed the network-based model (Saleem *et al.*, 2018), descriptive statistics methods (Rodriguez-Ibeas, 2017), or the DEA method (Ptak, 2018).

The method most frequently applied by researchers were multi-equation econometric models (mainly in structural form). They enable analysis of complex phenomena, consisting of diverse components. Such model makes it possible to take into account the correlations between these. They may serve as a basis for interesting conclusions on the reality being examined, as well as the impact and role of its individual components.

An important contribution of this article to development of the management theory is the fact that it groups studies on pro-ecological consumer behaviors, and the study conducted extends the knowledge of the research methods used.

At the same time, the authors are aware of the shortcomings of this chapter. First of all, the literature search did not include all works, which are of significance for the subject, and as a result, the query may fail to show the entire truth about the current state of knowledge but only its fragment.

Secondly, the critical literature review method used fails to take into account the inclusion and exclusion criteria for individual studies, and therefore, the basis for categorization/ systematization of studies remains unclear. Thirdly, the classification of studies into sub-categories proposed by the authors may be viewed by many as incomplete and overly simplified, which is due to the great number of studies related to pro-ecological consumer behaviors and their interdisciplinary nature. Analysis of the literature review conducted suggests that studies on pro-ecological consumer behaviors are attracting increasing interests. They encompass a broad scope of issues, they are conducted in different periods and countries, using various research methods and techniques.

It is also necessary to point to other methodological shortcomings of studies, which are not cyclical, usually employing survey questionnaires, in which the sample sizes vary, as well as the sample selection criteria, making it impossible to compare the results.

The methods used to reach respondents vary, as well as the research methods used. Moreover, another problem associated with research conducted on this specific group is the discrepancy between declarations concerning the particular value of nature and the necessity to protect it, to act on behalf of the environment and buy ecological products, and the actual buying and post-consumption behaviors.

Summing up, it is necessary to underline the need for integrated research, standardized by many academic centers, on pro-ecological consumer behaviors. Many studies present fragmentary and very specialist approaches to the problem. The multi threaded nature of studies on pro-ecological behaviors leads to conclusion that the issues of pro-ecological consumer awareness are a promising line of research.

Further theoretic and empirical research is necessary with regard to environmental protection, movements and pro-environmental behaviors of consumers in various sectors of products and services to assess the significance of changes in consumer behaviors. It is necessary to analyze the role of all consumers for environmental protection, as well as the social and cultural dimensions of consumption in various countries.

This would enable politicians, institutions, manufacturers, service providers and consumers to take the proper action to respond quickly to challenges related to environmental protection.

Analysis of trends in consumer attitudes is valuable for enterprises in their strategic decision-making processes. Market segmentation aimed at identification of sustainable consumers allows enterprises to aim their marketing activity to contribute best to the concept of sustainable development.

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