



## Article

# Human Safety in Light of the Economic, Social and Environmental Aspects of Sustainable Development—Determination of the Awareness of the Young Generation in Poland

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## Abstract

The UN's "Global Agenda for Change" focused on global challenges, with the aim of improving quality of life. The focus on People, Planet, Prosperity, Peace, Partnership, and Integrated Action (EU) orients its efforts towards socially needed change. Although the above perspectives, which ultimately shape the goals of sustainable development, refer in effect to the security of the functioning of societies and economies, this issue has not been sufficiently explored in the literature. Taking the above into account, this paper explains the aspect of people's sustainable security and well-being, and also indicates the importance of determining the social competences needed for a broadly understood sustainable future, which is the main goal of this article. Considering the importance of sustainable awareness among the younger generation, who are responsible for the future modeling of the pace and direction of sustainable changes, the analysis of the literature in the practical findings was supported by qualitative and quantitative methods, as well as statistical analysis techniques using PQstat software, to ensure in-depth research. The results confirm that the studied population generally has good knowledge of the idea of sustainable development. Importantly, this population combines development in a sustainable direction with actions to strengthen people's safety and well-being. It should be noted that the studied population is most strongly aware of the environmental pillar of sustainable development, suggesting potential to improve knowledge in this area—which is crucial for effective development towards a safe future and important for future decision-makers (the young generation). The findings can serve as a source of information for teams designing study programs and information campaigns on sustainable development in order to further strengthen social education in the studied area.

**Keywords:** human safety; human well-being; sustainable development; socio-economic sustainability; sustainable competence; Young Generation



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## 1. Introduction

Modern global development is oriented towards a balancing social, environmental and economic goals. According to this concept, human activity must safeguard temporal interests in development without simultaneously harming future generations [1]. This is the guiding idea behind the policy-oriented layout of the global threats facing the world, which

focus on the existential security of people and the planet [2]. There are many more localized attempts to address these issues—as noted by C. Kremen and A. M. Merenlender [2], among others—as well as international or global efforts.

At present, security covers a number of different areas, meaning there are different dimensions of its value [3]. An extremely broad spectrum is covered by the idea of sustainable development, which considers human safety in a system of interdependent categories: environmental, economic, and social. With this in mind, it should be assumed that efforts in the area of sustainable development can be seen as related to human security, a secure future, and general well-being. Hence, social understanding and acceptance of the idea of sustainable development, which influence social attitudes towards the implementation of the SDG goals, is important. In this respect, it is necessary to explore aspects of human security in line with the idea of sustainable development, considering them perspective of well-being in the broadest sense, and to study public awareness in this area, particularly with regard to future decision-makers currently undergoing training and preparation for specific roles in society.

Hence, the aim of the presented study was to analyze the challenges of sustainable development from the perspective of shaping human security and well-being. The specific objectives of the paper are to present the general level of sustainable competences and responsible social attitudes among a population of students of selected fields of study at specific universities operating in Poland. This is considered a key issue, requiring multi-dimensional analyses, in the development of a safe future.

Studying the topic of human security, considered from the perspective of sustainable development, requires literature research aimed at identifying cause–effect relationships between assumptions regarding the subject’s concept and the shaping of real human security and well-being. This observation of the authors is confirmed by the observation of W. Duan, who points to the need for research in this area that could provide a basis for the evaluation and shaping of intervention policies in light of environmental challenges [4]. This aspect is also referenced in other studies, with an emphasis on its importance in relation to diverse social groups [5], which confirms the research potential that still exists in this area. In addition, the aspect of human security, including the challenges of sustainable development, is a topic of ongoing research, as articulated by J. A. Wendt et al. [6], to determine the reasons behind the formation of social attitudes and move towards the development of a secure future, as note by L. Haglund et al. [7]. M. Gawlik-Kobylińska [8] emphasizes the importance of such findings in the development of education in this area. These studies provide evidence of research gap and helped to establish the research hypotheses for this study. In addition to examining the literature, the adopted research concept also presents a diagnostic survey of a population of students representing the young generation in Poland. We also provide an in-depth analysis of the survey results, together with elements of statistical inference, using descriptive statistics instruments.

The research concept determined the layout of the study:

- Section 1—introduction;
- Section 2—literature study;
- Section 3— materials and methods;
- Section 4—results of practical research;
- Section 5—discussion and conclusions.

The research concept and the scope of the findings created research limitations. The cognitive process enabled the achievement of the research goal, which was to expand the available knowledge in the area of human security and sustainable development, enriching the literature in this field.

The obtained results complement the literature in this area and can be used in planning programs to promote the idea of sustainable development and to design or improve related study programs

## 2. Literature Study

### 2.1. Human Security—An Overview of Outlooks

Security is part of the system of basic human aspirations. It ranks among the basic attributes of the functioning of individuals and entire communities, as well as nations and economies. With regard to the level of the state, it is a fundamental value [3] that determines the efficiency of its functioning [9].

W. Williams emphasizes that the concept of security is not uniformly defined [10]. It assumes a multidimensional character, and can hence be considered in a number of categories [11]—from security in the political and military dimensions [9] through to security in the physical [12,13], social [14], or cultural [15], as well as environmental [16] (ecological [17]) dimensions, and security in the social and economic spheres [18,19]. The complexity of these various categories gives rise to further consideration of security in cyber and ICT security and information security [20,21], as well as energy security, food security, and health care, among other categories [22]. M. Jovanovic and J. Burbiel note that security can be considered in relation to social individuals, businesses, communities, states, or regions of the world, further showing its importance [13]. However, regardless of the aspect being considered, the various categories of security broadly consider the well-being of human beings.

The dimension of human security is evolving along with the progress of civilization, and is determined through improvements in the quality of life. This progress gives rise to new categories of security as a response to emerging risks of disruption to smooth functioning and development—for example, in the sphere of data security and privacy in the current era of the development of artificial intelligence, as pointed out by, among others, H. Villegas-Ch et al. [23]. D. Frei points out that risk in the sphere of security, caused by an increase in the probability of a given threat occurring, determines the significance of a specific category [24]. In the framework of social and economic functioning, security is important to the following spheres [22]:

- The culture of the community, determining its lifestyle and the arrangement of needs (including development needs) within it.
- The legal system, determining civil rights and obligations, which, together with a set of social norms and values, determine the social order for the functioning of individuals in the socio-economic dimension.
- The standard of living and efforts to improve the quality of functioning in the social and economic dimensions.
- The conditions of the operating environment, with particular attention to geopolitical conditions, the availability of resources, and the quality of the environment.

Thus, elementary human needs pertain to one sphere of the security framework (peace of mind or the non-existence of danger—the determinants of human well-being), taking into account the aspects of survival, possession, and development. This context justifies the existential dimension of human, organizational, and state security, creating a basis for its consideration in the social, economic and environmental dimensions. This does not interfere with the concept of human security that has been presented over the decades, as a life free of fear and deprivation, which has a significant influence on policy, as shown in the literature [24–30].

The emphasis on security in the outlined area of the literature coincides with the set of challenges in the concept of sustainable development, according to which socio-economic

development must be implemented in harmony with nature. However, such references have not been directly made, which confirms the existence of a gap in the literature, to which this article responds. Hence, in relation to the findings of the literature review, it should be assumed that the goals in the social, economic and environmental spheres should be balanced to inhibit the negative impact of human activity on the environment and ensure the responsible development of the future. This is the concept of sustainable security, which is the research interests of the authors of this study, particularly in the context of verifying the impact of the idea of sustainable development on the sense of sustainable security and social well-being against this background in relation to the research population in this study, as presented in Hypothesis 1.

**Hypothesis 1.** *The environmental, economic, and social goals of sustainable development affect the sense of sustainable security of the young generation in Poland, influencing their well-being.*

## 2.2. Human Safety and Well-Being from the Perspective of Sustainable Development Challenges

The existential security of humanity is developed against the background of fundamental human rights to access the resources necessary for life, in the form of air, water, or soils. In times of environmental crisis, this right is clarified in terms of general access to resources in light of their finiteness, including uncontaminated resources [30]. This should be considered a key condition for safe living, creating an elementary dimension of human well-being. The need for a shift toward responsible functioning reinforces public awareness [31] and activities to counteract the destructive impact of human activity on the planet, emphasizing the need to balance various activities. This has led to the formation of a formal legal framework pertaining to the environment, clarifying the arrangement of duties to protect nature in connection with functioning in the economic and social dimensions [32,33].

The formal and legal regulations for the expected contemporary development [34–36] dictate the course of action towards a sustainable future. These are supported by the world of science, which supports intervention in the areas that require it in order to reduce the negative effects of human activity on quality of life. In this regard, the key solutions involve reducing the conditions that drive climate change, which threatens the security of humanity's functioning, as well as the overexploitation of the environment, which has catastrophic effects on the planet's ecosystems, as indicated by, among others, P. Barnard et al. [37]. These are key aspects of the global existential crisis, posing a real threat to the future due to ecological inefficiency, as emphasized by F. S. Chapin et al. [38], as well as the destruction of biodiversity as a result of ecological catastrophes largely resulting from environmental changes, as explained by M. S. Habibullah et al. and A. S. Mori [39,40]. In this regard, the socioeconomic aspects of development absolutely must take into account care for nature, and measures to protect it must be an integral part of these efforts. In this regard, it is important to promote eco-behavior, which focuses on societies' and economies' adaptation to climate change. The need for necessary measures in this regard, has been pointed out, among others, by N. Morrow et al. [41]. The importance of this aspect is reflected in the creation and implementation of sustainable development policies [42], and it also influences the formation of everyday pro-environmental social behavior. An approach based on absolute consumerism [43,44] is being replaced by a means of balancing social, environmental, and economic outcomes—shifting towards a system of development that ensures a balance of resources, providing a basis for action in accordance with the idea of intergenerational justice [45]. The justice in question aims to reduce the risk of the depletion or irreversible impairment of resources and productivity to fulfill future needs [33]. This concept particularly emphasizes the environmental aspect of security as an elementary source of human well-being, focusing on the idea of sustainable development.

The economic dimension of security specifically focuses on human well-being. Indeed, the need to fulfil social needs guides the idea of economic development, driving improvements in the quality of life and general well-being of people and contributing to the progress of civilization. The economic sphere of human activity draws on nature (resources) and affects it (mining, emissions, discharges, etc.). The economic dimension of activities, therefore, requires special attention when balancing economic goals with environmental goals to obtain social objectives.

From a macro-perspective, the economic dimension of security is shaped by, among other things: [46]

1. The ability to meet elementary social needs, creating the primary source of human well-being.
2. The arrangement of economic power, determining the framework of freedom of economic activity.
3. Ensuring economic viability in order to secure an adequate standard of living for communities.
4. Ensuring the availability of common goods.
5. Ensuring the availability of resources and economic independence regarding their sources.
6. Ensuring stability in the functioning of markets, with particular emphasis on financial markets.

These challenges are essential aspects of sustainable development, ensuring the existential security of individuals, communities, and economies. At the level of individual countries, the dimension of performance is captured by indicators describing economic growth [47]. In the basic approach, this is determined in relation to the sum of goods and services introduced into a given market in the study period (Gross Domestic Product); in a slightly more advanced approach, it is determined in relation to the increase in the value of goods, taking into account related indicators, including price indices (Producer Price Index; Consumer Price Index (CPI)) [48,49]. This provides a starting point for more detailed determinations, such as the measurement of social productivity in the formation of goods and services, converted per capita (GDP per capita) [49], or a measure of social development—the Human Development Index (HDI)—capturing key dimensions of the needs of individuals, such as income, education, or health, which are determined through the level of economic development [50]. This can be used to determine the degree of fulfillment of key social needs that determine social well-being.

These considerations indicate that the economic and environmental dimensions of sustainable development are closely linked to the social thread. After all, human well-being is the highest good, as explicitly articulated in the Universal Declaration of Human Rights [51]. Therefore, all economic efforts should be aimed at improving the quality of life, with the prevention of poverty [52] and famine at their core, as well as ensuring access to essential goods and services, with particular emphasis on health care and access to education. These aspects should be considered fundamental to people's well-being, as their comfort in life is determined by their ability to fulfill their basic needs [15]. Therefore, there is a public responsibility to ensure equality and social cohesion [53] and counter social exclusion in a broad sense, as these are key to ensuring the overall well-being of people. This will ensure the existential security of an individual of any social background, which is the primary source of human well-being. These are key aspects of human security related to social sustainability.

The presented literature studies provide a basis for the claim that the environmental, economic, and social goals of sustainable development are closely linked to human safety. Moreover, these goals are not contradictory; complementing each other, they create a wide spectrum of human well-being. However, the literature on the subject does not

sufficiently explain whether, and to what extent, knowledge and understanding of the idea of sustainable development influence the formation of responsible social attitudes, determining the effectiveness of actions for sustainable development. In response to this gap in the literature, the second research hypothesis was adopted, aimed at examining the topic of the impact of knowledge on sustainable social attitudes in relation to the population surveyed in this study.

**Hypothesis 2.** *Knowledge and understanding of the idea of sustainable development by the young generation in Poland influences the formation of responsible social attitudes necessary for development towards a safe, sustainable future.*

### *2.3. The Role of Education in Promoting Sustainable Development in Light of Shaping a Secure Future*

The need for knowledge formation in the area of sustainable development is indisputable in light of the widespread need to model sustainable social competencies. According to E. Yli-Panula et al. and Z. Veinovic, education in this area should be universally accessible and provided to all sectors of society [54,55], which coincides with one of the key goals of sustainable development: stipulating universal access to education.

The promotion of knowledge of sustainable development relates directly to the formation of the currently expected idea [3] that human security, which establishes human well-being in its broadest sense, is shaped within a system balancing environmental, economic, and social goals. This influences the formation of responsibility in everyday functioning, indicating the need for systemic thinking and action, as emphasized by D. Tilbury [56], to balance different goals. According to H. Komiyama et al., this increases the degree of understanding and acceptance of the challenges [57,58] faced by the world, which translates into conscious action to fulfil the needs of the economic and social dimensions, taking into account common concern for humans and the environment. Importantly, this action should be seen as shaping the security of humanity's functioning, with special attention to the future.

The process of modeling responsible mechanisms of action requires wide access to theory and practice explaining the idea and mechanisms of sustainable development. In this regard, the role of education in the sphere of sustainable development is invaluable, as strongly articulated in the research of, among others, X. Du [59]. The key importance of this area is noted by higher-level education, as emphasized by, among others, D. Ortega-Sánchez et al. and W. L. Filho [60,61]. This education, as emphasized by T. L. Owens, realizes the need [62,63] to shift social attitudes in a responsible direction. The implementation of this shift must be consistent with everyday conscious practice and, to ensure its effectiveness, must stem from a common acceptance of the need to balance the goals of increasing the safety of communities and economies with simultaneous concern for the safety of people and the planet. As indicated by A. Zadroga, A. Płonka et al., this mechanism is consistent with the idea of developing a sustainable civilization [64,65], in which the transfer of knowledge implemented in the course of education plays a fundamental role. Indeed, it is emphasized that the modeling of social attitudes is most strongly realized in the course of education, in connection with the preparation for students' roles in society and the economy, as pointed out by T. Wass [60,66], among others. This means that education in the area of sustainable development strongly influences the future. Hence, increasing the competence of future staff is important to strengthen the practical implementation of the idea of sustainable development, as emphasized by T. S. Wright et al. [67]; therefore, it is also crucial from the perspective of responsibility for the future [66], as it shapes the broad understanding security, which determines human well-being.

The presented cause–effect relationships in this context are widely discussed in the theoretical literature. The scope of research on the role of social diagnosis in shaping the

future is insufficient in this respect. The young generation, who are responsible for the future modeling of reality, plays a key role; hence, in response to this research gap, the authors of this study directed their attention to the analysis of the sustainable competences of the young generation in light of their impact on sustainable development (Hypothesis 3).

**Hypothesis 3.** *The sustainable social competences of the young generation in Poland assume crucial importance in the process of shaping sustainable security.*

### 3. Materials and Methods

The established research objective shaped the structure of the study. The introduction explains the purpose and layout of the paper. The research background was developed with reference to the literature, which is reviewed in the next section. Research papers, thematic reports, and formal and legal regulations were examined to clarify the themes explored. The sources for research purposes were taken from databases such as Google Scholar, Web of Science, and Scopus, among others, using the keywords established for the study and their combinations.

The empirical–analytical part of the paper concerns the study of the adopted themes using the methods applied in the field of economic analysis, as well as taking into account statistical inference techniques. The adopted methodology makes it possible to realize the aim of the paper and to make inferences regarding the presented challenges.

The study of the selected research threads, considered from the perspective of sustainable development, requires research aimed at identifying cause-and-effect relationships between the assumptions of the concept in question and the shaping of real human safety and well-being. Furthermore, literature research is required to identify the development of the formation of social attitudes, in light of the journey towards a secure future. This makes it possible to confirm a gap in the literature and justifies the adopted research hypotheses for this study. The research concept also requires reference to physical indications; we selected study population of students representing the young generation in Poland based on a diagnostic survey. Hence, for the purposes of practical research, a diagnostic survey was conducted in February 2024 in a traditional format, ensuring that participation was voluntary and that indications were fully anonymous. The survey was carried out among 278 students studying economics and finance (123 respondents) and administration and security (155 respondents) at three universities operating in three provinces in Poland, i.e., Lubusz, Westpomeranian, and Pomeranian Voivodeships; therefore, the obtained results are specific to this population and cannot be transferred to the general population of the young generation in Poland.

The research comprises a random survey distributed among students, focusing on the use of their studies. Respondents were not selected according to additional differentiating characteristics in order to maximize the selection of students for the study. In the survey of respondents, the snowball technique was used—the promotion of the survey and the recruitment of respondents by students taking part in the survey. The age of respondents was 19–27 years, allowing us to present a conclusion about the young generation in Poland, in accordance with the research topic. The characteristics of the respondents shows that 63% of surveyed students were women and 37% were men. Differential characteristics of the population were not taken into account in the survey.

The substantive scope of the survey was geared towards assessing students' knowledge of sustainability and related safety and well-being issues. The scope of the survey was six questions—four closed questions and two dual questions (partly open). The findings were within the scope of other, detailed studies. In the presented study, only complete measurements were used, which excluded the problem of incomplete data.

The analysis of the survey results was supported by in-depth analysis techniques, together with elements of statistical inference and descriptive statistics, the choice of which was determined by the research hypotheses and the nature of the variables. The degree of correlation of the variables was measured and the concept of the logit function model was applied, together with the determination of the odds ratio, to estimate the variables. The statistical research was supported by the PQstat software (version 1.8.4.164).

This cognitive process made it possible to realize the aim of the study to expand the available knowledge in the areas of human security, well-being, and sustainable development, enriching the literature in this field. The results can be used in planning programs to promote the idea of sustainable development, and to design or improve curricular content for the fields of study under investigation.

### 4. Results of Practical Research

#### 4.1. Analysis of Survey Results

The practical study aimed to determine sustainable awareness of the young generation and comprised a diagnostic survey. Its main goal was to collect information enabling a general assessment of the competences of the studied population in the sphere of sustainable development and the related topic of sustainable safety and well-being. The diagnostic sample comprised students of administration and security and economics and management at three selected universities in Poland who met the characteristics presented in Section 3 of this paper.

The survey results revealed that 52% of the surveyed population indicated that the key factor driving development towards a safe future is knowledge about sustainable development (Figure 1). This factor received the highest level of indications, alongside factors such as legal regulations or social principles. This is an interesting result and provides a basis for adopting this condition as a reference basis in future in-depth studies. Detailed results of the indications in this area are included in Table 1.

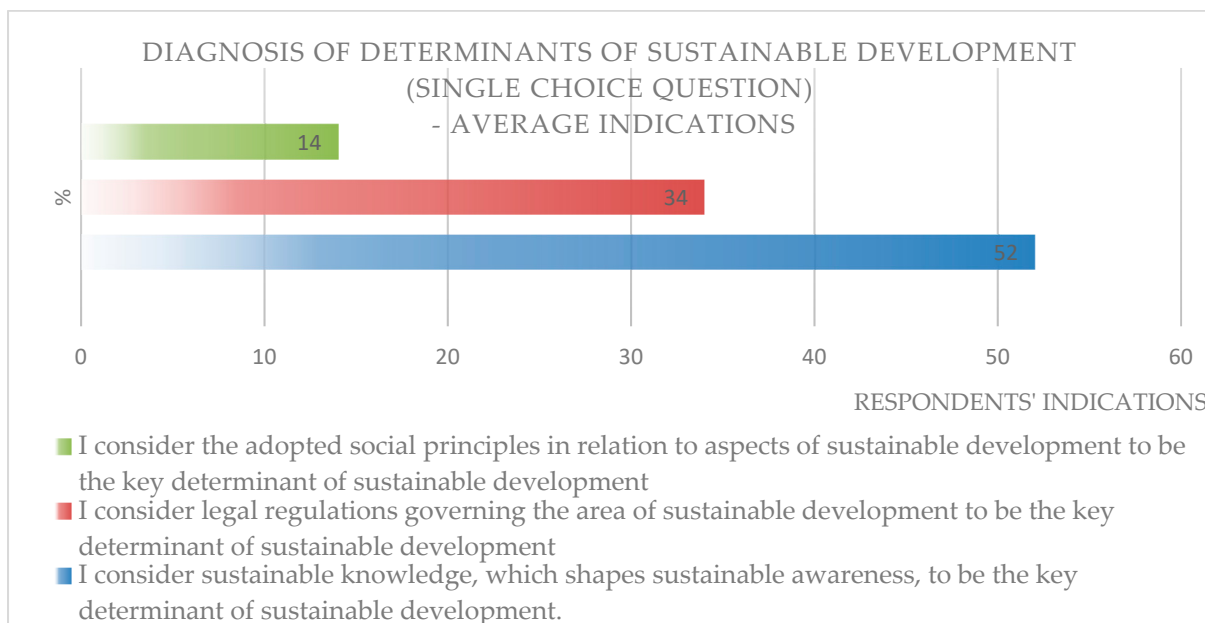
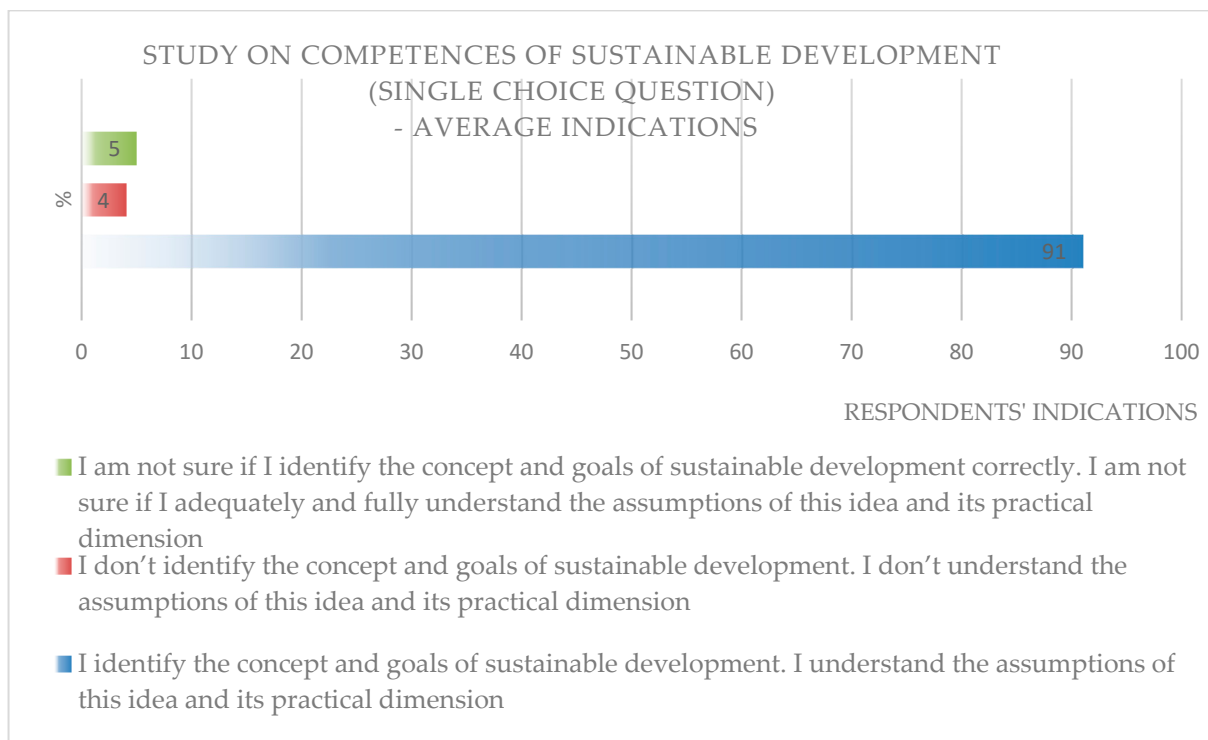


Figure 1. Diagnosis of the determinants of sustainable development (single choice).

**Table 1.** Diagnosis of the determinants of sustainable development (single choice).

| Study Area:   | Students of Administration and Security | Students of Economics and Management |
|---|---|--------------------------------------|
| I consider sustainable knowledge, which shapes sustainable awareness, to be the key determinant of sustainable development                      | 45%                                     | 59%                                  |
| I consider legal regulations governing the area of sustainable development to be the key determinant of sustainable development                 | 40%                                     | 28%                                  |
| I consider the adopted social principles in relation to aspects of sustainable development to be the key determinant of sustainable development | 15%                                     | 13%                                  |

Regarding the sustainable competences of the surveyed population, the survey results revealed that 91% of students have general knowledge of the concept of sustainable development and an understanding of its practical dimension (Figure 2). The analysis of the findings in this area indicates that students of economics and management understand this concept 6% better than students of administration and security. The level of uncertainty regarding an unambiguous identification and understanding of the concept in question was very similar, with an average value of 5%. Detailed results of indications in this area are included in Table 2.

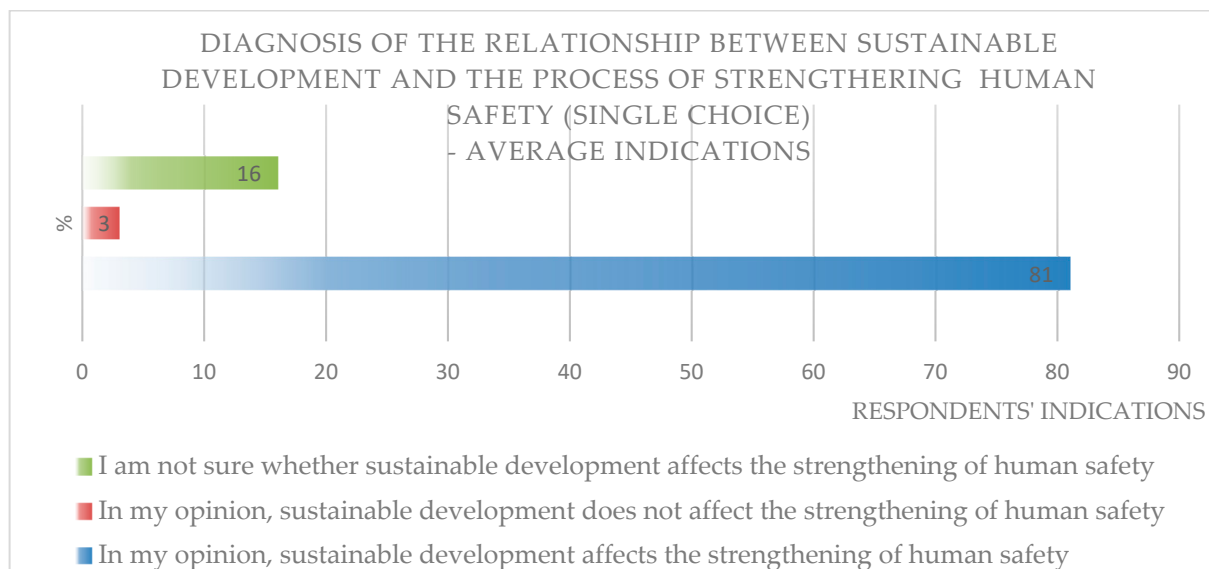


**Figure 2.** Study of competences regarding sustainable development (single-choice questions)—average indications.

**Table 2.** Study of competences regarding sustainable development (single-choice questions).

| Study Area:   | Students of Administration and Security | Students of Economics and Management |
|---|---|--------------------------------------|
| I identify the concept and goals of sustainable development. I understand the assumptions of this idea and its practical dimension  | 88%                                     | 94%                                  |
| I don't identify the concept and goals of sustainable development. I don't understand the assumptions of this idea and its practical dimension  | 6%                                      | 2%                                   |
| I am not sure if I identify the concept and goals of sustainable development correctly. I am not sure if I adequately and fully understand the assumptions of this idea and its practical dimension | 6%                                      | 4%                                   |

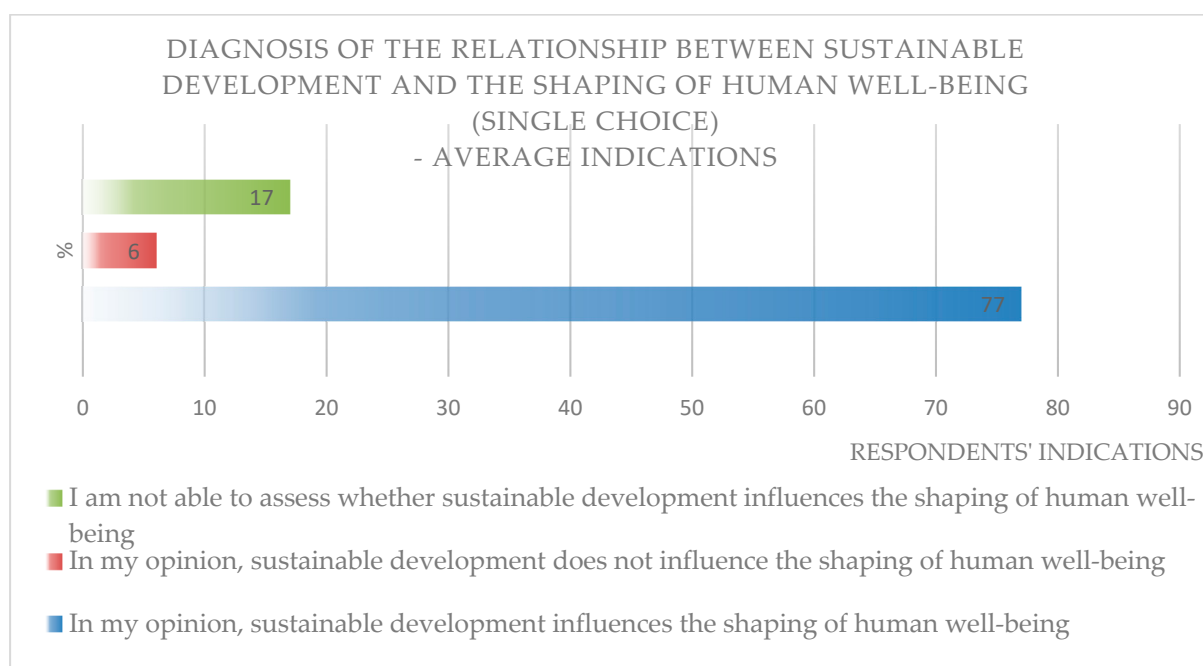
The fundamental objective of the presented study was to determine the perception of respondents regarding the impact of sustainable development on human safety and well-being. Regarding the impact of sustainable development activities on strengthening people's sense of safety, the results clearly indicated that the studied population of students confirmed this correlation to a very significant extent, with an average of 81% of respondents (Figure 3). Students of administration and security confirmed the impact of sustainable development on strengthening human safety to a greater extent (84%) than students of economics and management (78%). The lack of knowledge of students in this area is also worth observing, which amounted to an average of 16%. Detailed results are presented in Table 3.

**Figure 3.** Determined relationship between sustainable development and the process of strengthening human safety—average indications.

**Table 3.** The determined relationship between sustainable development and the process of strengthening human safety (single choice).

| Study Area:  | Students of Administration and Security | Students of Economics and Management |
|--|---|--------------------------------------|
| In my opinion, sustainable development affects the strengthening of human safety         | 84%                                     | 78%                                  |
| In my opinion, sustainable development does not affect the strengthening of human safety | 3%                                      | 3%                                   |
| I am not sure whether sustainable development affects the strengthening of human safety  | 13%                                     | 19%                                  |

In terms of the findings of the impact of sustainable development on shaping human well-being (single choice), very similar results were noted to those obtained in the area of the impact of sustainable development on the sense of human security. In this respect, on average, 77% of students indicated this relationship, which can be considered a strong position on this subject (Figure 4). The detailed distribution of indications in this respect is included in Table 4.



**Figure 4.** Diagnosis of the relationship between sustainable development and the shaping of human well-being (single choice)—average indications.

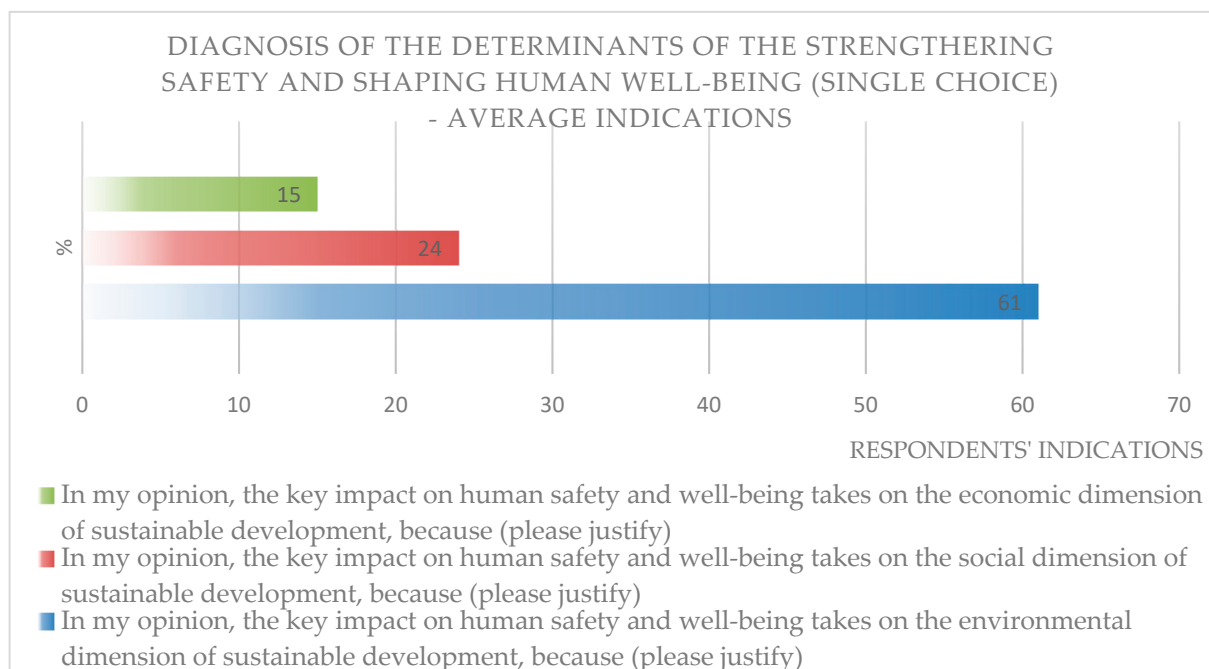
The in-depth study in this area showed that, on average, 61% of the surveyed population considers activities regarding the environmental pillar of sustainable development to be a determinant in strengthening safety and shaping human well-being, particularly those in the following areas:

- Activities to ensure access to clean water, air and soil—94%;
- Activities counteracting climate change—95%;
- Activities to reduce emissions and waste and general environmental protection—61%;
- The protection of endangered species of animals and plants—37%;
- Activities limiting the extraction of deposits—33%.

Next, the respondents indicated their knowledge of the social (24%) and economic (15%) pillars of sustainable development (Figure 5). These results indicate significant potential for improving knowledge about sustainable development in these fields of study at the universities studied. The detailed distribution of indications in this area is included in Table 5.

**Table 4.** Determination of the relationship between sustainable development and the shaping of human well-being (single choice).

| Study Area:   | Students of Administration and Security | Students of Economics and Management |
|---|---|--------------------------------------|
| In my opinion, sustainable development influences the shaping of human well-being         | 75%                                     | 79%                                  |
| In my opinion, sustainable development does not influence the shaping of human well-being | 6%                                      | 5%                                   |
| I am not sure whether sustainable development influences the shaping of human well-being  | 19%                                     | 16%                                  |

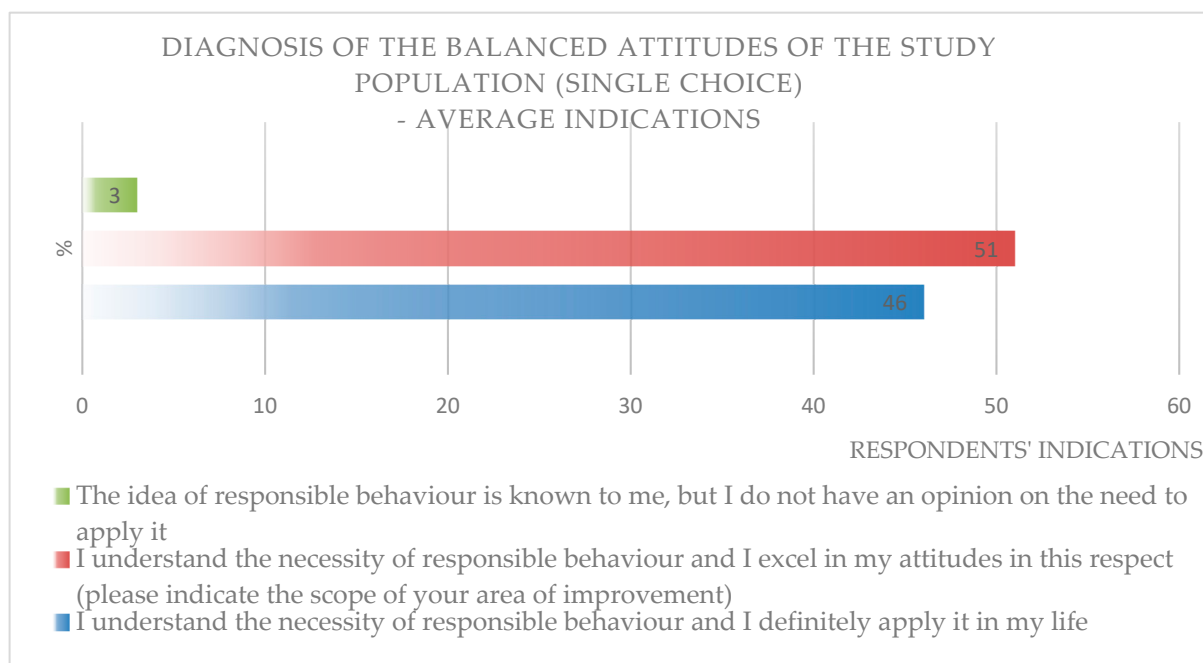


**Figure 5.** Determinants of strengthening safety and shaping human well-being (single choice); average indications.

An important aspect of the survey was the determination of social attitudes in light of the challenges in developing a safe future. Research in this area revealed that 46% of the surveyed student population understands the need for responsible behavior and tries to apply this behavior in their lives (Figure 6). Of the remaining students, the vast majority understand the need for responsible behavior and continue to improve their attitudes in this area (51%). A detailed breakdown of indications in this area is included in Table 6.

**Table 5.** Determinants of strengthening safety and shaping human well-being (single choice).

| Study Area:  | Students of Administration and Security | Students of Economics and Management |
|--|---|--------------------------------------|
| In my opinion, the key impact on human safety and well-being takes on the environmental dimension of sustainable development, because (please justify) | 62%                                     | 60%                                  |
| In my opinion, the key impact on human safety and well-being takes on the social dimension of sustainable development, because (please justify)        | 25%                                     | 23%                                  |
| In my opinion, the key impact on human safety and well-being takes on the economic dimension of sustainable development, because (please justify).     | 6%                                      | 24%                                  |

**Figure 6.** Diagnosis of the balanced attitudes of the study population (single choice); average indications.

Detailed research in this area revealed the potential for improvement that the young generation notices in their behavior. This potential mainly concerns the environmental and economic dimensions of sustainable development:

- Green transport—26%;
- Responsible consumption—21% (mainly purchasing goods in PET packaging, purchasing clothing);
- Saving resources—12%;
- Other—3%.

The survey results indicate that the surveyed population, representing the young generation in Poland, can define the idea of sustainable development in general, and to a large extent perceive it as a positive trend, constituting a path to strengthening human safety and well-being. These are important observations, given the accentuated role of the young generation in shaping the present and influencing the future. They point to the importance of knowledge in the area of sustainable development in shaping informed

attitudes, which could influence the responsible modeling of the future, providing a basis for positive verification of the assumption of hypothesis no. 3 that the sustainable social competences of the young generation in Poland are of fundamental importance in shaping sustainable security. The practical importance of this knowledge reinforces the legitimacy of improving its transmission, emphasizing the key role of green education at the tertiary level. In this respect, it is interesting to note the distribution of results among the two fields of study pursued in parallel at the same universities.

**Table 6.** The balance of attitudes among the study population (single choice).

| Study Area:   | Students of Administration and Security | Students of Economics and Management |
|---|---|--------------------------------------|
| I understand the necessity of responsible behaviour and I definitely apply it in my life  | 44%                                     | 47%                                  |
| I understand the necessity of responsible behaviour and I excel in my attitudes in this respect (please indicate the scope of your area of improvement) | 54%                                     | 49%                                  |
| The idea of responsible behaviour is known to me, but I do not have an opinion on the need to apply it  | 2%                                      | 4%                                   |
| The idea of responsible behaviour is known to me, but I do not feel the need to apply it  | 0%                                      | 0%                                   |
| I do not identify the idea of responsible behaviour   | 0%                                      | 0%                                   |

#### 4.2. Statistical Analysis of Results

The in-depth research was focused on the analysis of survey results using statistical analysis techniques. The selection of statistical instruments was determined by the adopted hypotheses and the nature of the variables. Hence, for this research, the degree of correlation among variables was measured, and the logit function model was used with the determination of the odds ratio to estimate variables. The statistical research was supported by PQstat software (version 1.8.4.164).

For the purposes of in-depth analysis, the following parameters were determined:

- (a) The endogenous variable ( $Y_0$ ), which was assumed to be knowledge about the sustainable development of the studied population, as a key determinant of development towards a safe future. The significance of this parameter was confirmed at a significant level in the survey.

This variable has a binary character (classification 0:1; 0—does not occur; 1—occurs).

- (b) Explanatory variables ( $X_1$ – $X_3$ ), which were assumed to be as follows:  $X_1$ —a sense of sustainable security;  $X_2$ —a sense of well-being among the respondents;  $X_3$ —the sustainable attitudes of the respondents.

The explanatory variables are presented in the range of 1–3, according to the parameter or variable being studied, where 1 suggests a negligible impact, 2 a significant impact, and 3 a very significant impact. All explanatory variables present the level of awareness of the studied population, creating a relationship between the level of knowledge of the young generation and knowledge of the dimensions studied.

A dichotomous and numerical approach to variables for in-depth research purposes has been effectively used in other studies [16,32].

Descriptive statistics of variables were established in relation to the determination of parameters—an endogenous variable (Y1) and explained variables (X1–X3) (Table 7).

**Table 7.** Descriptive statistics results.

|    | Mean   | SE     | SD     | SD <sup>2</sup> | min. | max. |
|----|--------|--------|--------|-----------------|------|------|
| Y1 | 0.9101 | 0.0172 | 0.2866 | 0.0821          | 0    | 1    |
| X1 | 0.7086 | 0.0273 | 0.4552 | 0.2072          | 0    | 1    |
| X2 | 0.5108 | 0.0300 | 0.5058 | 0.2508          | 0    | 1    |
| X3 | 0.5324 | 0.0299 | 0.4998 | 0.2498          | 0    | 1    |

At the next stage of in-depth research, the following findings were used:

- (a) Logit regression for the estimated parameters  $\beta_0 \dots \beta_k$  (elements of vector  $\beta$ ), according to [26]:

$$\ln \frac{p_i}{1-p_i} = Z_i = x^J \beta = \beta_0 + \beta^1 + \beta^2 X^1_i + \beta^2 X^2_i + \dots + \beta_k X_{ki} \quad (1)$$

where

$$\ln \frac{p_i}{1-p_i} = \text{logit}(p_i);$$

- (b) Odds ratio (OR) in the parameter estimation process, with the results compared to determine whether the parameter ( $X_{mi}$ ) was individually increased according to the following approach [26]:

$$\exp(\beta_m) = \frac{\Omega(x_i^m, X_{mi} + 1)}{\Omega(x_i^m, X_{mi})} \quad (2)$$

where the following hold:

$x_i^m$ —a vector of  $x_i$  is a vector without  $X_{mi}$ ;

OR—determined according to the following approach:

$$\ln \frac{p_i}{1-p_i} = \exp(x_i^J \beta) = \exp(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki}) = \Omega(x_i) \quad (3)$$

Importantly, a unit increase in the  $X_{mi}$  variable determines the OR at the level of the fold change  $\exp(\beta_m)$ , whereby the following hold:

- (a) if  $\exp(\beta_m) > 0$ , then the OR assumes an upward trend;  
 (b) if  $\exp(\beta_m) < 0$ , then the OR assumes a downward trend.

Related to the dichotomous variable  $X_m$ ,  $\exp(\beta_m)$ , the presented mechanism reveals the fold change in the odds ratio for  $Y = 1$  in the classification area “1” for parameter  $x_m$ , in relation to the odds ratio OR in the classification area “0” for variable  $x_m$ .

The findings of logit regression regarding the scale of changes in the odds ratio  $\hat{\beta}_j$  indicate the values of OR  $\exp(\hat{\beta}_j)$ , where the average change in OR is created by a unit change in the parameter. The degree of probability of balanced awareness among the studied population, which determines the sense of security and well-being, as well as creating social attitudes, can be captured in the range of  $<0.1>$ . Taking the above into account, the probability result  $\leq 0.5$  presents a degree of balanced security or well-being or balanced competences, independent of the level of knowledge, arising from the awareness of the studied population, while the probability result  $>0.5$  indicates the dependence of these conditions.

Grouping the results of the study findings for comparison with the results of the findings of  $OR > 1$  provides the basis for determining and assessing random factors and for determining the threshold values estimated in the applied model.

For logit regression, the statistical data processing software PQstat was used.

The correlation of the studied variables is presented as a matrix of their correlations (Table 8).

**Table 8.** Correlation matrix of the variables.

| Variable | Y1     | X1     | X2     | X3    |
|----------|--------|--------|--------|-------|
| Y1       | 1.000  |        |        |       |
| X1       | 0.5188 | 1.000  |        |       |
| X2       | 0.4909 | 0.2168 | 1.000  |       |
| X3       | 0.3102 | 0.0178 | 0.0635 | 1.000 |

The results of the determination of the interdependencies of the studied variables show their homogeneity. The highest recorded correlation value was 0.5188, indicating a significant level of correlation among variables Y1-X1. For variables Y1-X2, the result of 0.4909 shows their collinearity is close to the significance level, which is set at 0.5. For variables Y1-X3, their collinearity of 0.3102 suggests their relationship does not play a significant role (findings  $< 0.5$ ).

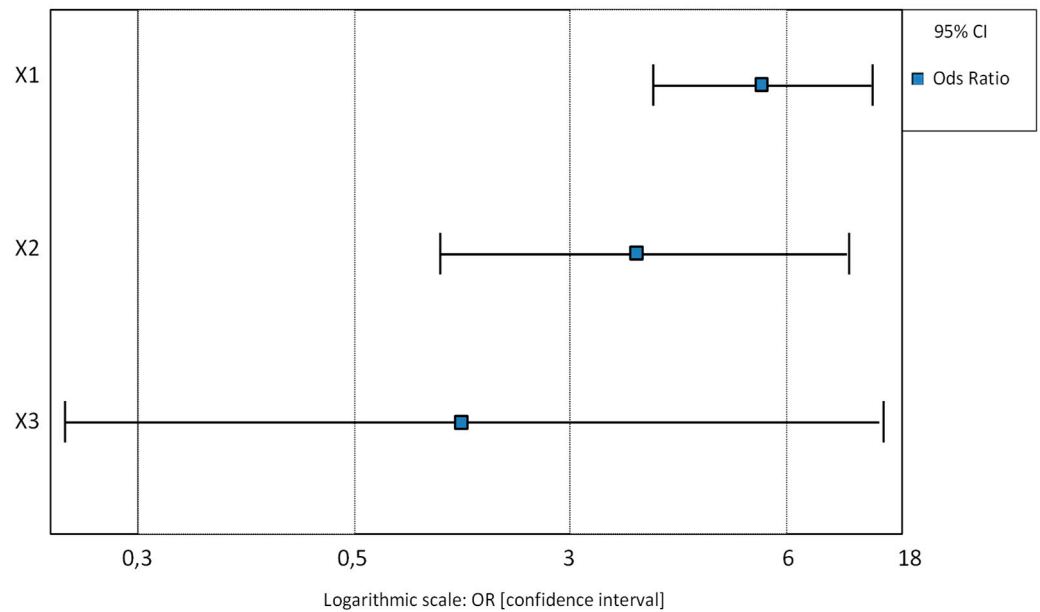
The results of the logit regression for the Y1 parameter are included in Table 9. The findings in this area included an estimation of the values of the  $\beta$  vector, the error scale (b), the confidence interval (CI), the Wald statistic, and the odds ratio (OR).

**Table 9.** Logistic regression model for category Y1.

|                       | $\beta$ | Error b | -95% CI | +95% CI | Wald Statistic | OR Odds Ratio |
|-----------------------|---------|---------|---------|---------|----------------|---------------|
| X1                    | 4.7678  | 0.3728  | 3.5852  | 9.2333  | 12.4758        | 5.9596        |
| X2                    | 3.4587  | 0.1887  | 1.0890  | 8.7202  | 8.6146         | 3.2614        |
| X3                    | 2.5679  | 0.2261  | 0.0024  | 16.8740 | 0.7129         | 0.9261        |
| Pseudo R <sup>2</sup> | 0.7102  |         |         |         |                |               |

The distribution of changes in the OR coefficient is shown in Figure 7.

The in-depth statistical analysis revealed the relationship between the endogenous variable and the explanatory variables. A significant relationship was noted between the impact of knowledge about sustainable development (Y1) and the sense of sustainable security (X1). A level of interdependence close to the level of significance was noted between the impact of knowledge about sustainable development (Y1) and the sense of human well-being (Y2). The above findings support the assumption made in Hypothesis 1 that sustainable development goals affect the sense of sustainable security among the young generation in Poland, influencing their well-being. A low level of interdependence was confirmed in the relationships between the impact of sustainable knowledge (Y1) and the sustainable attitudes of the respondents (X3). However, a low level of linear correlation in this area does not exclude the existence of a non-linear relationship between these parameters, and does not provide grounds for rejecting ] hypothesis No. 2, that knowledge and understanding of sustainable development by the young generation in Poland influences their responsible social attitudes, which are necessary for development towards a safe, sustainable future. Therefore, there is no reason to dismiss the importance of the issues examined.



**Figure 7.** The distribution of changes in the OR (odds ratio).

The recorded confidence interval for the relationship between the impact of sustainable knowledge on the sense of sustainable security and the impact on the sense of well-being indicates limited uncertainty regarding the results. The Wald statistics confirm the significance of the results in this area. The confidence interval regarding the impact of sustainable knowledge on sustainable attitudes shows a higher degree of uncertainty.

The odds ratios, at the level of 5.9596 and 3.2614, for the impact of knowledge about sustainable development on the sense of sustainable security and the sense of well-being suggest the probability of the occurrence of a given result. In the case of the relationship between the impact of sustainable knowledge on the sustainable attitudes of the respondents, the R result, at the level of 0.9261, indicates a lower chance of occurrence ( $OR < 1$ ). The obtained results provide a basis for the positive verification of all the adopted hypotheses (1–3), although the chances of the result occurring are varied—there is a significant degree of probability for the Y1–X2 relation, a slightly lower degree of probability for the Y1–X2 relation, and a limited degree for the Y1–X3 relation.

## 5. Discussion and Conclusions

The concept of sustainable development is being explored at many levels. The largest portion of the research relates to the SDGs [68], their formal and legal framework [69,70], their levels, their modes of implementation, their reporting systems, or the general importance of promoting the concept on social and economic grounds [16,71,72]. In this regard, environmental, social, and economic threads, which are relevant areas of the idea in question, are explored. These studies further emphasize the importance of conservation resources, and the need to establish zero-carbon processes [73]. This is the background for measuring and assessing the effectiveness of the concept of sustainable development and analyzing the effects of this process. In the outlined context, a broadly understood idea of human safety in light of sustainable development remains insufficiently explained in the literature; this was the reason behind the choice of this paper's topic and scope.

In terms of security, the research has focused on the issue of energy security in societies and economies [74,75]. Security is considered in the economic plane, where the availability of cheap energy plays a key role [76]. An equally explored issue in this regard is energy resources and their scarcity [77] (resource crisis), and the need to search for alternatives. The main thread of many studies is an analysis of green energy sources in the context of

their energy potential, taking into account the economic thread [78] of the transformation of energy systems towards renewable, secure energy sources [79]. This highlights the problem of energy security in social and economic terms, as well as the problem of environmental protection [80]; however, the impact of the discussed activity on the human sense of security and well-being is inefficiently or not explored. In this regard, this paper is distinct from other studies.

Another frequent research thread is the issue of environmental challenges, alongside the importance of the efforts in question for the security of Earth [81]. The importance of SDG goals is emphasized in light of the degradation of the Earth and increasing climate change, with disastrous consequences for humans [82]. In this regard, the risk of insufficient remedial efforts to protect air, water, and soil, as well as biodiversity, is emphasized. The importance of these issues for ensuring people's existential security is obvious, but the literature on the subject does not pay enough attention to the impact of environmental protection activities on human's sense of security and well-being, which justifies the efforts made in the presented article.

Research threads aimed at exploring the social determinants of sustainable development touch on aspects of existential security—the climate crisis, hunger, or poverty, and the resulting inequalities in access to key goods and services. Research in this area mainly discusses the scale of these problems and the mechanisms aimed at counteracting them and dismantling barriers to secure human functioning. The aspect of safety and human well-being in these studies is strongly articulated—with reference to formal and legal frameworks, including the assumptions of the UN [83,84], economic mechanisms, or the value system [85]. Also strongly articulated is the role of education as a way of raising public awareness [86,87], with the aim of intensifying efforts to ensure human well-being [88]. The role of sustainable development and social awareness in this area is emphasized, but not enough attention is paid to the analysis of the impact of this concept on the sense of human safety and well-being, which is the issue explored in this paper. A secure future is a basic aspect of global pro-development challenges. According to the SDGs, it is to be implemented in a system of balance, defined in the social, environmental, and economic dimensions, and its integration is to be a feature of contemporary expectations of the safe development of the world, as articulated, among others, by the UN. In this configuration, human safety and well-being are the center of attention, and the achievement of socio-economic goals must be implemented alongside simultaneous care for the environment.

Long-term human well-being, when considered from the perspective of human safety, is strongly dependent on the level of competence of decision-makers. With this in mind, it is reasonable to examine the issue of human safety and well-being in light of the idea of sustainable development, as well as sustainable attitudes, which are the embodiment of sustainable consciousness. In this regard, it is particularly interesting to examine the perception of the younger generation, which will take on future social roles and participate in the sphere of future development, creating future realities. Therefore, this study discusses the younger generation's sense of safety and well-being, as well as the formation of social attitudes under the influence of sustainable knowledge. Its detailed research threads provide useful insights into the effects of education on sustainability and the relevance of this knowledge for human beings and their development in a responsible direction. Importantly, this paper is distinguished from other studies through its direct reference to these aspects of study. The paper elucidates the cause-and-effect relationships between the knowledge and understanding of sustainable development and increasing sustainable awareness and reinforced responsive social attitudes towards a secure future. These considerations are both theoretical and practical in nature, which makes the conclusions drawn from them useful.

The main research finding is the confirmation of the impact of knowledge of sustainable development on the sense of sustainable safety at a significant level, and on the sense of well-being at a slightly lower level of significance. The correlation among these findings was 0.5188 (significant correlation level for sustainable security) and 0.4909 (collinearity at a level close to significant for sense of well-being), respectively. In addition, the research results confirmed that knowledge of sustainable development influences the modeling of sustainable social attitudes. The creation of competences in this area is less dependent on knowledge about sustainable development (collinearity of 0.3102), which indicates the potential for improvement in this area. It is important to emphasize the nature of the respondents (age range 19–27) and the importance of the young generation from the perspective of development towards a sustainable future. In this respect, it is important to highlight the 52% recognition by respondents of sustainable knowledge as a key determinant of sustainable development, shaping sustainable public awareness. The perception of sustainable development in the minds of the young generation is important in shaping the current reality, as well as when designing the future, in which the young generation plays a key role. Particular potential for action in this area is noted by respondents in formal legal regulations (34% of respondents) and social principles (14% of respondents). These are important findings, as they concern 48% of the surveyed student population. These conclusions not only enrich the source material, but could also constitute the basis for programs to strengthen the knowledge of the community at every stage of development.

The research methodology and the scope of the study made it possible to realize the aim of the study and to positively verify the adopted hypotheses, reinforcing the importance of knowledge of sustainable development in the process of responsible development. This provides a rationale for the widespread dissemination of knowledge in the area of sustainable development as part of regular education or in-service training programs, as well as through various information campaigns. The need to reinforce this knowledge is the main recommendation of this work.

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## References

1. Bartlett, A.A. The meaning of sustainability. *Teach. Clgh. Sci. Soc. Educ. Newslett.* **2012**, *31*, 1–14.
2. Kremen, C.; Merenlender, A.M. Landscapes that work for biodiversity and people. *Science* **2018**, *362*, eaau6020. [[CrossRef](#)]
3. Chomać-Pierzecka, E. Value as an economic category in the light of the multidimensionality of the concept 'value'. *Lang. Relig. Identity* **2021**, *2*, 155–166.
4. Duan, W. Ecological Perspective on Sustainable Human Well-Being. *Sustainability* **2025**, *17*, 1943. [[CrossRef](#)]

5. Sultana, F.; Petzold, J.; John, S.; Muehlberger, V.; Scheffran, J. Systematic Mapping of Climate Change Impacts on Human Security in Bangladesh. *Climate* **2024**, *12*, 141. [CrossRef]
6. Wendt, J.A.; Bógdał-Brzezińska, A. Security and Securitization as Topics in Sustainability and Tourism Research. *Sustainability* **2024**, *16*, 905. [CrossRef]
7. Haglund, L. Human Rights Pathways to Just Sustainabilities. *Sustainability* **2019**, *11*, 3255. [CrossRef]
8. Gawlik-Kobylińska, M. Can Security and Safety Education Support Sustainability? Lessons Learned from Poland. *Sustainability* **2021**, *13*, 1747. [CrossRef]
9. Dyrka, S.; Chomać-Pierzecka, E. Economic-financial instruments for the motivation of uniformed services personnel based on the example of the Polish Army. *Zesz. Nauk. Akad. Górnośląskiej* **2024**, *16*, 5–15.
10. Williams, P.D. *Security Studies: An Introduction*; Routledge: London, UK, 2012.
11. Espinosa García, J.; Hernández Encinas, L.; Peinado Domínguez, A. A Comprehensive Security Framework Proposal to Contribute to Sustainability. *Sustainability* **2021**, *13*, 6901. [CrossRef]
12. Pérez de Armino, K. Estudios de Seguridad: De la visión tradicional a los enfoques críticos. In *Teorías de las Relaciones Internacionales; del Arenal Moyúa, C., Sanahuja Perales, J.A., Eds.; Revista Española de Derecho Internacional*: Madrid, Spain, 2015; pp. 301–328.
13. Jovanovic, M.; Burbiel, J. The evolving concept of security: A critical evaluation across four dimensions. In Proceedings of the 9th Security Research Conference Future Security, Berlin, Germany, 16–18 September 2014; pp. 502–506.
14. Pabian, A.; Pabian, B.; Reformat, B. E-Customer Security as a Social Value in the Sphere of Sustainability. *Sustainability* **2020**, *12*, 10590. [CrossRef]
15. Urbańczyk, E.; Kokieli, A.; Dyrka, S.; Chomać-Pierzecka, E. Sustainable HR and Employee Psychological Well-Being in Shaping the Performance of a Business. *Sustainability* **2024**, *16*, 10913. [CrossRef]
16. Chomać-Pierzecka, E. Investment in Offshore Wind Energy in Poland and Its Impact on Public Opinion. *Energies* **2024**, *17*, 3912. [CrossRef]
17. Declaration on the Human Environment (Stockholm Declaration), UN Conference on the Human Environment, Stockholm 16.06.1972. Available online: <https://www.un.org/en/conferences/environment/stockholm1972> (accessed on 4 November 2024).
18. Purpura, P.P. *Security and Loss Prevention: An Introduction*, 7th ed.; Butterworth-Heinemann: Boston, MA, USA, 2019.
19. Stasiak, J.; Chomać-Pierzecka, E. Domestic Tourism Preferences of Polish Tourist Services' Market in Light of Contemporary Socio-economic Challenges. In *Strategic Innovative Marketing and Tourism. ICSIMAT 2023*; Springer Proceedings in Business and Economics; Kavoura, A., Borges-Tiago, T., Tiago, F., Eds.; Springer: Cham, Switzerland, 2024.
20. Taherdoost, H. Understanding Cybersecurity Frameworks and Information Security Standards—A Review and Comprehensive Overview. *Electronics* **2022**, *11*, 2181. [CrossRef]
21. Downer, K.; Bhattacharya, M. BYOD Security: A Study of Human Dimensions. *Informatics* **2022**, *9*, 16. [CrossRef]
22. Security. Wikipedia Wolna Encyklopedia. Available online: <https://pl.wikipedia.org/wiki/Bezpiecze%C5%84stwo> (accessed on 6 February 2025).
23. Villegas-Ch, W.; García-Ortiz, J. Toward a Comprehensive Framework for Ensuring Security and Privacy in Artificial Intelligence. *Electronics* **2023**, *12*, 3786. [CrossRef]
24. Problems of the Human Environment: Report of the Secretary-General, United Nations. 1969. Available online: <https://digitallibrary.un.org/record/729455> (accessed on 5 November 2024).
25. UNDP (United Nations Development Programme). *Human Development Report: New Dimensions of Human Security*; United Nations: New York, NY, USA, 1994.
26. United Nations. *We the Peoples: The Role of the United Nations in the 21st Century*; United Nations: New York, NY, USA, 2000.
27. Mani, D. *Human Security: Concepts and Definitions*; UN Centre for Regional Development: Tokyo, Japan, 2002.
28. Alkire, S. Concepts of Human Security. In *Human Insecurity in a Global World*; Chen, L., Fukuda-Parr, S., Seidensticker, E., Eds.; Asia Center, Harvard University: Cambridge, MA, USA, 2003; pp. 15–39.
29. Lautensach, A.K.; Lautensach, S.W. When Should We Care About Sustainability? Applying Human Security as the Decisive Criterion. *Sustainability* **2012**, *4*, 1059–1073. [CrossRef]
30. Our Common Future. Report of the World Commission on Environment and Development. United Nations. A/42/427. 1987. Available online: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> (accessed on 4 November 2024).
31. Kowalska, M.; Chomać-Pierzecka, E. Sustainable Development Through the Lens of Climate Change: A Diagnosis of Attitudes in Southeastern Rural Poland. *Sustainability* **2025**, *17*, 5568. [CrossRef]
32. Chomać-Pierzecka, E. Offshore Energy Development in Poland—Social and Economic Dimensions. *Energies* **2024**, *17*, 2068. [CrossRef]
33. Kierzkowska, J. Przejawy równowagi rozwojowej ziemi cekcyńskiej. In *Zasada Zrównoważonego Rozwoju w Wymiarze Gospodarczym i Ekonomicznym*; Rakoczy, B., Karpus, K., Szalewska, M., Walas, M., Eds.; Uniwersytet Mikołaja Kopernika: Toruń, Poland, 2015.
34. Agenda 21. Available online: [https://www.unic.un.org.pl/johannesburg/info\\_agenda21.php](https://www.unic.un.org.pl/johannesburg/info_agenda21.php) (accessed on 6 November 2024).

35. United Nations Millennium Declaration. Available online: [https://www.unic.un.org.pl/dokumenty/deklaracja\\_milenijna.doc](https://www.unic.un.org.pl/dokumenty/deklaracja_milenijna.doc) (accessed on 6 November 2024).
36. UN General Assembly Resolution No A/RES/70/01. Available online: <https://www.un.org.pl/agenda-2030-rezolucja> (accessed on 6 November 2024).
37. Barnard, P.; Moomaw, W.R.; Fioramonti, L.; Laurance, W.F.; Mahmoud, M.I.; O'Sullivan, J.; Rapley, C.G.; Rees, W.E.; Rhodes, C.J.; Ripple, W.J.; et al. World scientists' warnings into action, local to global. *Sci. Prog.* **2021**, *104*, 1–32. [[CrossRef](#)]
38. Chapin, F.S.; Díaz, S. Interactions between changing climate and biodiversity: Shaping humanity's future. *Proc. Natl. Acad. Sci. USA* **2020**, *117*, 6295–6296. [[CrossRef](#)]
39. Habibullah, M.S.; Din, B.H.; Tan, S.-H.; Zahid, H. Impact of climate change on biodiversity loss: Global evidence. *Environ. Sci. Pollut. Res.* **2021**, *29*, 1073–1086. [[CrossRef](#)]
40. Mori, A.S. Advancing nature-based approaches to address the biodiversity and climate emergent-cy. *Ecol. Lett.* **2020**, *23*, 1729–1732. [[CrossRef](#)]
41. Morrow, N.; Mock, N.B.; Gatto, A.; LeMense, J.; Hudson, M. Protective Pathways: Connecting Environmental and Human Security at Local and Landscape Level with NLP and Geospatial Analysis of a Novel Database of 1500 Project Evaluations. *Land* **2022**, *11*, 123. [[CrossRef](#)]
42. Pettorelli, N.; Graham, N.A.J.; Seddon, N.; Bustamante, M.M.D.C.; Lowton, M.J.; Sutherland, W.J.; Koldewey, H.J.; Prentice, H.C.; Barlow, J. Time to integrate global climate change and biodiversity science-policy agendas. *J. Appl. Ecol.* **2021**, *58*, 2384–2393. [[CrossRef](#)]
43. Chomać-Pierzecka, E. Power of capital as the determinant of innovativeness of the company. *Mod. Manag. Syst.* **2018**, *13*, 195–207.
44. Chomać-Pierzecka, E. Functional controlling in managing of capital the enterprises. *Mod. Manag. Syst.* **2018**, *13*, 63–75. [[CrossRef](#)]
45. Ikerd, J. Business Management for Sustainability. *Sustainability* **2024**, *16*, 3714. [[CrossRef](#)]
46. Rogall, H. *Ekonomia Zrównoważonego Rozwoju: Teoria i Praktyka*; Zysk i s-ka: Poznań, Poland, 2010.
47. Kuciński, K. *Geografia Ekonomiczna*; Wolters Kluwer: Warszawa, Poland, 2015.
48. Szulc-Fiszler, P. Zrównoważony rozwój a granica wzrostu gospodarczego. In *Zasada Zrównoważonego Rozwoju w Wymiarze Gospodarczym i Ekonomicznym*; Rakoczy, B., Karpus, K., Szalewska, M., Walas, M., Eds.; EIKON: Toruń, Poland, 2015.
49. GDP. Wikipedia Wolna Encyklopedia. Available online: [https://pl.wikipedia.org/wiki/Produkt\\_krajowy\\_brutto](https://pl.wikipedia.org/wiki/Produkt_krajowy_brutto) (accessed on 6 November 2024).
50. Trzepacz, P. Zasadny i mierniki rozwoju zrównoważonego. In *Zrównoważony Rozwój—Wyzwania Globalne: Podręcznik dla Uczestników Studiów Doktoranckich*; Trzepacz, P., Ed.; Uniwersytet Jagielloński: Kraków, Poland, 2012.
51. Universal Declaration of Human Rights. Available online: [https://www.unesco.pl/fileadmin/import24/user\\_upload/pdf/Powszechna\\_Deklaracja\\_Praw\\_Czlowieka.pdf](https://www.unesco.pl/fileadmin/import24/user_upload/pdf/Powszechna_Deklaracja_Praw_Czlowieka.pdf) (accessed on 12 November 2024).
52. Kubasik, A. The Factors of Idea and Practice Development of the Corporate Ecological Responsibility, Społeczna odpowiedzialność—Aspekty teoretyczne i praktyczne. *Stud. Ekon.* **2011**, *64*, 53–73.
53. Murphy, M. The social pillar of sustainable development: A literature review and framework for policy analysis. *Sustainability* **2012**, *8*, 15–29.
54. Yli-Panula, E.; Jeronen, E.; Lemmetty, P. Teaching and Learning Methods in Geography Promoting Sustainability. *Educ. Sci.* **2020**, *10*, 5. [[CrossRef](#)]
55. Veinovic, Z. The curricula revision in the context of education for sustainable development: From the perspective of two primary school subjects' curricula. *Zb. Inst. Za Pedagos. Istraz.* **2017**, *49*, 191–212. [[CrossRef](#)]
56. Tilbury, D. *Education for Sustainable Development: An Expert Review of Processes and Learning*; UNESCO: Paris, France, 2011.
57. Komiyama, H.; Takeuchi, K. Sustainability science: Building a new discipline. *Sustain. Sci.* **2006**, *1*, 1–6. [[CrossRef](#)]
58. Kates, R.W. What kind of a science is sustainability science? *Proc. Natl. Acad. Sci. USA* **2011**, *108*, 19449–19450. [[CrossRef](#)]
59. Du, X.; Su, L.; Liu, J. Developing sustainability curricula using the PBL method in a Chinese context. *J. Clean. Prod.* **2013**, *61*, 80–88. [[CrossRef](#)]
60. Filho, W.L. About the role of universities and their contribution to sustainable development. *High. Educ. Policy* **2011**, *24*, 427–438. [[CrossRef](#)]
61. Ortega-Sánchez, D.; Gómez-Trigueros, I.M. Massive Open Online Courses in the Initial Training of Social Science Teachers: Experiences, Methodological Conceptions, and Technological Use for Sustainable Development. *Sustainability* **2019**, *11*, 578. [[CrossRef](#)]
62. Owens, T.L. Higher education in the sustainable development goals framework. *Eur. J. Educ.* **2017**, *52*, 414–420. [[CrossRef](#)]
63. Zamora-Polo, F.; Sánchez-Martín, J.; Corrales-Serrano, M.; Espejo-Antúnez, L. What Do University Students Know about Sustainable Development Goals? A Realistic Approach to the Reception of this UN Program Amongst the Youth Population. *Sustainability* **2019**, *11*, 3533. [[CrossRef](#)]
64. Zadroga, A. Sustainable development as a paradigm of socio-economic development. In *Research Spaces of Young Scientists. Inspiration-Innovation-Implementation*, 1st ed.; Wyd. Katolickiego Uniwersytetu Lubelskiego: Lublin, Poland, 2016; pp. 11–24.

65. Płonka, A.; Dacko, M.; Satoła, Ł.; Dacko, A. The Idea of Sustainable Development and the Possibilities of Its Interpretation and Implementation. *Energies* **2022**, *15*, 5394. [CrossRef]
66. Waas, T.; Verbruggen, A.; Wright, T. University research for sustainable development: Definition and characteristics explored. *J. Clean. Prod.* **2010**, *18*, 629–636. [CrossRef]
67. Wright, T.S.; Wilton, H. Facilities management directors' conceptualizations of sustainability in higher education. *J. Clean. Prod.* **2012**, *31*, 118–125. [CrossRef]
68. Barbier, E.B.; Burgess, J.C. The sustainable development goals and the systems approach to sustainability. *Economics: The Open-Access. Open-Assess. E J.* **2017**, *11*, 1–23.
69. Zaman, R.; Brudermann, T. Energy governance in the context of energy service security: A qualitative assessment of the electricity system in Bangladesh. *Appl. Energy* **2018**, *223*, 443–456. [CrossRef]
70. Flavio, R.; Arroyo, M.; Miguel, L.J. The Role of Renewable Energies for the Sustainable Energy Governance and Environmental Policies for the Mitigation of Climate Change in Ecuador. *Energies* **2020**, *13*, 3883. [CrossRef]
71. European Union. Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 Amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as Regards Corporate Sustainability Reporting (Text with EEA Relevance). Available online: <https://eur-lex.europa.eu/legal-content/EN-FR/TXT/?from=EN&uri=CELEX:32022L2464> (accessed on 12 November 2024).
72. Borys, K.; Krawczyńska-Kaczmarek, M. Standardy Raportowania Zrównoważonego Rozwoju—Wymogi i Przykłady Zastosowania, Uniwersytet Jagielloński, Warszawa. 2024. Available online: <https://jbc.bj.uj.edu.pl/dlibra/publication/1023137/edition/974039> (accessed on 20 January 2025).
73. Escobar, J.A.; Lora, E.E.; Venturini, O.J.; Yáñez, E.; Castillo, E.F.; Almazán, O. Biofuels: Environment, technology and food security. *Renew. Sustain. Energy Rev.* **2009**, *13*, 1275–1287. [CrossRef]
74. Ang, B.W.; Choon, W.L.; Ng, T.S. Energy security: Definitions, dimensions and indexes. *Renew. Sustain. Energy Rev.* **2015**, *42*, 1077–1093. [CrossRef]
75. Wang, Q.; Wang, Q.; Wei, Y.-M.; Li, Z.-P. Role of renewable energy in China's energy security and climate change mitigation: An index decomposition analysis. *Renew. Sustain. Energy Rev.* **2018**, *90*, 187–194. [CrossRef]
76. Omri, A.; Daly, S.; Nguyen, D.K. A Robust Analysis of the Relationship between Renewable Energy Consumption and Its Main Drivers. *Appl. Econ.* **2015**, *47*, 2913–2923. [CrossRef]
77. Park, S.; Salkuti, S.R. Optimal Energy Management of Railroad Electrical Systems with Renewable Energy and Energy Storage Systems. *Sustainability* **2019**, *11*, 6293. [CrossRef]
78. Belmonte-Ureña, L.J.; Plaza-Úbeda, J.A.; Vazquez-Brust, D.; Yakovleva, N. Circular economy, degrowth and green growth as pathways for research on sustainable development goals: A global analysis and future agenda. *Ecol. Econ.* **2021**, *185*, 107050. [CrossRef]
79. Brożyna, J.; Mentel, G.; Ivanová, E.; Sorokin, G. Classification of Renewable Sources of Electricity in the Context of Sustainable Development of the New EU Member States. *Energies* **2019**, *12*, 2271. [CrossRef]
80. Hoppe, T.; De Vries, G. Social Innovation and the Energy Transition. *Sustainability* **2019**, *11*, 141. [CrossRef]
81. Ceccarelli, M.; Glossner, S.; Homanen, M. Catering through transparency: Voluntary ESG disclosure by asset managers and fund flows. *SSRN Electron. J.* **2022**, *1*, 1–51. [CrossRef]
82. Zhang, C.; Jin, S. What Drives Sustainable Development of Enterprises? Focusing on ESG Management and Green Technology Innovation. *Sustainability* **2022**, *14*, 11695. [CrossRef]
83. Raport Brundtland; World Commission on Environment and Development (WCED). *Our Common Future*; Oxford University Press: New York, NY, USA, 1987.
84. Mondini, G. Sustainability Assessment: From Brundtland Report to Sustainable Development Goals. *J. Valori E Valutazioni* **2019**, *28*, 129–137.
85. Chomać-Pierzecka, E. Innovation as an Attribute of the Sustainable Development of Pharmaceutical Companies. *Sustainability* **2025**, *17*, 2417. [CrossRef]
86. Budihardjo, M.A.; Ramadan, B.S.; Putri, S.A.; Wahyuningrum, I.F.S.; Muhammad, F.I. Towards Sustainability in Higher-Education Institutions: Analysis of Contributing Factors and Appropriate Strategies. *Sustainability* **2021**, *13*, 6562. [CrossRef]
87. Chang, Y.-C.; Lien, H.-L. Mapping Course Sustainability by Embedding the SDGs Inventory into the University Curriculum: A Case Study from National University of Kaohsiung in Taiwan. *Sustainability* **2020**, *12*, 4274. [CrossRef]
88. Huijts, N.M.; Molin, E.J.; Steg, L. Psychological factors influencing sustainable energy technology acceptance: A review-based comprehensive framework. *Energy Res. Soc. Sci.* **2012**, *16*, 525–531. [CrossRef]

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