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**THE ROLE OF INFORMATION IN SHAPING SUSTAINABLE HUMAN BEHAVIOUR****Dalia Streimikiene**

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**ABSTRACT.** Encouraging environmentally friendly behaviour in population is one of today's greatest sustainability challenges. Over the last decades, many scientists of environmental psychology, social psychology and behavioural economics studied the dependence of an individual's sustainable behaviour on stratification and various direct and/or indirect factors. External and internal factors determining the individual's behaviour are based on information sources and how, in what way, and at what level the initial data is perceived, as well as how the individual uses such sources. This article conducted in Lithuania aims to find out which information sources an individual is most likely to reach, and what factors would encourage the integration of sustainable natural resource-saving solutions into everyday life.

**Keywords:** sustainable development; sustainability, human behaviour, information, information management, sustainable human behaviour.

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**Introduction**

Humanity today can provide far more information than anyone can absorb, foster far greater interdependence than anyone can manage, and accelerate change far faster than anyone can keep up with (Senge, 1990). Alongside this unprecedented maze of complexity, there is a myriad of systemic disruptions, each with its own ecological, economic and social dimensions. This has led to the development of new concepts, including the concept of sustainable development, which has become the basis for overcoming environmental challenges (Mebratu, 1998).

More than a decade has passed since the terms "sustainable development" and "sustainability" "rose to the importance of a repeated mantra" (Daly, 1996). In 1987, the United Nations has announced its support for the World Commission on Environment and Development. Despite its acknowledged uncertainty and ambiguity, the World Commission on Environment and Development's definition of sustainable development has been instrumental in developing a "global approach" to the future of our planet (Mebratu, 1998; Tsai et al., 2022; Stjepanovic et al., 2022; Guinot et al., 2022).

The concept of sustainable development comes from different perspectives. Some have argued that environmental responsibility has been implemented in companies to avoid sanctions related to environmental laws, while others have claimed that environmental responsibility meets the criteria of moral obligation (Andrushkiv et al., 2020; Bansal & Song, 2016; Matuszewska-Pierzynka, 2021). The variety of interpretations of sustainable development concepts is so wide that by 1992 there were at least 70 different definitions of sustainable development, and in 2007 their number has increased to more than 300 (Johnston et al., 2007). Perhaps this is due to the difficulty of integrating social and environmental aspects while simultaneously pursuing and promoting economic development (Tøllefsen, 2021; Ashrafi et al., 2020; Kowalska & Bieniek, 2022).

Elkington (1999) states that the concept of sustainability is a difficult task. It requires societies to combine some basic principles such as human rights, legal norms, implementation of democracy, citizen involvement, education of the young generation, and economic vitality. Achieving and enshrining these guiding principles requires the cooperation of institutions, businesses and citizens. In other words, the promotion of sustainability or sustainable development is not only a matter of policies set by national governments, but a particularly close cooperation between institutions, companies and citizens (Liu et al., 2015).

In a broad sense, the term sustainability is understood as the search for a balance between economic, social and environmental systems (Strezov et al., 2017). Sustainability can be considered one of the greatest challenges facing humanity today. As mentioned, considering the concept of sustainability includes not only engagement with environmental issues, but also decision-making to improve social and economic problems of society (Parris & Kates, 2003; Magon et al., 2018; Richterová et al., 2021). The latter issues include aspects such as eradicating poverty and hunger, improving the health and well-being of citizens, promoting quality education, achieving gender equality, reducing inequality, promoting decent work and economic growth, and pursuing peace and social justice. These goals are precisely those promoted by the UN's 2030 Agenda for Sustainable Development, which is a call to urgently address sustainability (Tsai et al., 2022; Guinot et al., 2022). This transition to sustainability requires global, ownership and government commitment to provide sustainability leadership and provide the necessary resources to act on this issue. It is also the principles of sustainable development that require commitment at the local level, with cities, governments and local authorities moving towards these principles, applying policy, budget levers and establishing national strategies. This principle of sustainable development is regulated in many national legal acts that regulate activities related to energy, industry, and agriculture (Velasco-Muñoz et al., 2022). Finally, in order to promote sustainability, commitment is necessary both among individuals (individuals) and organizations. This requires that professionals, companies, scientists, civil society, media, trade unions and other stakeholders take the necessary steps to contribute to sustainability (Tsai et al., 2022; Guinot et al., 2022; Morelli, 2013).

The purpose of the article is to determine the impact of information on the sustainable behavior of an individual.

## 1. Literature review

Behavioral economics researchers argue that individual behavior is best understood as problem-solving behavior (Mitchell & Alderson, 1959). This concept highlights the user's motives, desires, and goals, which encourage users to look for the best solution to the situation. Scientists (Engel et al., 1990) note that the individual's behavior includes all the specific actions of the user, which the individual takes after identifying the existing problem: inquiring about the product or service, going to the place of sale of the product/service, choosing, purchasing the product/service. Evaluation of a product or service can occur after purchase, because the way an individual uses the product, feels satisfaction or dissatisfaction with the product, how he responds to the product to others, determines his further use and that of other individuals. An individual's behavior includes a particularly wide spectrum of psychological, social phenomena and actions (Huffman et al., 2003; Pikturnienė & Kurtinaitienė, 2010). These can be motives, attitudes, perceptions, which are natural, depending on previous experience or external stimuli surrounding the individual at a particular moment. It is impossible to know an individual's behavior without knowing his personality, psychographic characteristics and external factors that determine purchasing and consumption decisions - culture, social class, influence groups, family (Pikturnienė & Kurtinaitienė, 2010).

Behavioral economics researchers are seconded by environmental psychology researchers. They study a complex range of interactions between humans and the environment. The field of environmental psychology is a very broad field of individual behavior research with many branches (Kollmuss & Agyeman, 2010). Environmental psychology examines the psychological links between an individual's attitude to the environment and environmentally friendly behavior.

Human behavior is at the root of almost all environmental problems, such as air and water pollution, climate change, deforestation and loss of biodiversity. Most people want to live with care and respect for the ecosystems on which they depend for life. However, we all deal with irresponsible behavior every day that has a negative impact on the environment. We are intelligent, thinking individuals. Why is it so hard for us to change our behavior and take action on environmental issues? One reason is that although our rational mind may know that change is needed, it is not always the rational mind that determines our behavior (Manning, 2009). Anyone who has ever tried to change a habit, even slightly, knows how difficult it is, even if the new behavior has a distinct advantage over the old.

There is no universally accepted and agreed definition of "sustainable individual behavior" to date. Scientists from different countries interpret sustainable individual behavior and accept it in their studies differently, but it is agreed that sustainable behavior is behavior, an individual's action that promotes the development of responsibility for the environment (Dabija et al., 2022). Summarizing the definitions of sustainable behavior presented in the scientific literature and taking into account the current economic environment and development perspectives, we can expand the definition of sustainable behavior as the decisive actions of internal and external factors that satisfy individual needs with the least possible damage to the environment, which promotes a circular economy.

In their work, scientists distinguish different factors that determine an individual's behavior. Summarizing these factors, the article highlights those that have the greatest impact on the sustainable behavior of an individual (Figure 1).

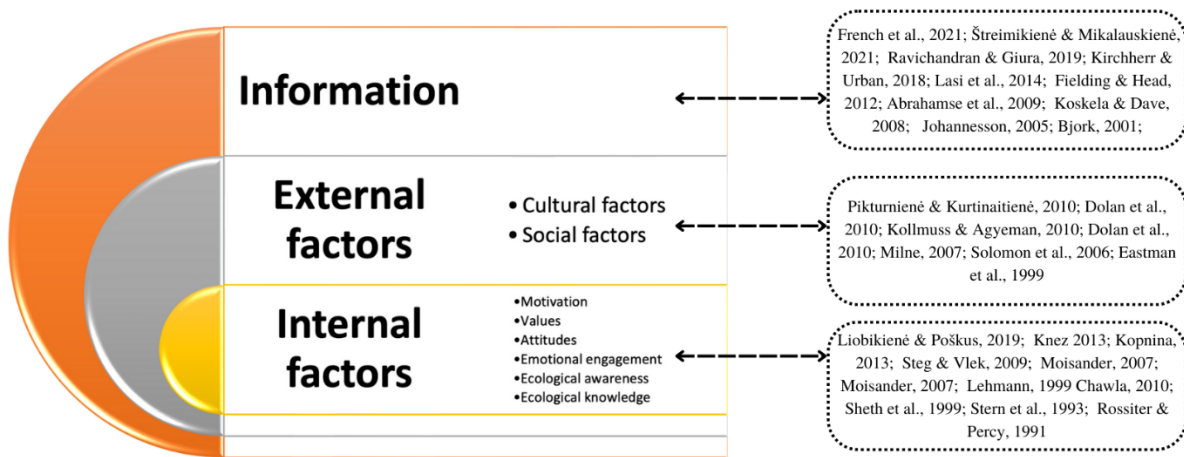


Figure 1. Factors influencing the sustainable behavior of an individual  
Source: created by the authors

**External cultural factors**

Culture is the broadest factor that encompasses all external factors: both social classes and influence groups, as well as the extent to which the family (as a cell of society) exists in a particular culture. The main transmitters of culture from generation to generation are: family, school, professed religion. The influence of culture on an individual's behavior is particularly large, manifesting itself in many ways (Pikturnienė & Kurtinaitienė, 2010).

Cultural factors can manifest themselves through long-term formed values and established general societal norms. Values and norms provide an individual with an understanding of what is acceptable, good, desirable, how to behave or not. When an individual is guided by cultural values, it is clearly understood, not only what is desirable, but also what is undesirable or reprehensible (Pikturnienė & Kurtinaitienė, 2010). These values are stable, to change them requires not one, but entire generations of change. Some spiritual values such as: virtue, friendship, loyalty, have not been distorted and have not changed for millennia. Norms, like values, are valid in everyday life as unwritten, word-of-mouth rules that are instilled in members of the cultural area from an early age (Pikturnienė & Kurtinaitienė, 2010). Norms are more detailed than values, they define what should or should not be done in a shorter context (for example, washing and disinfecting hands more often during the COVID-19 pandemic, or changes in purchasing behaviour, including frequency of purchases, highlighted by Rybaczewska et al.,2021). Culture regulates society with established norms and standards or sanctions for their violation. Existing clear and strict cultural norms partly dictate to the individual how they can or cannot behave (Pikturnienė & Kurtinaitienė, 2010). As an example, environmental policy legislation that applies to both natural and legal persons can be used. These legal acts aim to influence one or another behavior of an individual or company/groups of individuals. With the help of legislation, a cultural norm is inculcated in society to promote "good behavior of individuals" obligating compliance with laws, regulations and other policy mechanisms related to environmental issues (Dolan et al., 2010; Milne, 2007; Oliinyk et al., 2023).

Individuals have different wealth, income, power, educational opportunities, social values and lifestyles. Scientists have divided people with different resources into social classes. Conducted research has revealed that different services, products and stores are perceived by individuals as suitable for certain social classes. Not only the financial capabilities and financial

behavior of social classes differ, but also the priorities for the consumption of goods or services, the decision-making process, reactions to brands, and status symbols (Munson & Spivey, 1981).

Researchers Solomon et al., (2006) state that individuals adhere to purchase criteria specific to their social class not only because of different financial opportunities, but also because of different lifestyles, values or understanding of what is suitable or acceptable for the individual and what is not. For example, individuals of a lower social class are more focused on current needs than on long-term needs. They are more inclined to consider the opinion of family members or the surrounding close environment than to make individual or globally more useful decisions. Individuals of a lower social class are more conservative and more oriented towards family values.

Another term closely related to social class is social status. Social status defines an individual's position in relation to other individuals in various aspects: family status, level of power and influence in certain subcultures, level of consumption (a person who wears expensive clothes can be considered to have a higher social status). Individuals can have a higher social status in their narrow influence groups or subcultures, in any (even the lowest) social class (Pikturnienė & Kurtinaitienė, 2010).

Dawson & Cavell (1987) argue that social status is more easily imitated by consumption. These are attributes that can be immediately noticed and understood as an indicator of a certain social status - clothes, accessories, a vehicle, consumption of certain services/goods. According to the social status displayed to others (consciously or unconsciously), the individual shows the real status or tries to imitate it. Scholars Eastman et al., (1999) refer to this as status consumption. Consumers promoting such consumption seek to improve their social positions through the conspicuous consumption of goods that symbolize status both for the consumer himself and for those important to him.

### ***Internal factor: motivation***

Scientists observing the behavior of an individual state that decisions are motivated. Scientists Sheth et al., (1999), point out that the motivation process of an individual has a certain consistency. The individual receives a stimulus - it can be emotional, physiological or cognitive. As a result, a conditioned reflex - behavior - is stimulated. At this stage, cognitive activity is challenged for the individual, information is sought and the most acceptable solution for the individual is chosen. At this stage, behavior determines the best way to choose a goal, and emotional drive drives the individual's unconscious response. After the individual survives the first stages, there is a division of behavior into pursuit or avoidance. Looking for attractive objects. Avoidance behavior is caused by the desire to defend/avoid certain consequences. The end result of this process is the survival of a new state of the individual. If the new state causes a feeling of satisfaction, the feedback suppresses the stimulus, and if not, the process starts again (Pikturnienė & Kurtinaitienė, 2010).

Motivation is a cause of behavior or a strong internal stimulus, under the influence of which an individual's behavior changes. (Moisander, 2007). Motivation is shaped by intensity and direction (which determines which behavior is chosen from all possible options). Behavioral motives can be overt or covert, conscious or unconscious. Researchers distinguish primary motives, or rather larger motives, that allow one to engage in many behaviors, such as seeking to live an environmentally friendly lifestyle. Selective motives (motives that influence one specific action) are also distinguished, such as whether to ride a bicycle to work even if it is raining or to drive to work in the rain? (Moisander, 2007). On the other hand, there are obstacles to the manifestation of a certain behavior - obstacles that hinder and influence the behavior. Generally, internal barriers to pro-environmental behavior are non-environmental

motivations that are more intense and directed differently. For example, going to work by car because you prefer to be comfortable in your comfort zone rather than cycling - being ecological). This everyday situation is a classic example of how primal motives (environmental values) are overridden by selective motives (personal comfort).

Despite the wealth of existing behavioral information, it is not yet known which variable or variables have the greatest influence on motivating individuals to take responsible environmental action. Behavioral economics researchers distinguish two factors that drive motivation to perform a certain consumption action: needs and emotions. Needs are more focused on human nature. Goods or services must satisfy social, physical or functional needs and objectives. The product or service must promote knowledge and learning (Sheth et al., 1999). Decisions made by an individual to satisfy existing needs can be divided into rational and emotional. If the individual's need was to obtain emotional satisfaction, then he, in a sense, made a rational decision based on an emotional basis. This means that emotions and receiving them become one of the criteria for evaluating a product or service. Most of an individual's decisions are made on an emotional basis. Emotions directly affect the motivation to purchase a particular product or service (Rossiter & Percy, 1991).

### ***Internal factor: Environmental knowledge***

Consumer behavior directly affects the environment. The impact on nature occurs when an individual purchases, provides services, resulting in excess waste (Klößner, 2013; Morren & Grinstein, 2016; Hertwich & Peters, 2009). The ability to create sustainable societies and promote sustainable consumption should be achieved through environmental education (Barth et al., 2014; Salehi et al., 2015; Otto & Pensini, 2017). Since environmentally friendly education is proposed as the main means of influencing sustainable consumption, the impact of environmental knowledge on environmentally friendly behavior is also examined in the literature (Kopnina, 2013; Liobikienė & Poškus, 2019; Musova et al., 2021). Environmental knowledge can be defined as the amount of information individuals have about environmental issues and the ability to understand and assess the environmental impact of these issues. In short, knowledge about the environment includes knowledge about the problem, and about the current effects of the problem. Therefore, one of the strategies for changing people's behavior is to provide them with new knowledge that could influence their attitude towards environmental issues (Steg & Vlek, 2009). Most researchers agree that only a small part of pro-environmental behavior can be directly linked to environmental knowledge and ecological awareness. In a US study Kempton et al., (1995) surveyed a range of groups from those who were highly involved in promoting environmental action to those who they believed to be against or completely passive about environmentalism. Lack of knowledge was found to be equally strong among environmentalists and non-environmentalists. Their study indicated that environmental knowledge in itself is not a necessary condition for pro-environmental behavior (Kollmuss & Agyeman, 2010).

It is unlikely that a person will be consciously concerned about the environment or consciously behave in environmentally friendly ways if they do not know anything about the problem or possible positive actions (Hines et al., 2010). It is clear that people need to have basic knowledge about environmental problems and the behaviors that cause them in order to consciously act in an environmentally friendly way. The research conducted by the scientists complemented the research results obtained by Kempton et al., (1995) in that even very detailed technical knowledge about environmental protection and related problems does not encourage or increase environmentally friendly behavior of individuals (Fliegenschnee & Schelakovsky, 1998).

It is important to note that other incentives (e.g. economic factors) and cultural values may lead people to behave in an environmentally friendly manner without doing so specifically for the sake of the environment, eg: in countries with high fuel taxes, individuals tend to drive significantly less than in countries with fuel taxes are low (Kollmuss & Agyeman, 2010). People automatically, at a subconscious level, react to possible financial losses by withdrawing from such activities and looking for less harmful alternatives. However, some scholars warn that such unconscious pro-environmental behavior can easily be reversed or transformed into an unsustainable pattern because it is not based on values (Preuss, 1991).

### ***Internal factor: Values***

Values are responsible for much of our internal motivation. Scientists Fuhrer et al., (1995) proposed the following hypothesis: the values of a person are most influenced by the microsystem, which consists of the immediate social network - family, neighbors, peer groups, etc., and values are less influenced by the exosystem (Lehmann, 1999).

Nagy (2004) states that the basis of research on environmental values is that each culture has those prevailing values that are learned by each member of society during the socialization process. These dominant values are often communicated along with the main characteristics of the product. These values determine which product will be popular among consumers, but at least accepted by society. In cultures where environmental values are more dominant, environmental protection and the consumption of environmentally friendly products are believed to be of greater importance to consumers. The dominance of environmental values can be manifested in the consumption of organic products. However, the differences in environmentally friendly behaviour can be essential depending on generation, gender, place of living (Holotová et al., 2020).

One way to explore the determinants that shape an individual's environmental values is to study the life experiences that have shaped the beliefs and values of active environmentalists. Chawla (2010), interviewed a number of professional environmentalists in the US and Norway about their experiences and the people who shaped and influenced their decisions to become environmentalists. In addition, she reviewed previous research on the lived experiences of environmentalists. In her research, she retrospectively investigated what factors influenced an individual's sensitivity to the environment. Chawla (1999), defines environmental sensitivity as a tendency to be interested in the environment, to feel concern for the environment and to take active action in preserving it, based on experiences that shape the individual. Chawla (1999) states that there is no single influencing experience that can collectively increase people's awareness, it is a combination of more factors. During the conducted research, Chawla (1999) singled out the most common factors influencing an individual:

- Childhood experiences are related to nature;
- Environmental destruction experience;
- Environmentally friendly family values;
- Organizations protecting the environment;
- Examples of individuals (friends, teachers, etc.);
- Education.

Childhood was mainly influenced by nature and family experiences; in adolescence and early adulthood, the most common mentions were education and friends, and in adulthood environmental organizations (Chawla, 1999). It is important to note that Chawla (2010) did not study factors that promote direct pro-environmental behavior, but indirect pro-environmental actions. Her interviewees were highly active environmentalists, but their commitment to indirect environmental activism did not necessarily mean that these people displayed greater

direct pro-environmental behavior. Nevertheless, her research is valuable in that it highlighted the importance of an emotional connection with the natural environment in promoting environmental awareness and concern for the environment (Kollmuss & Agyeman, 2010).

Based on the scientific literature, it can be said that even if an individual has environmentally friendly values and attitudes, it is likely that he will not behave environmentally friendly in his consumption habits. These barriers are usually associated with the motivational complexity of green consumption (Moisander & Pesonen, 2002).

### ***Internal Factor: Attitudes***

Attitudes are defined as long-term positive or negative feelings about a person, object, or issue. Closely related to attitudes are beliefs that refer to the information (knowledge) a person has about a person, object, or problem (Newhouse, 1990).

Environmental attitudes have been found to have a differential and generally very small effect on pro-environmental behavior. This is surprising because we tend to think that people live by their values. Diekmann & Preisendörfer (1992) explain the discrepancy between environmental attitudes and pro-environmental behavior using a low-cost/high-cost model.

Researchers Diekmann & Preisendörfer (1992) suggest that people choose the environmentally friendly behavior that requires the least cost. In their model, costs are not defined strictly in economic terms, but in a broader, psychological sense that includes, among other factors, the time and effort required for pro-environmental behavior. In their study, they show that environmental attitudes and low-cost pro-environmental behavior (eg, recycling) are significantly related (Diekmann & Preisendörfer, 1992). People who care about the environment tend to engage in activities such as recycling, but not necessarily engage in activities that are more costly and inconvenient, such as driving or taking less public transport. In other words, positive environmental attitudes can directly influence low-cost pro-environmental behavior. Diekmann & Preisendörfer (1992) note that people with a high environmental "level" may be less willing to make more sacrifices in their lifestyles and, the author suggests, are more likely to accept sustainable policy changes that will reinforce pro-environmental behavior, such as higher fuel prices, taxes or stricter building regulations (Lehmann, 1999).

Attitudes can indirectly influence an individual's pro-environmental behavior. Gigliotti's (1992, 1994) study of college students found that those who believed that technology and growth would solve environmental problems were less likely to make personal sacrifices. These findings suggest that people who strongly believe in growth and technological solutions may not see the need for and be less willing to engage in pro-environmental behavior due to perceived lifestyle changes (Gigliotti, 1992, 1994). Values and attitudes undoubtedly play an important role in determining pro-environmental behavior.

### ***Internal factors: Ecological awareness and emotional involvement***

Scientists suggest that environmental awareness has a cognitive knowledge-based component and an emotional-based component. Researchers distinguish several cognitive and emotional limitations (Kollmuss & Agyeman, 2010):

1. *Environmental problems are not resistant.* Most factors of environmental degradation are not immediately tangible (Preuss, 1991). An individual cannot comprehend the amount and extent of damage caused by nuclear radiation, the ozone hole, or the accumulation of greenhouse gases in the atmosphere. Even changes that would theoretically be noticeable, such as the loss of biological species, are not visible to the human eye. We can feel the direct effects



of pollution and destruction of nature, for example: smelling rot in a body of water, which can be affected by agriculture developed near the body of water. Such emerging factors can lead to a decrease in biological species diversity in water, changes in species relationships and toxicity not only to nature but also to the individual himself. This means a time delay: very often we notice changes only when human activities have already caused enormous, sometimes hard-to-repair, damage to nature (Kollmuss & Agyeman, 2010).

Since the majority of environmental degradation is not immediately tangible, information about environmental damage must be transformed into comprehensible, perceptible information (language, pictures, graphs). More often than not, this information will enhance our intellectual understanding without providing a link to our emotional involvement (Preuss, 1991). It's a rare exception when you can find a vivid, provocative image that explains a scientific concept that simultaneously engages people emotionally (a good example of this exception is the so-called "ozone hole"). Relying on secondary information about environmental destruction distances us emotionally from the problem and often leads to disengagement (Preuss, 1991; Fliegenschnee & Schelakovsky, 1998). The need for emotional involvement also explains why campaigns to protect large mammals, aptly named "charismatic megafauna," garner much wider public support than abstract issues such as climate change (Kollmuss & Agyeman, 2010).

*2. Slow and gradual ecological destruction.* Another cognitive barrier is the often very gradual, slow rate of change in environmental change (Preuss, 1991). People are very good at perceiving drastic and sudden changes, but often fail to perceive slow, gradual changes. In many ways, we are similar to the frogs in the famous experiment: when frogs were put into hot water, they immediately jumped out, and when frogs were placed in slowly heated, cool water, the frogs did not respond to changes in water temperature and boiled to death (Kollmuss & Agyeman, 2010).

*3. Complex systems.* Most environmental problems are complex and extremely complex. Individuals are often unable to understand such complex systems and tend to simplify them and think directly as they understand them (Preuss, 1991; Fliegenschnee & Schelakovsky, 1998). This prevents us from understanding the effects of natural destruction. It can also lead to a lack of understanding of the scale of the problem of environmental damage and an underestimation of such a change in time. In general, an individual's perception of information about environmental degradation, a subconscious limitation of perception, seriously undermines our emotional engagement and our willingness to act sustainably (Kollmuss & Agyeman, 2010).

Scientists define emotional engagement as the extent of emotional connection with the natural world. Chawla's (2010, 1999) work suggests that such an emotional connection is crucial in shaping our beliefs, values, and attitudes toward the environment. We see emotional engagement as the ability to respond emotionally when faced with environmental degradation. In other words, it is a person's emotional investment in the problem. Research has shown that women tend to be more emotionally responsive to ecological, global issues (Lehmann, 1999). Grob (1991) hypothesizes that the stronger a person's emotional response, the more likely he is to engage in environmentally friendly behavior.

Scientists say that even if an individual experiences an emotional response to environmental degradation, they may still not act in a sustainable manner. When faced with the effects and long-term consequences of environmental degradation, an individual may feel fear, sadness/pain, anger, and guilt. Emotional response is stronger when experiences are felt directly (Newhouse, 1990; Chawla, 1999). Scientists believe that fear, sadness, pain and anger are more likely to lead to pro-environmental behavior than feelings of guilt. Strong feelings combined with feelings of powerlessness will not lead to active action (Kollmuss & Agyeman, 2010).

Primary emotional reactions to ecological problems, which are primarily experienced and experienced by the individual, are expressions of induced anxiety. As a result, secondary psychological reactions are caused, which seem to aim to isolate the individual from these negative feelings. Very often, those secondary reactions prevent us from acting sustainably. Psychologists distinguish different defence mechanisms. These are denial, rational disengagement, apathy, and delegation (Kollmuss & Agyeman, 2010).

Denial is the refusal to accept reality. A person lives believing in a "lucid dream" (Mindell, 1988) and transforms the received information according to his own version of reality assessment (for example, climate sceptics ignore or reinterpret research conducted by intergovernmental commissions to deny research conducted by scientists, the conclusions reached). Denial will prevent a person from pro-environmental behavior because the person refuses to acknowledge the problem that exists.

Rational detachment is another way to protect yourself from painful emotions. A person who rationalizes has a clear understanding of the issues, but stops feeling the emotions associated with them. This defense mechanism is particularly common among scientists who are often faced with "bad news". Researchers hypothesize that emotionally detached people are less likely to act in an environmentally friendly manner, because their internal motivation to do so is much weaker due to the constant availability of "bad news" that influences their behavioral passivity (Kollmuss & Agyeman, 2010).

Apathy and resignation often result from feeling pain, sadness, anger, and helplessness at the same time. If a person feels that he cannot change the situation, he will likely retreat into apathy, resignation and sarcasm. A person can stop informing himself about environmental issues and focus on different aspects of life. Such a person may still take some pro-environmental actions out of a sense of moral obligation, but is unlikely to become highly proactive (Kollmuss & Agyeman, 2010).

Delegation is a means of eliminating guilt. The delegator refuses to accept any personal responsibility and blames others for the destruction of the environment (e.g. industries, multinational companies, political institutions). Delegating individuals are unlikely to choose pro-environmental behaviors that require personal sacrifices (Kollmuss & Agyeman, 2010).

The sense of responsibility is shaped by the values and attitudes you have. An individual prioritizes the well-being of himself and his family (Stern et al., 1993). When pro-environmental behavior aligns with these personal priorities, motivation to do so (eg, buying organic food) increases.

Knez (2013) suggests that concern and emotional reactions to climate change may be driven by an individual's egoism and altruism in relation to the environment. The scientist justifies such a conclusion by presenting the results of the conducted research. One of the groups of people who participated in the study was rated as having "huge" egoism. The egoism of individuals was identified by finding that the latter are more concerned with issues related to themselves (the immediate environment) and fears about the impact of climate change on the local environment, which indicates a self-interested motive. Another group of individuals participating in the study was rated as "high" altruism, which was identified by observing the individual's expressed concern for other individuals (than himself, his immediate environment) and issues related to nature, which indicates that this group of individuals has a social goal motive (Knez, 2013). This suggests that the value orientations of egoism and altruism related to the environment can lead to concern and convey different feelings about climate change. Accordingly, when promoting sustainable development, policies and actions that preserve the environment, we must bear in mind people's worldviews based on environmental selfishness and selflessness; indicating different goal-directed motivations for climate change decision-making (Knez, 2013).

***The relationship between information and sustainable individual behavior***

A person is always surrounded by sources of information - flows of knowledge. Each person reacts, absorbs, understands and communicates certain information differently. Information is the content of an object perceived by a person, consisting of information data as a primary product or material for acquiring primary knowledge. Information is knowledge that can be transmitted, received, memorized. Information becomes knowledge only when a person wants it, when it is accepted and understood (John B. Anderson & Johannesson, 2005). The word information, depending on the context of use, is usually closely related to the following concepts: meaning, knowledge, instruction, message, communication, representation, mental stimulus. The most popular meaning is scientific, social, political, technical knowledge, transmitted from one person to another orally, in writing or by means of mass communication (through the press, radio, television, cinema). Information is the primary vehicle through which all decisions made are documented, communicated, and shared with others (Bjork, 2001; Koskela & Dave, 2008). Successful information management is the main goal of many individuals, unions, political communities and other organizations. Effective information management for sustainable development is not an easy task. However, its effectiveness affects economic outputs significantly (Bilan et al., 2023).

In order to assess how the countries manage information on the SDGs on a national scale, national and international audit organizations are included in the evaluation processes. Up until now, the main evaluation indicator of information on SDGs has been the level of knowledge gained by the public about specific SDGs, given to the public to know and understand SDGs. Through the prism of explaining the level of knowledge of the SDGs, the aim is to assess the ability of state institutions to implement and lead the country in the direction of the SDGs.

The desire to effectively manage information can be determined by various factors, such as plans to improve the efficiency of business processes, comply with legal requirements and the desire to provide sustainable, efficient and innovative technologies and services. This means that information management requires the integration of multiple technological systems, addressing multiple private and public needs, and addressing complex cultural issues. Information management also includes such systems as: document management, web content management, intranet platforms, digital asset management, learning management systems, collaboration systems - the transition to larger team integration and collaboration at an international level (Robertson, J. 2005).

In the era of globalization, two features of this era have emerged that have played a major role in increasing atmospheric pollution and thus contributing to the adverse effects of climate change. First, it is the mass export of goods over long distances. This globalization-driven process, which is constantly growing, requires huge fossil fuel resources. Second, it is a model of excess consumption created by rich countries and imposed on every region of the world. Combining these two elements, it becomes clear that the liberalization of global markets has also led to the liberalization of fossil fuel extraction, which has a particularly negative impact on climate change. This means that the free market cannot stabilize the situation, because drastic pollution reduction is only possible during economic recession or economic depression (Štreimikiene et al., 2019).

It is becoming obvious that there is a fierce battle between the man-made economic system and the system of our planet. In the face of this contradiction, two mutually incompatible theories emerge: in order to avoid an ecological catastrophe, humanity must use as few natural resources as possible. However, unbridled and uncontrolled expansion is necessary to avoid the collapse of the economic system. However, the concept of reducing the consumption of natural

resources can be accepted by our ideology, it rejects a model of economic planning and management in which low-emitting sectors of the economy expand and high-polluting ones retreat. Meanwhile, by artificially reducing the number of efficient sectors of economic activity (e.g. in case of bankruptcy), the most vulnerable groups of society can be (and are) affected (Kirchherr & Urban, 2018; Štreimikiene et al., 2019).

If we consider sustainable development as a policy goal, an important question is how policy can ensure a more sustainable development trajectory. The trajectory of a society's development is influenced by many important decisions related to investment, natural resource use, lifestyle and consumption, technology choices, and the institutional structure that determines the underlying conditions for these choices. All this can be achieved by applying sustainable development policy (Lasi et al., 2014; Štreimikienė & Mikalauskiene, 2021).

Sustainable development policy cannot be strictly separated from other policies. It is still possible to discuss various policy directions, recommendations for connecting different sectors with environmental protection. Laws attempt to regulate a policy package aimed at defining resources, environmental taxes, promoting ecological agriculture, increasing human and institutional capital, and as a result - scientific research and its development (Ravichandran & Giura, 2019; Štreimikienė & Mikalauskiene, 2021). A policy is necessary to achieve specific policy objectives, e.g. air pollution standards, organic food and health issues, reducing greenhouse gas emissions, generating income for specific groups of people or developing green technology industries. In this way, the development trajectory is obtained as a joint result of many economic and social transactions initiated by government policies, private sector initiatives and consumer choices (Štreimikienė & Mikalauskiene, 2021).

Studies conducted by researchers have found (Abrahamse et al., 2007; Möser & Bamberg, 2008; Abrahamse et al., 2009) that information can increase knowledge but has a minimal effect on behavior. Specific and correct knowledge about environmental issues can to some extent predict pro-environmental behavior (Fielding & Head, 2012), as well as targeted information, can reach a specific person or group of persons by segmenting consumers and selecting targeted groups of individuals to target. real information. (Abrahamse et al., 2007).

Communication and dissemination of information in media campaigns is already quite common, as it is necessary to choose sustainable solutions, multiple use of things, waste sorting, saving water resources or electricity. Discourses projected by the media contribute to the attempt to solve the problem of climate change. With the help of the media, the aim is to inform individuals about sustainable and innovative existing solutions on how to save natural resources and contribute to the implementation of the SDGs. The media engages in social interpretation, helping to transfer certain elements of science into the general culture (Pinheiro & Farias, 2015). Moreover, the individual's decision-making depends not only on the availability of information, but also on the trust in various information sources (Dietz et al., 2007; Lorenzoni et al., 2007). ultimately leads to confusion for the individual, resulting in mistrust of the information received.

Gifford & Comeau (2011) found that informational message orientation influences both mitigation commitment and pro-environmental behavioral intentions. Kellstedt et al. (2008) state that trust in non-governmental organizations, media or political institutions can facilitate or hinder an individual's perception of ongoing changes related to climate change. Spence & Pidgeon (2010) found that the effectiveness of messages also varies depending on the geographic location in which the information circulates, which has differential effects on an individual's sustainable behavior.

In summary, the basis of the external and internal factors determining the individual's behavior are information sources and how, in what way, at what level the initial information data is perceived, how the individual uses them. During the last decades, many scientists of

environmental psychology, social psychology and behavioral economics studied the dependence of an individual's sustainable behavior on stratification, direct and/or indirect factors affecting the individual. Due to the complexity of the situation, there is no single clear answer to the questions asked by scientists regarding people's environmentally friendly behavior and the obstacles to its manifestation. Theoretical and practical schemes, methodologies were created, and a series of studies were conducted to explain the gap between knowledge about the environment and the consistency and stability of demonstrating environmental awareness and environmentally friendly behavior. Although many studies have been carried out, definitive answers have still not been found, although it is recognized that the environmental worldview of individuals varies greatly, depending on the accumulated knowledge about the environment and socio-economic determinants. In order to promote behavioral changes, it is necessary to transfer informational knowledge initiated by the highest authorities, governments, informative and effective informational campaigns, the goal of which is often to change attitudes or to deepen knowledge about an environmental problem and thus to promote behavioral changes. It is believed that this knowledge and information about sustainability should reach individuals as early as possible, and examples of good practice should be shown from an early age (external cultural aspect of the factor), both in the family and in the group collective environment of the young individual. We should not forget to adapt information sources, tools, and presentation methods to various strata of individuals (age, professional, etc. groups). Specific, targeted and specialized environmental circular economy, knowledge marketing could help to solve the change of unsustainable behavior to sustainable behavior.

## 2. Study framework and methods

An informed, sustainable society is civil, responsible and able to implement the goals and objectives of sustainable development. This era is very relevant for the following generations, for their future. Researchers of behavioral economics and environmental psychology note the complex spectrum of interactions between the individual (family, people in society) and the environment, sustainable behavior directly dependent on the received information, external (cultural, institutional) and internal (motivation, knowledge, values, attitude, ecological awareness, emotional involvement) factors. When conducting research in Lithuania, it was aimed to take into account these factors, to find out how respondents receive information about sustainable behavior, what are the sources, what influences Lithuanian residents on sustainability and what can encourage them to become sustainable.

The conducted research is characterized by consistency and uniformity. First, a questionnaire is drawn up. The questionnaire contains closed-ended questions and a five-item Likert scale. The questions in the questionnaire are presented in a comprehensible and clearly arranged manner. The questionnaire consists of two parts consisting of 12 questions:

1. *In the first part* - in the first block of questions of the questionnaire survey, a total of 6 questions were prepared in order to collect data about the respondents participating in the study.
2. *In the second part*, in the second - sixth question blocks of the questionnaire survey, data are collected about the information sources most likely to reach the individual, what influences him, what lack of information is related to the promotion - motivation of the individual's sustainable behavior, a total of 5 questions, a Likert scale is used to mark the answers. For each statement, respondents had to answer "strongly disagree, disagree, have no opinion, agree or strongly agree".

The structure of the question model of the questionnaire survey is presented in Table 1 and the additional Table 2 - the rationale for creating blocks of questions.

## RECENT ISSUES IN SOCIOLOGICAL RESEARCH

Table 1. Questionnaire survey question pattern structure

Questionnaire surveys blocks of questions, their parts	Contents of the question block
The first block.	Data on respondents: gender, age, education, monthly income, marital status, place of residence (county).
Second block.	Information sources through which individuals are most likely to obtain information about sustainable behaviour.
The third block.	Informational sources influencing the respondents to purchase an environmentally sustainable purchase or service.
Fourth block.	The effect of available information on respondents' sustainable behavior.
Fifth block.	Respondents identify a lack of information related to sustainability, sustainable behavior.
Sixth block.	Measures that can further encourage individuals to become more involved in promoting sustainable behaviour.

Source: created by the authors

Table 2. Rationale for creating questionnaire questions

Blocks of questionnaire questions	Contents of the question block	The scientific literature
The first block.	Data on respondents: gender, age, place of residence (county), education, monthly income, marital status.	External social and cultural factors (Pikturnienė & Kurtinaitienė, 2010), Solomon et al., (2006),
Second block.	Information sources through which individuals are most likely to obtain information about sustainable behavior.	The concept of sustainable individual behavior (Engel et al., 1990; Huffman et al., 2003; Pikturnienė & Kurtinaitienė, 2010; Pikturnienė & Kurtinaitienė, 2010, 11-26). Išoriniai kultūriniai veiksniai, (Pikturnienė & Kurtinaitienė, 2010, 28), The importance of information in the context of sustainable development: (John B. Anderson & Johannesson, 2005; Robertson, J. 2005; Bjork, 2001; Koskela & Dave, 2008)
The third block.	Informational sources influencing the respondents to purchase an environmentally sustainable purchase or service.	External social factors Solomon et al., (2006), Internal factor: values. (Lehmann, 1999), Internal factors: ecological awareness and emotional involvement (Stern et al., 1993),
Fourth block.	The effect of available information on respondents' sustainable behavior.	Internal factor: motivation, (Moisander, 2007; Ravichandran & Giura, 2019; Štreimikienė & Mikalauskiene, 2021), Internal factor: Environmental knowledge, (Kollmuss & Agyeman, 2010), (Knez 2013),
Fifth block.	Respondents identify a lack of information related to sustainability, sustainable behavior.	Abrahamse et al., 2007; Abrahamse et. al., 2009; Dietz et al., 2007; Lorenzoni et. al., 2007 Möser ir Bamberg, 2008; Kellstedt et al., 2008; Spence & Pidgeon 2010; Gifford & Comeau 2011; Fielding & Head, 2012; Barth et al., 2014; Pinheiro & Farias, 2015; Salehi et al., 2015; Otto & Pensini, 2017; Liobikiene & Poškus, 2019)
Sixth block.	Measures that can further encourage individuals to become more involved in promoting sustainable behaviour.	External social factors, (Kollmuss & Agyeman, 2010) Internal factor: motivation, (Rossiter & Percy, 1991; Kirchherr & Urban, 2018; Štreimikiene et al., 2019)

Source: created by the authors.

The questionnaire survey was carried out according to a pre-prepared structured questionnaire. The respondents were informed that the questionnaire is anonymous. The survey was conducted in accordance with the main principles of research ethics: research usefulness, respect for personal dignity, privacy, confidentiality, voluntariness, respondents' willingness to participate in the conducted research (Kardelis, K. 2017). Statistical data analysis was performed using the Microsoft Office Excel 2013 computer program.

October 31 - November 10, 2022 the questionnaire was sent to natural persons by random selection. In order for the data to be as accurate as possible, for the participation of as many respondents as possible in terms of age, education, and place of residence, the questionnaire was submitted by requesting to participate in the survey only those persons who meet the research criteria selected by the researchers.

When analyzing the impact of information on the sustainable behavior of an individual, a qualitative interpretation was applied. Qualitative processing is based on responses that reflect different perspectives on a given issue. The answers received by the respondents are interpreted. Also, the application of the descriptive statistics method made it possible to compare the received data, describe them, draw research conclusions, and formulate proposals (recommendations). A total of 243 respondents took part in the survey.

### 3. Research data analysis and discussion of results

*The first block of questionnaire* questions is designed to collect data about the respondents. According to the received data of the respondents who filled out the questionnaire survey, according to gender, women made up 80.7%, men - 18.5%, persons who did not want to specify their gender - 0.8%.

Examining the age distribution of the respondents who took part in the survey, it became clear that the first, largest age group of the respondents who took part in the survey are persons from 49 to 58 years old - 36.2%. The second largest age group of respondents is 39 to 48 years old - 21.8%. The third largest age group consisted of respondents from 31 to 38 years old - 14.8%. The fourth largest age group, 59 to 65, accounted for 14.0%. In the age groups of respondents: up to 25 years - 4.9% and from 26 to 30 years - 4.9% each had the same number of respondents. The least number of respondents were 66 - 75 years and older - in the age group - 3.3%.

Examining the distribution of respondents who took part in the survey by education, it turned out that the majority of respondents have a university education - 67.1%. 23.5% had higher non-university education, 4.9% had professional education, 4.1% had completed secondary education and 0.4% had incomplete secondary education.

The distribution of respondents according to the average monthly income per family member (after taxes), in the vast majority was above EUR 1501 - 27.6%. The group of respondents receiving between EUR 801 and EUR 1100 made up 25.1%.

Distribution of respondents according to marital status: the majority of respondents stated that they are married - 63.0%, divorced - 14.4%, single - 12.8%, cohabiting - 6.6%, widowed - 3.3%. When evaluating the results of marital status, it is likely that the majority of respondents, before making decisions to purchase an item or service, will first of all consult and ask the opinion of the person with whom they share the household. This group of individuals can be most influenced by the opinions of their closest circle of people.

*The second block of questionnaire* questions. This part presents the responses of the respondents visualized and organized in tables. The block of questions is intended to find out which information sources about sustainable behavior are most likely to be available to the

respondent. Obviously, information always surrounds an individual, and he absorbs it in various ways. As a result, it is very important to identify through which information channels individuals are most likely to reach information about sustainable behavior (Figure 2).

It should be noted that the analysis of the received data shows five main sources of information that are most likely to reach individuals: in the first place - social media 75.8%; in second place - radio and television programs 74.1%; in third place - search using online information browsers 69.9%; in fourth place - family *members*, friends, neighbors, co-workers 63.8%; in fifth place - written public sources 47.7%. Attention should be drawn to the particularly sharp increase in the redistribution of respondents' negative answers "completely disagree, disagree". One source of information, which the respondents denied as the most accessible source of information, is the district self-government institutions. It should be noted that the majority of respondents, 63.8%, did not agree to consider local self-government institutions as the most accessible (written, oral, etc.) source of information.

The information presented in Figure 2 about the information sources most likely to reach the respondents was analyzed in more detail, the collected primary data was delved into and the respondents' answers to the statements were analyzed according to the places of residence indicated by the respondents.

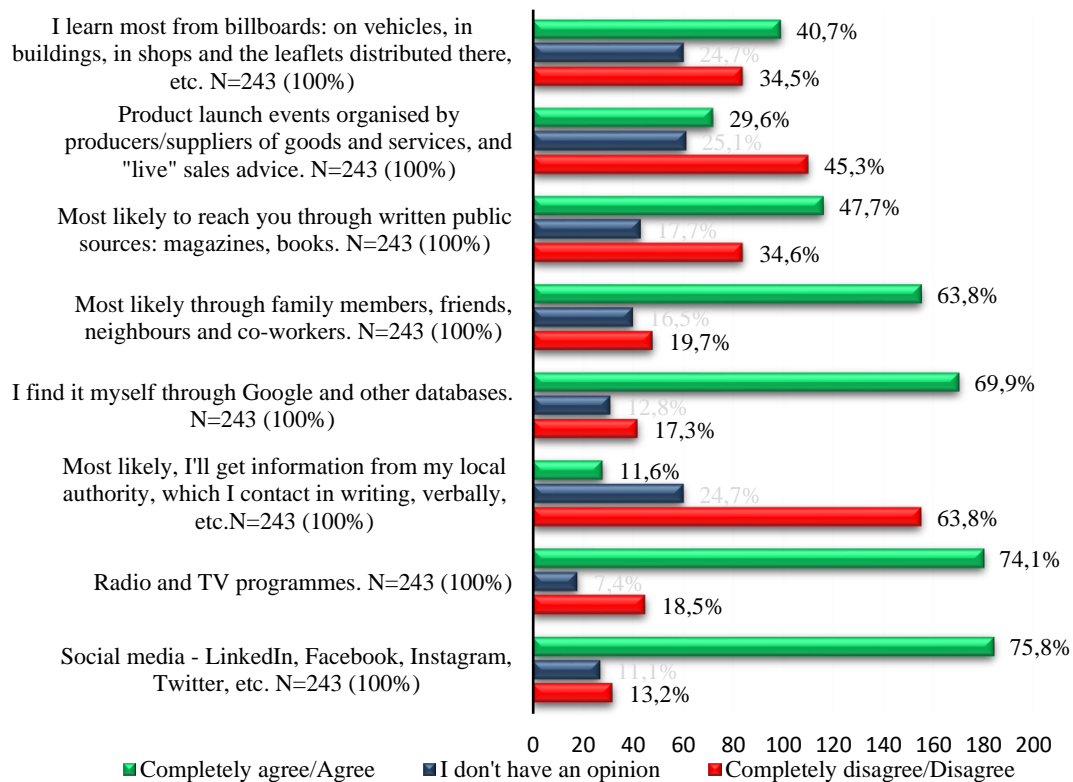


Figure 2. Information sources that most likely reach an individual  
Source: created by the authors.

Based on the received data, and taking into account the fact that the majority of respondents have a higher education, it can be said that the majority of respondents from various counties of Lithuania receive information through the same information channels. When comparing the choices of sources of obtaining information of Lithuanian residents in general, it should be noted that the main source of obtaining information in all counties remained the most accessible and used - the Internet. In second place according to the frequency of choice - radio and television were not chosen and were unpopular in Alytus (0.4%), Panevėžys (1.6%),



Tauragė (1.2%) and Telšiai (0.4%) counties. The third choice is to find information about sustainable behavior on your own through Google and others. databases turned out to be unpopular in Panevėžys (1.6%), Telšiai (0.4%) counties. According to the frequency of choice, the source of information about sustainable behavior of Lithuanian residents is in fourth place, "word of mouth", i.e. through family members, friends, neighbors, co-workers unpopular in Panevėžys (1.2%), Tauragė (1.2%) counties. It can be assumed that these results of "unpopular" choices are determined by the too small sample of the residents of these counties who participated in the survey.

*The third block of questionnaire* questions is intended to find out which information sources influence the respondents the most to purchase an environmentally sustainable purchase or service (Figure 3). Respondents singled out five main prevailing sources of information that influence them to decide to purchase an environmentally sustainable purchase or service. First of all, they rely on science-based knowledge in 80.2%, the second source is the opinion of family members and relatives in 74.6%. The third group of respondents indicated that they are influenced by information transmitted "from mouth to mouth" 68.3%, the fourth place according to the frequency of choice of influence was information distributed on social media 65.1% and the fifth source of information was information provided by store consultants 45.5%. Including the fact that most of the respondents who participated in the study were educated persons (67.1% with higher university education and 23.5% with higher non-university education) choosing to buy an environmentally sustainable purchase or service based on science-based knowledge 80.2%, only confirms the importance of education and society the benefits of education and the necessity to provide the necessary knowledge and behavioral knowledge of sustainability to the public. It should be noted that the majority of the respondents who took part in the study were married according to their marital status, 63.0%, which determined the second most frequent choice to purchase sustainable services or purchases - the opinion of family members, relatives 74.6%. This result confirms the statement of Stern et al., 1993 that "the sense of responsibility is shaped by the values and attitudes that are held. The individual prioritizes the well-being of himself and his family. When environmentally friendly behavior corresponds to these personal priorities, the motivation to do so increases ( eg buy organic food)".

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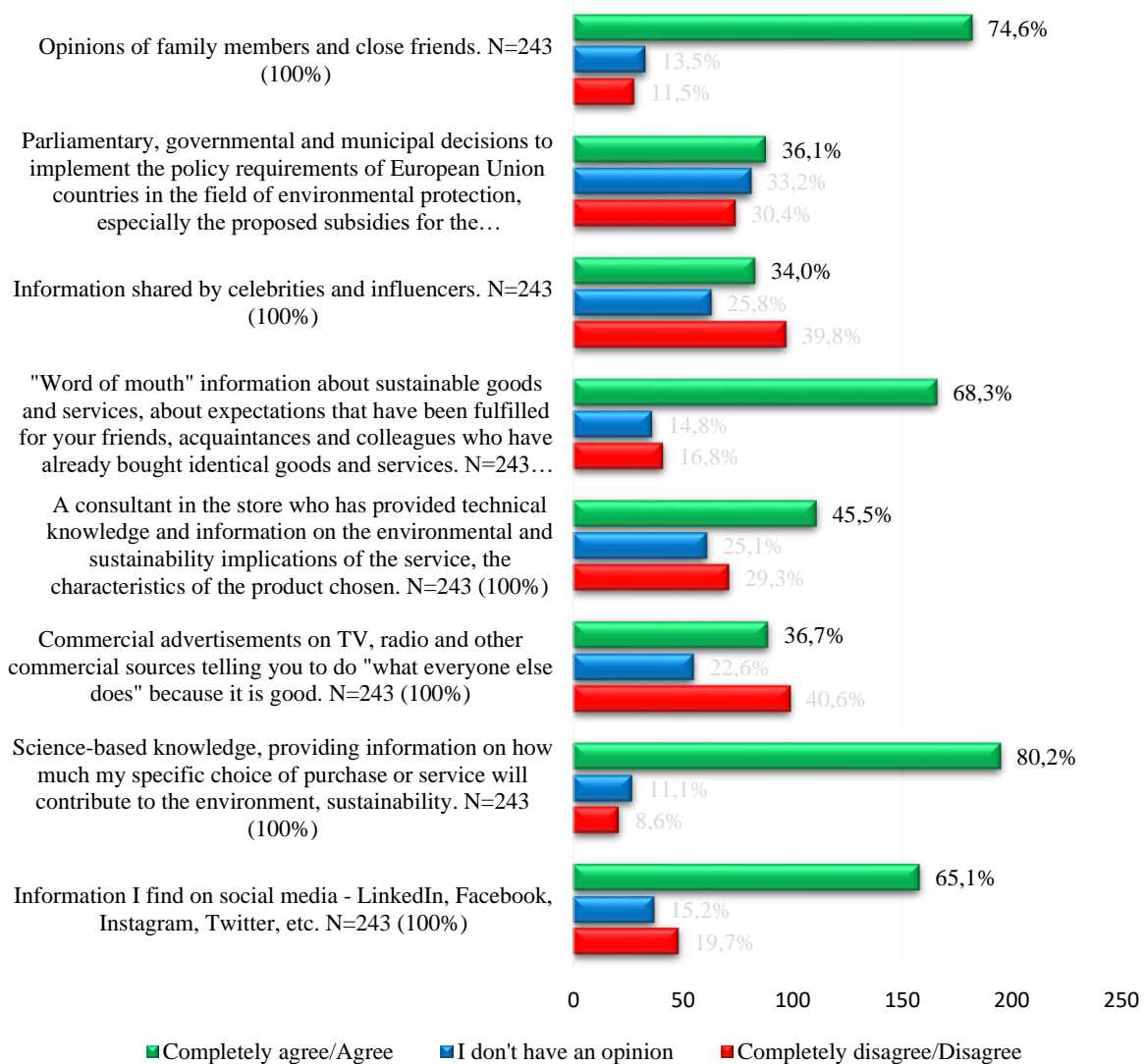


Figure 3. Sources of information that influence an individual's decision to purchase a sustainable product or service. Source: created by the authors.

Taking into account the data in Figure 3, it was also determined that the information sources that least influence the respondents to purchase an environmentally sustainable purchase or service are: advertising heard on television or radio 40.6%, information provided by famous people or opinion makers 39.8% and the Seimas, the government, self-government decisions in implementing the policy requirements of European Union countries in the field of environmental protection 30.4%. It should be noted that Liu et al., 2015 stated that "the promotion of sustainability or sustainable development is not only a matter of policy set by the governments of countries, but a particularly close cooperation of institutions, companies and citizens", but in the case of this study in Lithuania, "closeness" is not observed. These obtained results also show that individual decision-making depends not only on the availability of information, but also on trust in various information sources (Dietz et al., 2007).

The fourth block of questions in the questionnaire is designed to find out the impact of information on respondents' sustainable behavior.

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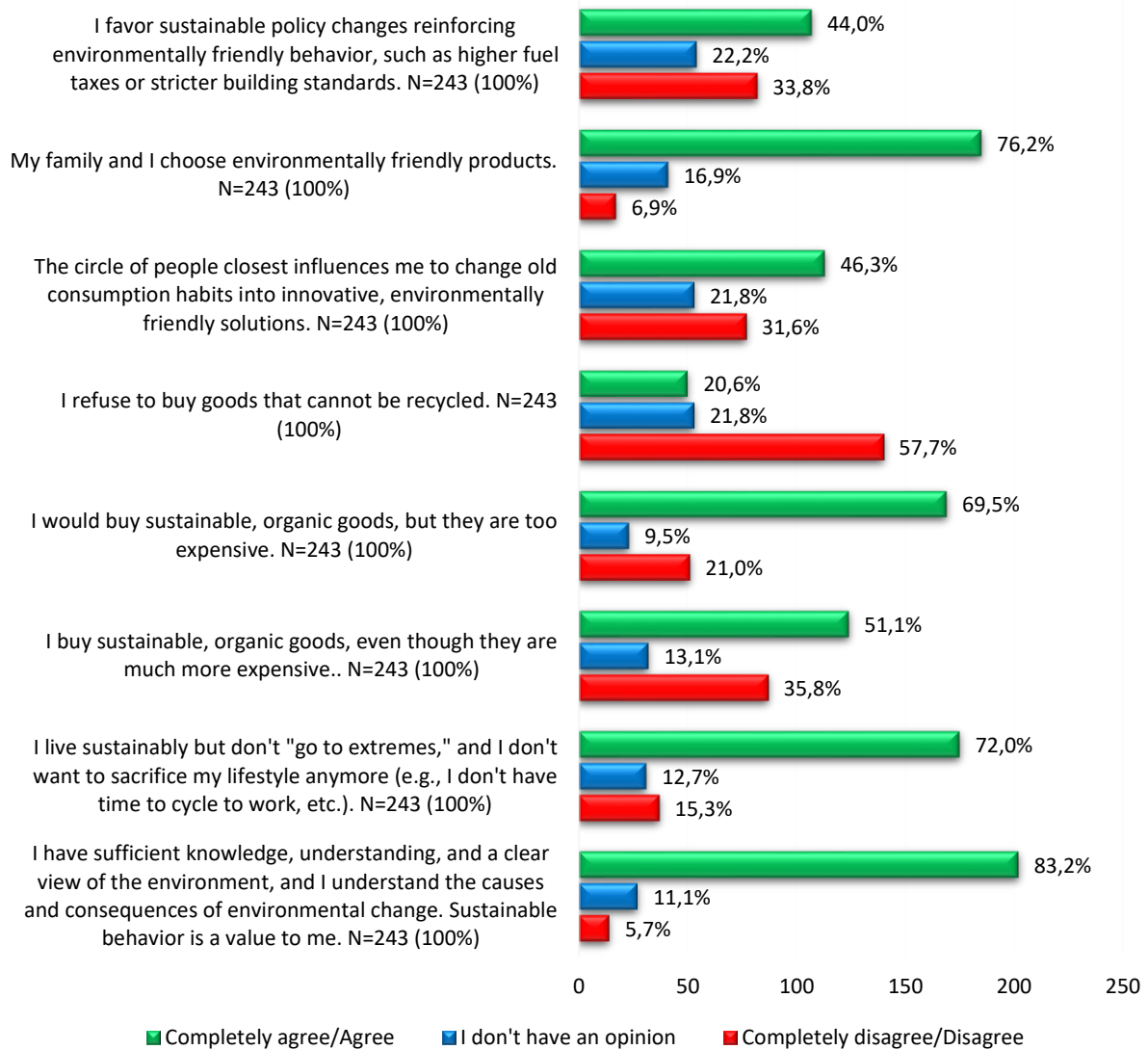


Figure 4. The impact of information on sustainable behavior  
 Source: created by the authors

According to the answers, most of the respondents have sufficient knowledge, awareness and a clear attitude towards environmental protection, they themselves understand the causes and consequences of environmental changes and agree that sustainable behavior is a value 83.2%. However, other statements made confirm the conclusion of scientists Kollmuss & Agyeman (2010) that although individuals have an emotional reaction to environmental problems, they still do not choose environmentally friendly behavior that would require personal sacrifices 72.0%. They do not refuse to use goods that cannot be recycled 57.7%. It cannot be ruled out that the respondents may have a very high environmental "level", but may not want to sacrifice their lifestyle any more, most of them are unwilling to accept sustainable political changes that would strengthen environmentally friendly behavior 44.0% and had no opinion on this topic 22.2 % of respondents (Diekmann & Preisendörfer, 1992). The statement of Diekmann & Preisendörfer 1992 is partially confirmed by the answers received from the respondents (Figure 4), 44.0% of which support political change enhancing environmental behavior, even if it means the emergence of additional taxes.

The responses of the respondents (Figure 4) confirm the results of the studies of Knez (2013), Diekmann & Preisendörfer, (1992) and Lehmann (1999), which indicate that the value orientations of egoism and altruism related to the environment are predominant, respectively, these values can promote sustainable development. Respondents care about environmental protection and related problems, but this does not mean that they will behave altruistically and purchase more expensive goods or services, or choose solutions that are inconvenient for them or their family members. More than half of the respondents say that they would buy organic goods, but they are too expensive for them 69.5%, also some respondents indicated that they buy organic goods even though they are much more expensive 51.1%. It was found that most of the respondents and their family members 76.2% choose organic products, these results confirm Solomon et. al (2006), claims that individuals follow different purchasing criteria, not only because of different financial situations, but also because of different lifestyles, values or understanding; it should be noted that the monthly remuneration of the majority of respondents is over 1101 EUR/month - 72.9%.

Solomon et al. al (2006) states that individuals are more inclined to take into account the opinion of family members or the surrounding close environment, this statement is confirmed by the results of the survey (Figure 3, Figure 4), respondents take into account the opinion of relatives 74.6%, they are influenced by the circle of closest people change formed old habits to new, more sustainable ones 46.3%.

Evaluating the obtained data (Figure 3, Figure 4), it can be said that the knowledge of the respondents about environmental protection is not sufficient to understand the negative changes already taking place in the environment and to evaluate them so responsibly and critically that they refuse comfort and actually behave as sustainably as they are referring to themselves. This is confirmed by the obtained results (Figure 5).

*The fifth block of questionnaire* questions is intended to find out what lack of information related to sustainability is identified by the respondents (Figure 5). The received answers of the respondents show a great need to get knowledge about how sustainable behavior can improve the quality of life of them and their family members, how their sustainable behavior contributes to environmental protection, what are the real benefits of sustainable behavior 71.6%. At the same time, the respondents lack information about ongoing or completed projects related to environmental protection, as well as the importance and benefits of adopted laws for environmental protection 70.0%. Respondents also feel a lack of knowledge of ongoing accounting or calculators as sustainable household solutions improve the state of the environment 68.5%, there is a lack of clear visualizations that can be understood by a person of any education, graphs indicating the current situation in the field of environmental protection 62.5%, there is a lack of information about legislation related with environmental protection 47.3%.

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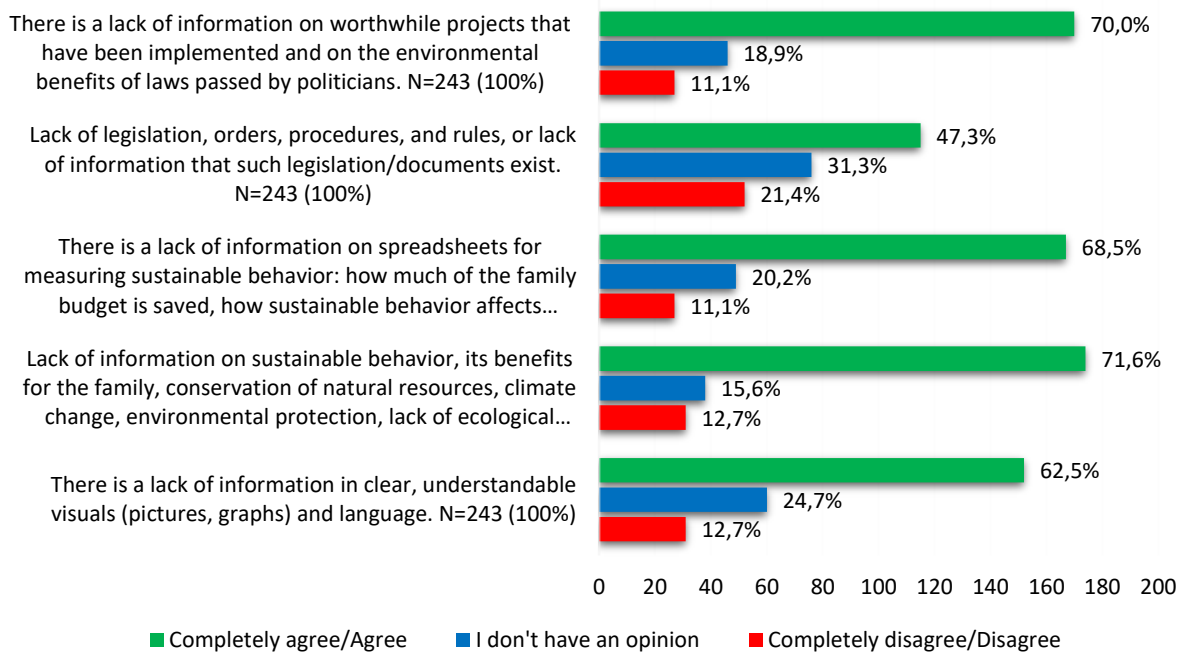


Figure 5. Identification of information gaps

Source: created by the authors

The respondents' answers reveal that there is a huge gap between people and state institutions and organizations. It also confirms the claim of scientists Fielding & Head, (2012) that specific and correct knowledge about environmental issues can reach a specific person or their group by segmenting users and selecting targeted groups of individuals to whom certain information will be addressed.

The sixth block of questionnaire questions is intended to find out what could additionally encourage individuals to become more involved in the promotion of sustainable behavior.

Based on the results obtained, financial additional income could be an incentive for individuals' sustainable behavior and this could stop people's inappropriate behavior - reduce the level of pollution of forests and water bodies by 78.2%, even 45.7% of respondents are convinced that only financial additional income would motivate individuals to behave sustainably. As a result of this, it should be noted that respondents who behave sustainably even without additional financial incentives do not feel satisfied with their positive environmental protection and sustainable behavior, their motivation decreases because they do not receive any feedback on how their actions influence environmental changes 76.6%. These results confirm that motivation is the cause of behavior or a strong internal stimulus under the influence of which an individual's behavior changes (Moisander, 2007).

4. Assessment of research results

Summarizing the results of the study, it is stated that the majority of 83.2% of Lithuanian residents (respondents) have sufficient knowledge, awareness and a clear attitude towards environmental protection, they themselves understand the causes and consequences of environmental changes and agree that sustainable behavior is a value. However, at the same time, there is a great need to obtain knowledge about how sustainable behavior can improve the quality of life of respondents and their family members, how their sustainable behavior would

contribute to environmental protection, and what real benefits can be obtained from sustainable behavior. More than half of the respondents, 70.0%, point to a lack of information about ongoing or completed projects related to environmental protection, as well as the importance and benefits of the adopted laws for environmental protection; there is a lack of knowledge of accounting and calculators. Education does not indicate the level of available information or knowledge specifically in the field of environmental protection or sustainable behavior, but this feature (value) of society assumes that members of society are interested in receiving and disposing of available information that is of interest to them, necessary or additional for sustainable behavior, and are able to share it "from the mouth" to the lips" and it is an important source of information for members of the public.

In the course of the research, it became clear that for the respondents, the highest-level management institutions (the Seimas of the Republic of Lithuania, the Government and local government institutions subordinate to them) are not a clear and high-quality source of information about the importance of sustainability, ongoing/implemented projects and their benefits for environmental protection. The majority of respondents, 63.8%, did not agree to consider local self-government institutions as the most accessible (written, oral, etc.) source of information. It was also found that for 30.4% of respondents, the information source that has the least influence on purchasing an environmentally sustainable purchase or service is the decisions of the Seimas, the government, and self-government in implementing the policy requirements of the European Union countries in the field of environmental protection. Liu et al., 2015's statement that "the promotion of sustainability or sustainable development is not only a matter of policy set by the governments of countries, but a particularly close cooperation of institutions, companies and citizens" is important in the global context, currently in Lithuania (in the case of this study in Lithuania) mentioned. "tightness" is not observed. It is possible that in the absence of information coordination at the highest level, the inefficiency of information disclosure will continue to be observed, and there will be no effective information coordination. This study reveals that there is a huge gap between people and government institutions. Although some respondents behave sustainably, they admit that the incentive for sustainable behavior could be financial additional income that would stop people's improper behavior - pollution of forests, water bodies, 78.2%, and even 45.7% are convinced that only financial additional income would motivate individuals act sustainably. It turned out that the majority of respondents, 76.6%, do not feel satisfied with their environmentally positive and sustainable behavior, have a decreasing motivation, the reason for which is the lack of feedback on how their actions influence environmental changes. Lack of information is observed at all levels of information dissemination.

## **Conclusion**

The concept of sustainability is inseparable from economic (business) sustainability, environmental (ecological) sustainability and social (individual, family, society) sustainability systems. The balance between these systems, the right balance, is particularly important and can be achieved through cooperation between institutions, companies and individuals. Providing and receiving information in the areas of sustainability, sustainable consumption, at all levels is necessary and a priority.

The scientists' statement that even small changes in individual (society) behavior can have a large overall cumulative effect in order to avoid potentially catastrophic global environmental changes is particularly important. This statement must be known to every individual, assimilated at the state level in order to influence and change the normal behavior of the individual (society) towards sustainable behavior. Conscious sustainable behavior must

be a conditioned, necessary reflex. A prerequisite for this is that sustainable consumption information must respond to the provisions of sustainability in a clear, reasonable, unambiguous and non-misleading manner.

In the absence of a unified, universally accepted definition of sustainable behavior of an individual on a global, EU and Lithuanian scale, it is difficult to formulate a policy of sustainable behavior of an individual (family and society). The approval of the definition of the individual's sustainable behavior on a national, EU, and global scale would facilitate the complex examination, management, and dissemination of environmental information, which would also influence the behavior of the Lithuanian individual to change towards sustainable consumption.

Researching and systematizing sources of information according to their fastest availability in shaping the sustainable behavior of Lithuanian residents revealed that information about sustainable behavior is most likely to be accessed through the following sources: social media 75.8%; radio, television program 74.1%; searching for information on their own (search using online information browsers) 69.9%; from "word of mouth" through family members, friends, neighbors, co-workers 63.8%; in fifth place according to the speed of access, written public sources remained at 47.7%, etc.

At the moment, self-governing institutions are not the most accessible source of information on sustainable behavior in Lithuania - the majority of respondents, 63.8%, did not agree to consider local self-governing institutions as the most accessible (written, verbal, etc.) source of information. From this point of view (evaluation), the opinions of the participating respondents from nine counties did not differ. When evaluating the most accessible sources of information, depending on the respondents' place of residence (county), the respondents' evaluation of the most accessible sources differs.

Information sources that influenced respondents to decide to purchase an environmentally sustainable purchase or service: science-based knowledge 80.2%, opinion of family members, relatives 74.6%, information transmitted "from mouth to mouth" 68.3%, information distributed on social media 65.1 % and information from store consultants 45.5% shows the importance of these sources for residents and assumes that these sources are reliable, timeless and valuable, which is especially difficult and important in this modern, fast-growing society; i.e. information must be constantly selected, updated, reviewed, improved, and the public must be informed about reliable sources that disseminate targeted, objective information in a clear, understandable language.

Scientists Kollmuss & Agyeman (2010), Diekmann & Preisendörfer (1992), Preuss (1991) stated at the turn of the 20th and 21st centuries that although individuals have an emotional reaction to environmental problems, they still do not choose environmentally friendly behavior that requires personal sacrifices - are relevant even now. Although the respondents believe that they have sufficient knowledge, awareness and a clear attitude towards environmental protection, and they themselves understand the causes and consequences of environmental changes and agree that sustainable behavior is a value 83.2%, on the other hand, they do not choose environmentally friendly behavior that would require personal sacrifices 72.0%. Thus, evaluating the insights of scientists and this obtained result, it should be noted that even in Lithuania, individuals do not realize that even small changes related to sustainable behavior can lead to huge (fundamental) changes - for this to happen, it is necessary to provide targeted information about sustainability and sustainable behavior to individuals (family, society).

A lack of information on individual sustainable behavior was found among the respondents: how sustainable behavior contributes to environmental protection, what real benefits are obtained by behaving sustainably 71.6%. At the same time, 70.0% of the

respondents note the lack of information about ongoing or completed projects related to environmental protection, as well as the importance and benefits of adopted laws. They point to a lack of knowledge of ongoing accounting or calculators as sustainable household solutions improve the state of the environment 68.5% lack; 62.5% of them lack clear visualizations that can be understood by a person of any education, graphs indicating the current situation in the field of environmental protection, 47.3% lack information about legal acts related to environmental protection. All this presupposes that the management of environmental information is not targeted, complex, and the methods of providing information chosen so far are still inefficient, reaching the individual and, accordingly, the general public in parts, therefore not meeting the needs of the individual (society), and basically, not motivating sustainable behavior.

The results of the conducted research show that the need for information influencing sustainable behavior is still high, residents are aware of its benefits and the potential impact of targeted information and the motivation of financial incentives for their sustainable lifestyle. This presupposes carrying out detailed, broader research in the directions of the effectiveness and expediency of scientific information dissemination, and with the aim of clarifying why in Lithuania state-level, self-governing institutions as sources of information are inefficient and irrelevant to local communities, what help and actions are necessary in this situation to change the current situation.

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