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THE ROLE OF MODERN TECHNOLOGIES IN IMPLEMENTING THE EUROPEAN GREEN DEAL STRATEGY

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Abstract

The European Green Deal is an attempt to transform the European Union's economy in order to achieve climate neutrality by 2050. This is to counteract undesirable climate change and environmental degradation. In this context, an interesting question is the role of new technologies in the implementation of the European Green Deal. In order to be able to answer this research question, this study is divided into few parts. The first one is an introduction to the analysed issues. The second part presents the basic assumptions of the European Green Deal. The third part presents how new technologies can help in the implementation of European Green Deal strategy. The study ends with a summary containing the conclusions of the conducted research.

Keywords: European Green Deal, New Technologies, European Union.

Introduction

In December 2019, the President of the European Commission, Ursula von der Leyen, presented a new strategy for the development of Europe known as the European Green Deal. This is a political initiative to achieve climate neutrality by the European economy by 2050. This means that in 2050, CO₂ emissions in Europe cannot be higher than the amount of CO₂ that will be absorbed, for example by forests or captured and stored underground.¹ At the same time, an increase in the already ambitious targets to reduce greenhouse gas emissions in the atmosphere by 60% by 2030 is being considered. The Green Deal also aims to increase resource efficiency, reduce pollution levels and protect biodiversity on the continent while ensuring social justice. Unlike other EU development strategies or energy strategies, or even the earlier climate targets, the European Green Deal is characterised by a comprehensive and holistic approach². According to the accompanying roadmap, a new legal framework and guidelines for implementation are to be put in place following a review and adaptation of European legislation.

¹ Bolesta, K., Korolec, M., Climate policy as an independent element of the European Union's foreign policy: conclusions for Poland, "Sprawy Międzynarodowe", No. 1, 2020, p. 53.

² Nowak, Z., Europejski Zielony Ład – na drodze do neutralności klimatycznej UE, „Biuletyn PISM”, No. 66, 2021.

Realising the European Green Deal in practice will mean that by 2050 almost all sectors of the economy will have to be decarbonised. All scenarios leading to climate neutrality assume a complete phase-out of coal. The share of renewables will have to increase significantly. Climate neutrality will require large amounts of investment in renewables or technologies to pull CO₂ out of the atmosphere. Far-reaching changes will also be needed in all sectors of the EU economy and in the lifestyles of Europeans, from consumption habits and forms of leisure to the organisation of business and industry. The dominant argument in the public debate on how to combat climate change is the need to economise and to modify current models of consumption. And although this argument is correct and justified, economic theory has known for years that human needs are unlimited and grow with consumption. In addition, the model of capitalist economy prevailing in all the countries of the European Union is based on continuous growth, and therefore one of the key factors which can lead to the implementation of the principles of the European Green Deal is the widespread use of innovation and technology in industry, agriculture and environmental protection. Based on this thesis a research question arises about the role of modern technologies in the implementation of the European Green Deal strategy. An attempt to answer this question will be made in this paper.

1. Background, substance and objectives of the European Green Deal

One of the greatest challenges facing the European economy and politics is to minimise the negative impact of economic processes on climate change by achieving climate neutrality for the EU over the next three decades. This is a huge challenge requiring both a comprehensive strategy and adequate financial resources. According to the objectives adopted by the European Commission, implementation of the European Green Deal will require a rethinking of policy objectives for clean energy supply throughout the economy, in industry, production and consumption, large-scale infrastructure, transport, food and agriculture, construction, taxation and social benefits. The areas requiring the largest changes will be the protection and restoration of natural ecosystems, the sustainable use of resources and the protection of human health. It is in these areas that transformation can bring the greatest benefits to the EU's economy, society and environment³. The necessary digital and technological transformation through increased innovation is also an important element in the implementation of the European Green Deal.

Climate neutrality is to apply to the entire European economy. The European Green Deal is also a plan for the transition to a clean, closed-loop economy, in which pollution will be reduced and biodiversity maintained. An important aspect is social issues - a just transition and a commitment to leave no one behind. The European Green Deal goes well beyond economics, demonstrating a new socially and environmentally sustainable vision for the development of European Union member states.⁴

The energy transition is proceeding at an unprecedented pace. Global electricity production from photovoltaic installations increased by 1630% between 2010 and 2018, from onshore wind turbines by 272%⁵. On the one hand, this is the result of thousands of investment decisions made by investors and

³Communication from the Commission. The European Green Deal, Brussels, 11.12.2019, <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN> [L.s.06.06.2021].

⁴ Gawlikowska-Fyk, A., Polska w Zielonym Ładzie – korzyści, możliwości i ocena SWOT, „Opinie i ekspertyzy OE-307”, Chancellery of the Senate, Warsaw 2020, p. 4.

⁵International Energy Agency, <https://www.iea.org/data-and-statistics/data-browser/?country=WORLD&fuel=Energy%20transition%20indicators&indicator=ETISharesInPowerGen> [L.s.06.02.2022].

companies around the world resulting in the diversification of energy sources and the development of the renewable energy sources (RES) market, on the other hand it is the result of the efforts of countries, governments and international organisations to increase climate ambition. The last major international agreement signed by the world's largest emitters - the so-called Paris Agreement - was signed in 2015. The European Union, as well as Poland, are its signatories.

The countries which have signed the Paris Agreement have committed themselves to limiting the increase in global temperature to well below 2°C above pre-industrial levels and to making efforts to limit this increase to 1.5°C. The European Union wants to be a global leader in the area of climate neutrality and the development of RES, which is to be an opportunity not only to combat climate change, but also to accelerate the modernisation of economies and infrastructure, and economic development. The 3x20 objective formulated by the EU, i.e. increasing by 20% the amount of energy obtained from RES by 2020, improving energy efficiency by 20% and reducing CO₂ emissions by 20%, is a prelude to combating climate change.⁶ The next step is to achieve climate neutrality in 2050 which is to be achieved by pursuing a European Green Deal strategy. Its aim is "to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use".⁷

Implementation of the European Green Deal is to be based on the following strategic elements: energy efficiency, renewable energy sources, clean mobility, competitive industry and the closed-loop economy, development of infrastructure and interconnection between countries, development of the bioeconomy and CO₂ sinks, and CO₂ capture and storage. The European Green Deal, as another tool to achieve the EU's objectives, sets the goal of reducing CO₂ emissions by at least 55% by 2030 compared to 1990 levels⁸. This is linked to the revision and extension of the CO₂ emissions trading scheme (ETS) and the increase in allowance prices.⁹

The European Green Deal also promises to review EU industrial policy and develop commercial applications for breakthrough technologies by 2030. Key areas include:

- clean hydrogen,
- fuel cells and alternative fuels,
- energy storage,
- carbon capture, storage and utilisation.

The European Green Deal also identifies digital technologies, digitalisation, recycling, building renovation, multimodal transport, sustainable food as important tools for achieving its goals. It also refers to the concept of sustainable development, outlining the actions and targets the EU will focus on in the coming years. Businesses, in planning their future activities, are forced to take into account aspects such as:

- ecodesign, which includes the reduction of plastics and the use of recycled materials,
- prevention of waste, including packaging waste,

⁶ Marszałuk, P., Markowski, M., Europejski Zielony Ład – geneza, wprowadzenie i planowane rezultaty, <https://crido.pl/blog-business/europejski-zielony-lad-geneza-wprowadzenie-i-planowane-rezultaty/>, 2.02.2021 [L.s.06.02.2022].

⁷ Communication on The European Green Deal COM (2019) 640 final link: https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0016.02/DOC_1&format=PDF, [L.s.06.02.2022].

⁸ The European Council endorsed this objective in its conclusions of 10-11 December 2020.

⁹ Marszałuk, P., Markowski, M., Europejski Zielony.

- Extended Producer Responsibility (EPR),
- emphasis on decarbonisation and certificates for CO₂ removal,
- non-financial data reporting,
- Green Public Procurement (GPP).

The European Union's climate ambitions will directly affect the activities of many businesses. Increasing the CO₂ emission reduction target and achieving climate neutrality will affect the coal-dependent energy sector the most, causing, among other things, an increase in the price of electricity. This will translate into increased costs for every business and consumer. This process can already be seen in many member states. At the same time, the profitability of industrial production will decrease for those using fossil fuels who are obliged to purchase emission rights.

The European Green Deal is not just about threats, but above all a strong stimulus for economic development. The EU's long-term budget for 2021-2027 of EUR 1,074.3 billion is designed to support the goals set. Together with the EU's €750 billion Next Generation EU recovery facility, the Union will gain €1.8 trillion in resources over the coming years. In line with the conclusions of the European Council of December 2020, which set the direction of EU policies including climate change, at least 30% of total Multiannual Financial Framework expenditure is to be allocated to climate projects, and at least 37% of the Next Generation EU funds to be allocated according to a given National Recovery Plan should be used to support the ecological transition.¹⁰

2. Impact of modern technologies on the implementation of the European Green Deal strategy

The experience of the COVID-19 pandemic demonstrated, on the one hand, the high degree of vulnerability and susceptibility of the global economy to unpredictable and sudden events and, on the other hand, unprecedentedly highlighted the potential in the constantly developing new technologies and how quickly these technologies could be effectively adapted to the needs of the new reality. The digitisation of economic transactions, the development of technologies based on artificial intelligence, or the development of applied biotechnology are just a few examples of how modern technologies have made it possible to combat pandemics effectively. Innovative technologies are undeniably a tool that can help to meet global challenges such as ever-increasing greenhouse gas emissions and the accompanying climate change, the need to reduce the carbon footprint or the production of ecological, readily available food.

Transport, agriculture, construction, finance, the clothing industry, electronics and plastics are just some examples of sectors of the EU economy that are to undergo changes in order to achieve climate neutrality by 2050. Innovation and new technologies are to be the key tools for these changes and the objectives behind them. The European Commission's communication points out, among other things, that "new technologies, sustainable solutions and disruptive innovation are critical to achieve the objectives of the European Green Deal. To keep its competitive advantage in clean technologies, the EU needs to increase significantly the large-scale deployment and demonstration of new technologies across sectors and across the single market, building new innovative value chains".¹¹ Importantly, in the context of the level and

¹⁰ Ibid.

¹¹ See: <https://eur-lex.europa.eu/legal-content/EN-PL/TXT/?uri=CELEX:52019DC0640&from=EN>, [L.s.06.02.2022].

sophistication of development of so-called green technologies to date, Europe is entering this project from a position of global leadership, or at least one of them.

New technologies, such as the Internet of Things, 3D/4D printing, augmented reality/mixed reality/virtual reality (AR/MR/VR), cyber-physical systems (CPS), robotics, novel human-machine interfaces (HMI), artificial intelligence (AI), big data techniques, machine learning (ML), deep learning (DL), 5G/6G connectivity or blockchain, oriented towards sustainability goals, will bring a wide range of breakthroughs in many fields.¹² Green technologies in a broad sense, which are understood as all technologies whose use is less harmful to the environment than their alternatives, can also help achieve the objectives of the European Green Deal. They include techniques and processes for pollution control, products and services that pollute less and use fewer resources, and ways of using resources more efficiently. These technologies are used in economic activities, often resulting in cost reductions and, by reducing the use of energy and raw materials, in improved competitiveness, while producing fewer emissions, pollutants and waste. These potential benefits can also have great significance for the development of individual countries. Appropriate technology transfer can give the right solutions to meet their need for rapid economic growth without causing increased pressure on the local or global environment.

Environmental technologies make it possible to minimise the emission of pollutants and to use natural resources efficiently. They are not only production technologies, but entire technological systems, production processes, products, service, equipment and organisational procedures and management. Actions for environmental technologies, leading to the full use of the potential of ecological innovations, are an important element in strengthening both the environmental protection policy and the state innovation policy. Their aim is to effectively use the potential of technologies to meet environmental challenges while maintaining economic growth and improving competitiveness.

One of the major elements of European Union energy policy is the area of broadly understood customer protection. It boils down, among other things, to measures in the area of ensuring transparency of contractual terms and conditions, protection of vulnerable customers, transparency of dispute settlement mechanisms, freedom of access to the grid and the right to reliable information. At the same time, Community policy promotes market mechanisms which guarantee the protection of the rights of small and vulnerable consumers, the transparency of information regarding the sources of primary energy used to generate electricity, and the assessment of their impact on the environment. The need to build knowledge and awareness among electricity consumers about the structure of the fuels they consume was identified and parameterised a dozen or so years ago in the Directive.¹³ The legislation introduced focused on the need for obliged entities to report data on, among other things, the environmental impact of electricity generation sold in the previous calendar year, in terms of carbon dioxide, sulphur dioxide, nitrogen oxides, dust and radioactive waste emissions.

One of the technologies that can effectively support the achievement of the European Green Deal objectives is the distributed blockchain technology. From the perspective of the subject discussed in this study, the possibility of using blockchain technology in the process of unambiguous marking of energy, i.e. assigning it unchangeable attributes of origin and parameters affecting the environment, seems to be particularly

¹² Fraga-Lamas, P., & Fernández-Caramés, T. M. (2020). Leveraging Blockchain for Sustainability and Open Innovation: A Cyber-Resilient Approach toward EU Green Deal and UN Sustainable Development Goals. In C. Thomas, P. Fraga-Lamas, & T. M. Fernández-Caramés (Eds.), *Computer Security Threats*. IntechOpen. <https://doi.org/10.5772/intechopen.92371>.

¹³ Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC, Official Journal of the EU 15.07.2003, L 176/37.

important. The most important element requiring change would be the need to record emission and environmental indicators in real time and to link this information with the recording of electricity generation by metering and billing devices. This mechanism would have to cover all generation sources, taking into account the different specific emissions characteristics of coal, gas and renewable energy sources. Blockchain technology can also improve the functioning of food supply chains, particularly in those areas relating to agri-food traceability, origin, safety and quality.¹⁴ This is in line with the European Green Deal strategy 'Farm to Fork'. This strategy aims to help the EU achieve climate neutrality by 2050 by shifting the current EU food system to a sustainable model. First experiences and pilot projects show that blockchain has indeed a strong potential to increase transparency in the functioning of food chains.¹⁵ It can, on the one hand, provide a secure and tamper-proof information trail on the origin of products and food quality certificates and, on the other hand, guarantee the actors involved an immutable record of all completed transactions. These benefits are increasingly convincing companies in the agri-food sector and high-tech companies to implement joint, innovative projects on the basis of blockchain.¹⁶

Conclusion

Globalisation processes and the development of economies at the cost of environmental degradation are forcing countries, economic entities and also ordinary citizens to become more active in protecting the natural environment. In limiting the pressure of economic growth and intensifying protection of increasingly endangered natural resources, it is essential to develop clean technologies and ecological innovations. New technologies, including green technologies, contribute significantly to increasing competitiveness and creating new jobs. In the face of contemporary challenges of globalisation, ecological innovations play an extremely important, double role. Firstly, being modern solutions of product, process or organizational nature, they contribute to the development of innovative economic entities. They make it possible to lower production costs, increase competitive advantage on the market or enter new sales markets. This, in turn, is a unique opportunity to create new jobs and reduce the level of unemployment. Secondly, by having a positive impact on the endangered natural environment, they influence the reduction of negative impacts on it or the achievement of greater efficiency in the use of increasingly scarce resources, including energy.

The enormous potential and opportunities arising from real, properly planned and effectively implemented investments in new technologies have long been recognised by European Union institutions. The most recent, comprehensive programme are the assumptions of the so-called European Green Deal. The key tools for these changes and the objectives behind them are to be innovation and new technologies. In the opinion of the European Commission, new technologies and innovation are key to achieving the objectives of the European Green Deal. To maintain its competitive advantage in clean technologies, the EU must

¹⁴ Smit H.: Blockchain: The trigger for disruption in the food value chain. [on line]. RaboResearch. Food & Agribusiness 2017. http://www.tenenga.it/wp-content/uploads/Rabobank_Blockchain_The_Trigger_for_Disruption_in_the_Food_Value_Chain_Smit_Dec2017.pdf [L.s.06.02.2022].

¹⁵ Ge L., Brewster Ch., Spek J., Smeenk A., Top J.: Blockchain for Agriculture and Food. Findings from the Pilot Study. Wageningen Economic Research, The Hague 2017.

¹⁶ Galvin D.: IBM and Walmart: Blockchain for food safety. [on line]. IBM Corporation 2017., [https://www-01.ibm.com/events/wwe/grp/grp308.nsf/vLookupPDFs/6%20Using%20Blockchain%20for%20Food%20Safe%20/\\$file/6%20Using%20Blockchain%20for%20Food%20Safe%20.pdf](https://www-01.ibm.com/events/wwe/grp/grp308.nsf/vLookupPDFs/6%20Using%20Blockchain%20for%20Food%20Safe%20/$file/6%20Using%20Blockchain%20for%20Food%20Safe%20.pdf) [L.s.06.02.2022].

significantly increase the large-scale deployment of new technologies in different sectors and across the single market, creating new innovative value chains.

The European Commission has presented a long list of actions which it intends to take in the coming months in order to increase the competitiveness of the EU economy and entrepreneurs from member states based on the so-called green economy. These actions include, among others, a number of incentives and facilitations in access to the system of intellectual property rights and their effective enforcement.

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ENVIRONMENTALIST CINEMA AND PRINCIPLES OF JUST SOCIETY

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Abstract

The UN Summit on Climate Change in Paris was held in 2015, at which the Framework Convention was signed by many countries around the world, including Georgia. The document is the basis of the EU Green Agreement, which was approved in 2019 and which doubles the commitment of Georgia, a member of the Eastern Partnership, to promote a green economy and culture, which not only is not the case but on the example of Namakhvani HPP reveals the fact that the country has been arranged according to a wrong economic model.

Cinema is the medium that has the most outstanding ability to reorganize the world and, therefore, has great potential. Cinema, as the screen of discourses best reflects a culture that stands out from the point of view of consumer values alike to ordinary people and nature, the environment, ecology. Marx's theory of fetishism, which has evolved since the advent of the term ideology, well explains the attitude of the culture towards natural (or human) resources.

We must not forget that a culture that is a conglomerate of discourses, and like discourses, it is produced by ideology (superstructure). Ideology possesses the intellectual levers through which the dominant forces, the classes, are established by presenting the values of this class as the "norm". Culture, therefore, is directed to save the verticals of power by concealing problems, or by telling incomplete truth. Nevertheless, it is a culture that implies confrontation with the laws of nature and discourses based on those laws. However, first and foremost, capitalist ideology seeks to adapt thought systems to itself, including culture.

Georgian cinema has always had an ideological line, but in the 1960's the process of devaluation of communism in intellectual and creative circles shifted the focus to the problem of individualism. For example, in several of Merab Kokochashvili's films, the mainline is drawn between the relationship of the individual and the environment, where the apparatus (state) is presented only as a clear source of evil. It is regulations that create the environmental context that is the only way to stop profit-oriented destructive systems. Neither competition nor individual or corporate responsibility can solve ecological disasters and human exploitation problems.

In modern Georgian cinema, there are more and more attempts to extract a broader holistic picture of the impact on the environment. Salome Jashi explores the whim of the richest Georgian - the passion for arranging a dendrological park with centuries-old trees, which is a class catastrophe along with an ecological catastrophe. Alexander Koberidze's "What do we see when we look at the sky?" asks the main question, "What do we answer our children" when they discover that they live in an unjust world that is sacrificed to the greed of a small number of people in power.

Keywords: political art; The logic of capitalism; Environmental protection; Contemporary Georgian cinema.

Introduction

The environmental movement in art is born in conjunction with conceptual art. The minimalism from which Land Art originated will look at the environment and ecology from a new perspective. Conceptual art, led by Joseph Kosuth, brings art back to the political arena, while Hans Haacke calls on artists to make "politically engaged" art.¹

In the second half of the twentieth century, art protest took on more concrete and earthly forms than it did before World War II. If previously Luis Buñuel and Max Ernst criticized culture as such, new post-war waves engage in specific political discussion. They aim to explore the world that made World War II possible, and with the war came the concept of segregation, colonialism, exploitation, ecological catastrophes, militarism, and expansion, both militarily and culturally, as globalism and other forms of oppression.

The aim of this article is to understand capitalism through the example of the anti-capitalist movements in both art and green politics that aim to control and regulate production for the benefit of the planet.

1. The Beginnings of Understanding Capitalism in Postwar Art

Modern green politics is based on just such anti-capitalist movements that emerged in the West in the 1960s. Environmentalism refers to the study of cultural-economic models based on fetishistic logic, according to which the exploitation of natural resources proceeds in the same way as before (and now) human resources were treated by excellent classes. Capitalism was exposed and the mask was removed on all fronts in the 1960s, from conceptual art – we can recall Hans Haacke's installation in Krefeld in 1972 of the "Rhine Water Purification Plant", which filtered contaminated Rhine water into a museum and kept goldfish in the pond alive – The Beginnings of Understanding Capitalism in Postwar Art ending with the work of Greenpeace, which was created exactly one year before Haacke's exhibition.

Even today, when environmental movement in the United States, the European Union, and China, for example, is intensifying,² and almost every country is signing a green agreement at the initiative of the West,³ it is due to a 1972 campaign launched by the "Rome Group", one of the oldest environmental societies, aimed at understanding the limits of natural minerals and other resources.⁴

The agreement,⁵ signed in 2015, provided for the creation of a team of scientists to present a special report. Based on the findings of scientists, the US and the EU began working on a green agreement, in 2019 the

¹ "Art Is A Weapon: Hans Haacke on How Art Survived the Bush Administration", Artspace, February 3, 2017, https://www.artspace.com/magazine/art_101/book_report/art-is-a-weapon-hans-haacke-interview-political-art-54590 [L. s. 25.02.2022].

² Lewis, J., Edwards, L., "Assessing China's Energy and Climate Goals", CAP, May 6, 2021, <https://www.americanprogress.org/article/assessing-chinas-energy-climate-goals/> [L. s.25.02.2022].

³ The European Green Agreement was signed in Paris in 2015 and is signed by 196 countries. The document aims to halt the first carbon-neutral continent by 2050 (meaning Europe) and global warming.

⁴ Meadows, D. H., Meadows, D. L., Randers, J., Behrens III, W. W., "The Limits to Growth", Universe Books, 1972.

⁵ UN Framework Convention on Climate Change (Paris Agreement), in Georgian: <https://www.matsne.gov.ge/ka/document/download/3702467/0/ge/pdf>, in English: https://unfccc.int/sites/default/files/english_paris_agreement.pdf. [L. s. 25.02.2022].

EU approved the document, which includes 4 areas: 1. Energy, 2. Buildings, 3. Mobility and 4. Nutrition.⁶ To this agreement was added the European Climate Pact, approved in 2020, which combines three areas and focuses on individual responsibility in all three areas.⁷ This approach is very similar to the reckless campaigns of large corporations that began in the 1970's; for example, "Coca-Cola" developed a marketing strategy in which *individual responsibility*⁸ for environmental pollution was underlined and the entire responsibility fell on consumers.⁹ In this campaign, the corporation called on the buyer to properly manage the waste and said nothing about its own production, which in order to increase profits, moved from glass bottles to plastic packaging, which is still considered one of the main polluting components of the planet. In the pollution of the oceans "Coca-Cola" is followed by "Pepsi" – the second-largest corporation of Big Soda.¹⁰

Fighting against large capitalist forces has become an integral part of modern art. Artists have taken on a role that both the media and the non-governmental sector,¹¹ as well as government agencies and politicians in general, have been unable to cope with; who in fact are in deals with big corporations and often arrange political, economic and sometimes even military interventions in other countries.¹²

"Coca-Cola" has become a symbol of the United States, because before that, if we use the term of György Lukács, it will be subject to reification, that is, in the context of American politics, this product of mass production has developed as a symbol of capitalism. During the Cold War, "Coca-Cola", "Marlboro", and "Levi's" were freedom fighters for the people living beyond the Iron Curtain, for whom the apologetics of consumer relations in a pop culture beyond the curtain evoked fetishistic sentiments toward the West.

The ontology of carbonated beverages, as a chemical food industry in general, is based on the assumption of being a consumer, in the logic of which the consumer is also subject to reification. In this closed circle, capital – money – becomes the object of autonomous fetishization. In the next stage, capitalism is proclaimed as a sacred service to the ordinary consumers, whose every aspect of life is based on consumption – even entertainment is associated only with trade (an attitude of spending free time in shopping malls). Politicians, on the other hand, view the fetishization of money in the spectrum of political theology and prefer to establish the not-so-obvious dogma of capital accumulation to the solution of social

⁶ Mikadze, E., "Europe Green Agreement and its Importance for Georgia", Heinrich Boell Foundation, February 18, 2021, https://ge.boell.org/ka/2021/02/18/evropis-mcvane-shetankhmeba-damisi-mnishvneloba-sakartvelostvis#_ftnref9 [L. s. 25.02.2022].

⁷ European Commission, "The European Green Deal", Brussels, 11 January, <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>, [L. s. 25.02.2022].

⁸ Personal responsibility is the idea in conservatism and libertarianism that people are responsible for the actions they commit or cause. Corporations use this idea to avoid liability for humans and the planet. According to them, the consumption of sugar or nicotine depends on a person's free choice. Also, in the case of ecology, the planet is not polluted by the products they produce, but by the consumers of those products.

⁹ Nestle, M., "Soda Politics: Taking on Big Soda (and Winning)", Oxford University Press, 2015, p. 280.

¹⁰ Big Soda is a term that, like Big Oil and Big Tobacco, refers to a conglomerate of carbonated beverage corporations. In this case, the two corporations of Big Soda are considered to be the major polluters of the planet's oceans. See "Holding Corporations Accountable for the Plastic & Climate Crisis, 2021", *BRANDED*, Vol. IV., 2021, <https://www.breakfreefromplastic.org/wp-content/uploads/2021/10/BRAND-AUDIT-REPORT-2021.pdf>, [L. s. 25.02.2022].

¹¹ Noam Chomsky explores the unity of the American media and non-governmental sector with the government. See Chomsky, N., Herman, S. E., "Consent Making: The Political Economy of the Media", Pantheon Books, 1988.

¹² "The head of PepsiCo is asking President Nixon for help in protecting the interests of the corporation in Chile in the early 1970s, which was won by a force unfriendly to US corporations. The U.S. intervention led to the overthrow and assassination of Chilean President Salvador Allende. Pepsi's similar interference is attributed to Guatemala's internal affairs. Coca-Cola has long been accused of killing a trade union leader in Guatemala in 1978 who worked for their company. "Coca-Cola's labor rights problem in the country lasted until the 1990s, when it was boycotted by trade unions in protest of the company's violent policies." Source: Nestle M., cf. Footnote 9, p. 207.

problems.¹³ Deviations from the canonical approaches of capitalism, such as slowing down economic development, raising taxes for the rich, caring for the expansion of the welfare state, and so on, are declared heresies.¹⁴

Donald Trump withdrew the US from the Paris Agreement in 2017, citing that the decision will help American companies in the extraction of fossils.¹⁵ Trump is based on the weathered notion that man lives in the binary of nature and culture, as Claude Lévi-Strauss explained, on the example of primitive societies,¹⁶ and that the taming of nature is, to some extent, not only the norm but also the cultural debt.

Exactly about subordination to nature is Salome Jashi's documentary "Taming the Garden" (2021), which tells the story of the creation of Shekvetili Dendrological Park, however, actually show us a x-ray picture of how we went against nature and not planted a dendrological park (i.e. growing trees, as it is generally the idea in a species protection park) but created it with perennial trees.

2. Georgian Cinema and Capitalism

Behind Shekvetili Park stands the richest and most influential politician, the former Prime Minister of Georgia Bidzina Ivanishvili, who decided to arrange a park near his residence. We hardly see these details in the film, but over time we learn from the conversations of the characters in the films that Ivanishvili's representatives are buying trees from the population of western Georgia. Some refuse, some agree, again and again due to unbearable social status.¹⁷

The film begins with an image of a forest in which white smoke explores its path. It will be followed by the noise of special equipment and music that prepares the viewer for the impending attack on nature. And indeed, both in the film and in the media before, we have seen the ecological catastrophes that followed the uprooting and transportation of each tree. We also observed the collapse of the state, which not only expressed its powerlessness in the face of the capital, but also stood at its service. The result of the epic tree transportation, in the words of Salome Jashi, is an event beyond good and evil¹⁸ – Shekvetili Dendrological Park, where trees are attached to the ground with the cords, artificially cultivated forest is irrigated with an irrigation system, and electric vehicles drive on the paths.

¹³ To explain the phantasmagoric relationship with the object, which he calls fetishism, Marx refers to the "religiously vague realm." See Marx, K., "Capital", Volume I, Book I, Tbilisi: Sakhelgami, 1954, p. 96. (in georgian) Max Weber extends this view to the concept of disenchantment, which in Georgian translates as "de-magic-ation". See M. Weber, "The Protestant Ethic and the Spirit of Capitalism," London and New York: Routledge, 2005. Consider Capitalism as a Religion Walter Benjamin's essay, Capitalism as a Religion. He says, "Capitalism is an ancient religious culture, without dogmas." See Benjamin, W., "Capitalism as Religion", 1921, available here: <https://cominsitu.wordpress.com/2018/06/08/capitalism-as-religion-benjamin-1921/> [L. s. 25.02.2022].

¹⁴ Speaking at the opening of the 74th session of the UN General Assembly in 2019, Donald Trump named socialism as the main enemy of the planet: "One of the most serious challenges facing our countries is the ghost of socialism. He is the destroyer of nations and the destroyer of societies". See, Remarks by President Trump to the 74th Session of the United Nations General Assembly, United Nations Headquarters, New York, September 24, 2019, available here: <https://trumpwhitehouse.archives.gov/briefings-statements/remarks-president-trump-74th-session-united-nations-general-assembly/> [L. s. 25.02.2022].

¹⁵ Easley, J., "Trump cements 'America First' doctrine with Paris withdrawal", *The Hill*, June 2, 2017, available here: <https://thehill.com/homenews/administration/336014-trump-cements-america-first-doctrine-with-paris-withdrawal>, [L.s. 25.02.2022].

¹⁶ Lévi-Strauss, C., "The Elementary Structures of Kinship", Beacon Press, 1971, p. 3.

¹⁷ In various interviews, Salome Jashi focuses on the motivation for selling wood, that some of the money received was used to finance their children's surgery, etc. cf. C. Nadibaidze, "Salome Jashi Documentary 'Taming the Garden'", *Indigo*, February 1, 2021, available here: <https://indigo.com.ge/articles/salome-jashis-dokumenturi-filmi-motviniereba/> [L.s. 25.02.2022]; Razmadze, G., "Paradise... Paradise? Interview with Salome Jashi", *Kino*, # 3, 2021, p. 75.

¹⁸ Razmadze, G., see footnote 17, p. 77.

This park is not only a symbol of the taming of nature, but also a symbol of subordination of nature by a human. What the feudal lords of ancient times did with sacral legitimacy, modern capitalist feudal lords¹⁹ base their power on money, especially when in this system money is not merely exchanged, and it becomes a source of mythical or metaphysical legitimacy through fetishization.

Salome Jashi sneaks into the Garden of Power, which is spread across the country, as noted by the famous English critic Peter Bradshaw.²⁰ The shooting of the Dendrological Park is a political manifestation of Salome Jashi, who exposes power in exactly the same way that Haake treated institutions and people with power and capital behind them in his series of museums and other investigative projects (MoMA Poll, A Real-Time Social System, Manet/Projekt, The Chocolate Master and so on).

In one of the interviews, Jashi says that she is often asked why he continues to live in Georgia, to which he replies, "Because it makes me angry".²¹ It is the television image that will become the inspiration for this film, a tree floating in the sea that has become an icon of subordination of nature.

Jashi worked in television for a while and is well acquainted with this medium, the power of television imagery, which became the inspiration for her film. Mass communications play exactly the same role in the modern world as art did in the era of classical feudalism, which was still the producer of the value of the ruling elites, hence the classes. Marx called it the superstructure, which was based on oppression to the extent that it was engaged in strengthening the instruments of oppression.²²

Art theorist Boris Groys views contemporary images as a conduit and service to ideology. Takes the example of terrorism and explains the notable aspects of this relatively new phenomenon:

"... as being the “icons” of the hidden, terrible reality that is for us the global political reality of our time. I would say: These images are the icons of the contemporary political theology that dominates our collective imagination".²³

The ideology in the new mass communication media formed as a result of globalization, which stands for the fetishization of commodities, serves to assert the feudalism of the big capitalists. Despite a lot of manipulation, environmental issues are a rubicon that manipulative logic cannot overcome- Even Margaret Thatcher spoke from the UN tribune on the need for climate protection (However, according to some, she needed environmental protection to destroy the coal miners' unions, although we have no direct evidence of this).²⁴

Hence, the activism of previous years has yielded some results, although the green policy still devotes itself to commodity fetishism. Even in the EU Green Agreement, we see a lot of concessions and loyalties towards

¹⁹ The term "big capitalist feudalism" was used by George Stuart Mill in his paper "Socialism" (J. S. Mill, "Socialism: The Subjugation of Women", ebooks, 2021, p. 25. (in georgian)), which in turn was based on Joseph Fourier's notion of "industrial (La féodalité industrielle), which is also explained in detail by the French socialist thinker Victor Consideran in "Social Fate" (V. Considerant, "Destinée Sociale", tome premier, Au Bureau de la Phalange, 1835, p. 194).

²⁰ Bradshaw, P., "Taming the Garden review -fascinating study of a billionaire's destructive folly", *The Guardian*, January 25, 2022, available here: <https://www.theguardian.com/film/2022/jan/25/taming-the-garden-review-fascinating-study-of-a-billionaires-destructive-folly> [L. s. 25.02.2022].

²¹ Wissot, L., "It Was Such a Jiggle of Consciousness, Such a Beautiful Monstrosity...", filmmaker, February 1, 2021, <https://filmmakermagazine.com/111029-it-was-such-a-jiggle-of-consciousness-such-a-beautiful-monstrosity-salome-jashi-on-her-sundance-debuting-taming-the-garden/#.Yfbsuy8RphA> [L. s. 25.02.2022].

²² Balibar, E., "Marx Philosophy", Verso, 2007, p. 50-51.

²³ Groys, B., "Art Power", The MIT Press, 2008, p. 125.

²⁴ Margaret Thatcher's Speech to the United Nations General Assembly (Global Environment), United Nations Building, New York, November 8, 1989, <https://www.margarethatcher.org/document/107817> [L. s.25.02.2022].

big corporations, which are given preferential terms until 2030 and maybe even till 2050. And just at that time Alexander Koberidze's not so the rhetorical question is heard, which he voices in his film "What we see when we look at the sky?" (2021): – "What do we say to our children..."

There are many important shots, episodes or scenes in Koberidze's film, about which much can be said both aesthetically or in terms of a form, as well as for the content and metaphor. This time, however, I would like to highlight the author's direct address, which is expressed in the so-called interlude of the film, between the first and second parts, in the best traditions of Greek theater.

"It would probably be appropriate to say a few words about when the story has happened, said the narrator, whom we are watching together. – What was that time like? – the time was cruel. Merciless. I have no doubt that future people will remember this time as cruel. Just as we find it hard to imagine how people engaged in daily activities when the most heinous crimes were being committed around them, neither can future generations explain our indifference to what is happening around us. For example, how we treat our sisters and brothers in the animal kingdom is unprecedent for history. This year, during fires on various continents alone – in fires caused by greed – an estimated 1,250,000,000 living things were killed. One billion two hundred and fifty million! Infinite examples can be given, but probably it is enough. We have a rough idea of when this story happened [the time in the film, G.R.] and as the children of that time are accustomed to, we should not overlook the above and go back to the narrative."

And towards the finale of the film, with an image of Khvamli Mountain on the background (near which the Turkish company "Enka Renewables" tried and is still trying to build a cascade of hydropower plants, which will destroy the ecology of western Georgia,²⁵ without receiving any energy or financial benefits²⁶) Koberidze takes the viewer out of the film again and addresses him again, this time with a more personal text than in the background of a soccer ball thrown in the river Rioni, which we have already quoted above: "What do I say to my children when they ask me what was the cause of such cruelty, such helplessness. When they ask me, when all this was happening, what was I doing ... I think, because I know they ask me, I do not even have an answer. What can I say, I was making movies ?!".

We can say that Koberidze made a film about greed. The greed that threatens to destroy the magical world that is portrayed in the "what we see when we look at the sky?." The film tells a phantasmagoric story, the love story of a pharmacist girl from Kutaisi and a football player boy, how they meet by chance, how they set a date and how the curse will change the appearance of the young people. Both will appear at the appointed time and place, but obviously they can not recognize each other. During the course of the film, they still fall in love with each other and only in the finale, thanks to the movie, will the curse disappear. The question of the enchantment and breaking the curse of the world is connected with capitalism, which, according to Max Weber, arises in a world that is no longer enchanted by the rationalism of the enlightenment, but then itself becomes a secular religion.²⁷

²⁵ Green Alternative Report, "Namakhvani HPP Cascade Under Violation", February 21, 2021, <https://greenalt.org/namakhvan-hesebis-kaskadis-mshenebloba-kanonis-darghvevit-mimdinareobs/> [L. s. 25.02.2022].

²⁶ The conclusion of the Center for Social Justice, "Namakhvani Cascade Project contains legal violations, high social and environmental risks", July 22, 2020, <https://socialjustice.org.ge/ka/products/emc-namakhvanis-kaskadis-proekti-samartlebriv-darghvevebs-maghal-sotsialur-da-ekologiur-riskebs-sheitsavs> [L. s. 25.02.2022].

²⁷ Weber, M., cf. Footnote 13.

This fabulous plot can be said to be secondary to the many layers of the film that explore the urban space, the unity of the inhabitants of this city – people and animals – with the urban space built on legends and memory. Koberidze is interested in this energy, which he is trying to accumulate in the medium of cinema, so that we know what we will lose when we do not resist the greed for capital.

Groys writes:

"Art always attempted to represent the greatest possible power, the power that ruled the world in its totality – be it divine or natural power. Thus, as its representation, art traditionally drew its own authority from this power. In this sense art has always been directly or indirectly critical because it confronts finite, political power with images of the infinite – God, nature, fate, life, death".²⁸

Alexander Koberidze, together with Salome Jashi, introduced a new type of political activism in Georgian cinema. If before the criticism of the system was always followed by public criticism (neo) liberal concept of individual responsibility (we can recall the films of Nana Ekvimishvili and Simon Gross: "In Bloom" (2013), "My Happy Family" (2017) and many other films of "New Georgian Cinema") first of all, Jashi and Koberidze treat the environment and time²⁹ with care and as a result of the time-consuming process of observation and study, and instead of blaming people, they offer to discuss the roots of the events

Groys views political activism as an integral part of contemporary art. He considers art as a medium and arena for political and social activism:

"The art activists do not want to merely criticize the art system or the general political and social conditions under which this system functions. Rather, they want to change these conditions by means of art – not so much inside the art system as outside it, that is, change the conditions of reality itself. Art activists try to change living conditions in economically underdeveloped areas, raise ecological concerns, offer access to culture and education to the populations of poor countries and areas, attract attention to the plight of illegal immigrants, improve conditions for people working in art institutions. In other words, art activists react to the increasing collapse of the modern social state and try to substitute for social institutions and NGOs that for different reasons cannot or will not fulfil their role".³⁰

Conclusion

The fact that Georgia occupies the worst position in terms of environmental and social state compared to the West is, of course, the merit of the neoliberal agenda. The architect of this arrangement is the Russian oligarch Kakha Bendukidze, who after the "Rose Revolution" came to Georgia from Russia at the invitation of Zurab Zhvania, who more or less suddenly begins to pursue a neoliberal policy. During his tenure (2004-8), almost all enterprises or sectors of the economy of strategic importance fell into the hands of Russian companies and oligarchs. Political elites, the media, and the leading non-governmental sector refrain from evaluating Bendukidze's reforms, and remain silent about the consequences (of Russia's economic and political power). It is at this point that artists at the forefront of the public movement should prepare the

²⁸ Groys, B., cf. Footnote 23, p. 2.

²⁹ Alexander Koberidze lived in Kutaisi for a year before starting filming. Salome Jashi sent a researcher to the site during the preparation period and only after that a „personal research" started on the spot. See G. Razmadze, cf. Footnote 17, p. 74.

³⁰ Groys, B., "In the Flow", Verso, 2016, p. 36.

decolonial movement against the "destructive economic model"³¹ as Heidi Hautala, a member of the Greens / European Freedom Alliance and Vice President of the European Parliament evaluated the protest against the Namakhvani HPP - a protest that exposed the vicious side of Bendukidze's subsequent political and economic formation.

³¹ MEP Heidi Hautala on Protest Against Namakhvani HPP", Interpressnews, June 2, 2021, <https://www.interpressnews.ge/ka/article/658954-evroparliamentari-haidi-hautala-namaxvanthesis-sacinaotbime-sakartvelos-mosaxleobis-am-axali-saxis-mobilizacias-destrukciuli-ekonomikuri-modelis-cinaagmdeg/> [L. s. 25.02.2022].

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EUROPEAN GREEN DEAL STRATEGY AND THE IMPLICATIONS FOR EMPLOYMENT

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Abstract

The European Commission's set of policy initiatives, whose main objective is to achieve climate neutrality in Europe by 2050, is often put against the economic interests of the Member States, especially in the context of the labour market. Many economists, politicians and trade unionist question whether economic growth, job security and climate neutrality in Europe are compatible. To answer this question, the paper is divided into several parts. The first part presents the main principles of the European Green Deal. The second part confronts the costs of introducing new solutions with the unimaginable losses that Europe may incur if the analysed measures are not taken. The third part of the study critically examines the costs and benefits of the European Green Deal from the perspective of the European labour market. The conclusion of the study puts the lie to the erroneous hypothesis of a collision between the European Green Deal and the efficiency of the labour market in Europe.

Keywords: European Green Deal, labour market, employment, climate neutrality.

Introduction

What might have been considered a hypothesis fifty years ago is now an indisputable fact experienced by all inhabitants of the Earth. Climate change has reached an unprecedented scale in the 21st century, and there is no doubt that it is caused by human activity. The World Meteorological Organisation (WMO) reports that 2015-2021 were the warmest years since measurements began in 1850, and the average global temperature in 2021 was 1.13°C higher compared to the pre-industrial era. One of the main contributors to climate warming is the emission of man-made CO₂ into the atmosphere. According to the National Oceanic and Atmospheric Administration (NOAA), atmospheric CO₂ concentration levels are now at a record 419.41 ppm (measured on 30 January 2022), an increase of more than 13% from the 2000 measurement (369.71 ppm). The consequences of an increase in the global average temperature will be melting of the ice caps, sea level rise and an increase in the number of extreme weather phenomena, such as violent storms, catastrophic floods, record heat, droughts and wildfires. These events could lead to the loss of drinking water sources, homes, jobs and vital infrastructure. According to the World Health Organisation (WHO), climate change could result in around 250,000 additional deaths per year between 2030 and 2050.¹ The World Bank predicts that with further environmental degradation, there will be 216 million so-called climate migrants by 2050.² And according to a simulation by the Swiss Re Institute, a 2°C rise in global temperature by 2050 will cause global GDP to shrink by 11%.³ The consequences of climate change will

¹ World Health Organization, Climate change and health vulnerability and adaptation assessment. Geneva 2021, p. 46.

² Clement, V., Rigaud, K. K., de Sherbinin, A., Jones, B., Adamo, S., Schewe, J., Sadiq, N., and Shabahat, E., Groundswell Part 2: Acting on Internal Climate Migration., The World Bank, Washington 2021, p. 80.

³ Swiss Re Institute, The economics of climate change: no action not an option. Zurich 2021, p. 8.

affect every corner of our globe. Paradoxically, however, it is the people in those regions of the globe where the least amount of global warming pollution originates that will suffer most. Around 50% of all carbon dioxide emissions are emitted by the richest 10% of the world's population living in highly developed economies. Meanwhile, global warming is turning the inhabitants of the poorest countries into climate refugees. In the long term, these problems will inevitably lead to an increasing competition for access to limited natural resources, an escalation of economic and political conflicts and, as a result, an aggravation of socio-economic inequalities.⁴

The question of who is responsible for environmental degradation and climate change needs to be answered. The drastic deterioration of the above-mentioned indicators undoubtedly coincides with increasing globalisation, excessive consumerism and the growing power of multinational corporations. The relentless pursuit by these entities of maximising short-term profits is contributing in an increasingly blatant manner to the degradation of the natural environment. Furthermore, the oligopolisation of the global economy is making multinational corporations so powerful that they are increasingly escaping the control of national governments, thus making it impossible to take radical action to counteract their devastating activities. Therefore, is the socio-economic system in which we currently function able to generate a mechanism that will protect society from the consequences of the phenomena it has created?⁵ The answer to such a catastrophic vision of environmental degradation, climate change and the consequent political and socio-economic crisis is the European Green Deal (EGD), which aims to transform the European Union (EU) into a climate-neutral area with a high-tech, resource-efficient and environmentally friendly economy.

Like many regions of the world, the European Union is exposed to all of the above-mentioned consequences of climate change. In the last five years, the average temperature in Europe has been 2.2°C higher than at the end of the 19th century. The wide range of natural disasters caused by global warming results not only in the destruction of infrastructure and workplaces, but also in the loss of human life and health. Based on 2020 data from the European Environment Agency (EEA), losses caused by extreme weather events in the 27 EU member states over the past 40 years have reached nearly €420 billion. For the same reasons, more than 85,000 EU citizens lost their lives between 1980 and 2019. However, the biggest threat to EU citizens posed by air pollution is around 400,000 premature deaths per year.⁶

It has become obvious to EU leaders that a continuation of the current economic policy based on thoughtless and predatory exploitation of the environment will lead to disaster in the long term. One of the most fundamental tasks today is to face the consequences of climate change while maintaining the current rate of economic growth. However, there are serious concerns that the enforcement of the European Green Deal will lead to the loss of many jobs in the economic sectors affected by the restrictions that have been introduced. Critics of the implementation of the idea of sustainable development argue that ignoring the social aspect of such a transformation could lead to the disintegration of the European Union. With the above in mind, an interesting research question is what impact the introduction of the European Green Deal strategy will have on the labour market in the EU. In order to answer this question, the following study will attempt to compare the balance of costs and benefits of introducing new regulations. However, one should not forget about the cited data showing the scale of the climate threat. It would be manipulative not to

⁴ Dahl, M., The European Green Deal and the social market economy, *Sprawy Międzynarodowe*, 74(3), 2021, p. 132.

⁵ Guttman, R., *Eco-Capitalism: Carbon Money, Climate Finance, and Sustainable Development*, Palgrave Macmillan, 1st ed., 2018, p. 35.

⁶ European Commission, *Sustainable growth for all: choices for the future of social Europe. Executive Summary*, Brussels 2019, p. 23.

include in this balance the unimaginable losses that the EU may incur if the analysed measures are not taken. Based on selected statistics and research, a critical analysis will be made of the costs and benefits of the European Green Deal from the perspective of the EU labour market.

1. The main Policy Areas of European Green Deal

The European Green Deal announced in December 2019 is a set of policy initiatives aimed at reforming the European Union's climate policy. As communicated by the President of the European Commission, Ursula von der Leyen, the main objective of the EGD is “to reconcile the economy with our planet, to reconcile the way we produce and the way we consume with our planet and to make it work for our people”.⁷ In fact, the EGD refers to both above-mentioned objectives: to achieve dynamic economic growth based on low-carbon industries while preventing the unimaginable economic, social and environmental damage that would undoubtedly result from doing nothing. This is to be achieved by amending more than 50 European laws and redefining public policy in eight key areas: clean energy, sustainable industry, building and renovation, sustainable agriculture, sustainable mobility, biodiversity, eliminating pollution and sustainable finance. The overarching goal underpinning these initiatives is to reduce greenhouse gas emissions by 55% compared to 1990 and to achieve complete climate neutrality by 2050.⁸

The ‘clean energy’ policy area aims to decarbonise the EU energy system by developing an energy sector based more on renewable energy sources. This is crucial as up to 75% of greenhouse gas emissions in the EU come from energy production and consumption.⁹ The most important objective for achieving the targets defined in the area of ‘sustainable industry’ is the implementation of the Circular Economy Action Plan. As industry is currently responsible for as much as 20% of greenhouse gas emissions, the European Commission's actions aim to reduce the waste of raw materials and, by modernising recycling processes, ensure the re-use of products.¹⁰ Another important area for EGN action is the ‘building and renovation’ sector. Today, the exploitation of buildings accounts for as much as 40% of the energy produced in the EU, which directly contributes to significant greenhouse gas emissions into the atmosphere.¹¹ Therefore, reforms in this area are aimed at promoting and increasing financing for energy-efficient investments in the building sector. An area of transformation as part of achieving the EGN targets that raises major concerns about job losses is ‘sustainable agriculture’. As announced by European Commissioner for Climate Action Frans Timmermans „Farm to Fork strategies point to a new and better balance of nature, food systems and biodiversity; to protect our people’s health and well-being, and at the same time to increase the EU’s competitiveness and resilience”.¹² As food production consumes 69% of extracted freshwater and is responsible for 25-30% of greenhouse gas emissions, the importance of implementing the legislation included in the area on ‘sustainable agriculture’ is crucial to achieving the indicators set by the EGD.¹³ The policy area 'sustainable mobility', which defines measures to reduce pollution emitted by transport, which

⁷ The Italian Association of Energy Economists (AIEE), *Current and Future Challenges to Energy Security*, Rome 2019, p. 267.

⁸ European Commission, *Proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union*, Brussels 2021, p. 1.

⁹ European Commission, *A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy*, COM/2018/773, 2019, Brussels, p. 6.

¹⁰ European Commission, *Circular economy action plan for a cleaner and more competitive Europe*, Luxembourg 2020, pp. 6-7.

¹¹ European Commission, *A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives*, Brussels 2020, p. 1.

¹² European Commission, *From Farm to Fork: our food, our health, our planet, our future*, Brussels 2020, p. 1.

¹³ Gladek, E., Fraser, M., Roemers, G., Sabag Muñoz, O., Kennedy, E., Hirsch, P., *The global food system: an analysis*, WWF Netherlands, Amsterdam 2017, p. 4.

accounts for 25 per cent of the EU's greenhouse gas emissions, is a major opportunity to create new jobs.¹⁴ The goal of producing 30 million zero-emission cars by 2030 and doubling the number of high-speed rail links offers hope for increased employment in these industries. Another element of the EGD is the strategy for the conservation of 'biodiversity'. Around half of the world's GDP is generated by processes dependent on the natural environment. Therefore, about 25% of the European budget for combating climate change will be allocated to implementing organic farming methods, supporting pollination processes, reducing pesticides, restoring free-flowing rivers and reforestation.¹⁵ Equally important from the point of view of the labour market (mainly carbon-intensive production plants and the workers they employ) is another element of the EGD aimed at 'eliminating pollution'. Zero Pollution Action Plan, which aims to achieve zero pollution from all sources, cleaning up air, water and soil by 2050. A final area, crucial to achieving the ambitious targets contained in the EGD strategy, is 'sustainable finance'. To ensure that the above elements of the EGD strategy are financially supported, the European Commission introduced the European Green Deal Investment Plan (EGDIP), also referred to as Sustainable Europe Investment Plan (SEIP). As part of the goals set by the EGD, the European Commission has pledged to mobilise at least €1 trillion worth of investment in sustainable development over the next decade.¹⁶ During the negotiations on budgetary issues, the concept of the EGD and related programmes encountered a wave of criticism not only from the main polluters of the ecosystem, such as powerful transnational corporations representing the oil and coal sectors, but also from the most radical circles advocating a revolutionary ecological transformation and, consequently, a larger pot of money from the EU budget for combating climate change. In turn, fearing criticism from the leaders of several member states and trade union representatives, the EGD found that the transformation could succeed only if the interests of the countries most affected by the changes were taken care of in solidarity, and if appropriate measures were taken to counteract the social exclusion of the most vulnerable professional groups. The result of this concern was the adoption of the Just Transition Mechanism (JTM), which is to take care of the economic sectors and geographical regions that are most exposed to the losses resulting from transition. Consequently, €100 billion will go to economic sectors that rely on fossil fuels or high emission production.¹⁷

2. Costs and benefits of the European Green Deal from the perspective of the European labour market

The European Green Deal is unquestionably a very expensive investment in climate security, both in terms of the costs to the budgets of the EU Member States that it will generate, and also in terms of the loss of many jobs in sectors of the economy whose activities will decline because of the restrictions imposed by the new regulations. On the other hand, the costs associated with a failure to implement the measures set out in the European Green Deal would certainly have disproportionately greater consequences for people, not only financially, but also in terms of health, particularly in regions affected by disasters caused by climate change. In working out the solutions contained in the EGD, the leaders of the member states were guided by the objective of maintaining maximum protection of workers' rights, the welfare of the workforce and intra-EU solidarity in accordance with the UN Sustainable Development Goals and the Paris Agreement

¹⁴ German National Academy of Sciences, Decarbonisation of transport: options and challenges, EASAC policy report 37, Halle 2019, p. 38.

¹⁵ European Commission, EU Biodiversity Strategy for 2030. Bringing nature back into our lives, Brussels 2020, p. 17.

¹⁶ European Commission, Sustainable Europe Investment Plan. European Green Deal Investment Plan, Brussels 2020, p. 6.

¹⁷ European Commission, The Just Transition Mechanism: Making Sure No One Is Left Behind, Brussels 2020, p. 1.

which refers to "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities".¹⁸ Recognising that some environmental restrictions may cause financial losses for both businesses and households, the European Commission has proposed a number of shielding measures to mitigate the negative consequences of the fight against climate change. Among them, it is worth mentioning the Social Climate Fund, which is to provide funding of €72.2 billion for the period 2025-2032 to support the most vulnerable households, transport users and micro-enterprises that will suffer as a result of the introduction of emissions trading for fuels used in road transport and buildings.¹⁹

On the other hand, the European Green Deal, combined with the appropriate economic policies pursued by member states, offers a huge opportunity to create new jobs in innovative and green economic sectors. As the European Commission forecasts, the transformation of the economy into a resource-efficient and environmentally friendly one could create around 1 million jobs in the EU by 2030 and 2 million jobs by 2050.²⁰ An even more optimistic vision for the European labour market emerges from a report conducted by Ernst & Young (E&Y) in cooperation with the European Climate Foundation (ECF). In the energy sector alone, the development of new energy generation projects through photovoltaics, landfill gas or biomass plants, among others, could provide more than a million new jobs.²¹ In the transport sector, the report predicts that an additional one million people will gain jobs through the electrification of transport, the construction of recharging infrastructure for low-carbon mobility, the construction of new high-speed rail links, the development of autonomous vehicles and the expansion of low-carbon public transport.²² Furthermore, in the industry sector, the E&Y report forecasts that projects related to the circular economy, the improvement of industrial processes, the expansion or modernisation of existing plants and the production of low-carbon technologies will employ nearly 300,000 workers.²³ The emerging land use sub-sector combining large-scale afforestation projects, innovative land management technologies, application of modern technologies in agriculture and land reclamation will additionally create nearly 90,000 jobs.²⁴ Another sector that will benefit from investments in greater energy efficiency is the construction industry. Modernising buildings to make them less energy intensive and constructing new infrastructure to obtain energy from renewable sources will lead to an increased employment in this sector. The European Commission forecasts that by 2030 as many as 35 million buildings could be renovated, generating 160,000 additional green jobs in the construction industry alone.

Analysing the EGN assumptions in detail, and in isolation from the over-optimistic assumptions of the European Commission, as suggested by various expert circles, one may also make some suppositions and somewhat more critical comments regarding the changes that will take place in the EU labour market. The European Commission quite ambitiously predicts that job losses in the sector of mining and processing of fossil fuels will be more than compensated by the dynamically developing sectors of recycling and recovery of raw materials or construction and production of equipment to exploit renewable energy sources. It should be noted, however, that such jobs require relatively low qualifications and are associated with relatively

¹⁸ United Nations, Paris Agreement, Paris 2015, p. 2.

¹⁹ European Commission, Proposal for a regulation of the European Parliament and of the Council establishing a Social Climate Fund, Brussels 2021, p. 23.

²⁰ European Commission, Commission presents guide for a fair transition towards climate neutrality. Press release, Brussels 2021, p. 1.

²¹ Ernst & Young, Perspectives on a European green recovery from the COVID-19 pandemic, 2021, p. 20.

²² Ernst & Young, Perspectives on a European green..., op. cit., p. 24.

²³ Ibid, p. 32.

²⁴ Ibid, p. 36.

low pay. In addition, there is concern that technological progress, and in particular the development of artificial intelligence, could very quickly lead to the almost total automation of many of the processes hitherto used in these sectors. Such a risk, bordering on certainty, calls into question the European Commission's optimistic forecasts and suggests that statistics on potential jobs are greatly overestimated. Another striking problem may be the speed of change in the labour market, triggered by the entry into force of new legislation, for example introducing low-carbon solutions in many sectors of the economy. This transition may cause delays in adjustment processes, with some workers losing their jobs and new sectors running out of workers who often must meet higher education, qualification and skill requirements. This situation could lead to structural and technological unemployment spikes. Another aspect which should be emphasised is the risk of unequal distribution of benefits resulting from the generation of new jobs by EGD between EU member states and the large corporations which are often associated with them. For example, the existing giants in the automotive market, taking advantage of subsidies and various financial reliefs, will clearly become beneficiaries of the Sustainable and Smart Mobility Strategy, increasing their competitive advantage in the field of electric cars and their components.

Conclusion

The hypothesis put forward by some politicians, economists and trade unionists that EU climate policy necessitates a choice between dynamic economic growth with full employment and climate change is false. The opposite is true. The European Green Deal can be a guarantee against the progressive devastation of the environment and global warming, and thus a catalyst for green economic growth and the creation of new green jobs.

A successful EU climate policy should be based on long-term investments that finance the transformation of the economy to low-carbon growth and reduce the risk of exacerbating climate change. At the same time, in the short-term, in order to secure the support of society as a whole, climate policy must be inclusive and improve the quality of life and well-being of the entire population. European political leaders have a key role to play in this aspect and should communicate frankly and openly to the public the full range of consequences of the EGD. This transition will not only bring benefits, but also the loss of many jobs and colossal expenditure associated with new investments in low-carbon infrastructure. It will also force society as a whole to make often difficult to accept changes in the way we travel, consume and use energy. Only by meeting these challenges and accepting many sacrifices can we create new, innovative and environmentally friendly sources of economic growth and, consequently, new jobs.

Another important issue, which is the source of much of the criticism in the publications analysed, is the fact that the conversion of the existing business model to a zero-carbon economy will require colossal investments in adapting the professional skills of employees and adjusting the infrastructure in many enterprises. However, money spent on these purposes does not guarantee rapid economic benefits for businesses or the certainty that vulnerable professional groups will find work in the new sectors of the economy. In this context, the €1 trillion promised by the European Commission may not be enough to meet the EGD's targets. Such a financial perspective also breeds frustration among those advocating a more radical transformation, in the face of the much larger funds spent by the EU to rescue the banking sector after the 2008 economic crisis.

Implementing the ambitious plans set out for the EU under the EGD will require cooperation at all levels of government, solidarity between member states, trade unions' trust and the support of citizens. If any party

reneges on its agreements to protect the interests of individual states or vulnerable groups, climate change will exacerbate the consequences of years of inaction on climate policy, which are already hitting economies, households, businesses and workers hard. In the absence of solidarity and cooperation, there will be no winners. No action is not an option

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THE EUROPEAN “GREEN AGREEMENT” AND ITS IMPACT ON GEORGIA'S ENERGY SECTOR

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Abstract

Energy is a key field of not only economic, ecological, climatic, but also political challenges and risks of modernity. Special attention is paid to the energy sector in the context of global climate change. Increasing the use of solar, wind, hydropower, geothermal energy and biomass will reduce greenhouse gas emissions and switch to fossil fuel-based economies of clean sources. The European Union- goals to replace traditional energy with renewables - are becoming more ambitious each time. The “Global Green Agreement”, which should be the basis of the EU's economic vision, provides additional incentives for this.

In the paper has been conducted an energy economic analysis of Georgian energy; Have been discussed the target indicators and characteristics of the energy sector; The most important tasks of energy security, energy saving and raising the level of energy efficiency is formulated; The directions to solve these problems are outlined in this work.

Second of all, Georgia should try to engage in a series of radical, revolutionary changes known as the "4th Energy Transition." With this transition, the use of fossil fuels will be reduced to a minimum in the next 10 years, and in 2050 the correction of "carbon neutral" energies around the world is announced. The use of solar and wind energy requires backup capacities, the cheapest source of which is again hydropower. In the paper we have substantiated and analyzed the most important issues of the need to develop hydropower resources and give recommendations based on research. In our opinion, in order to deepen political and economic relations with the EU, it is important to gradually bring Georgian legislation closer to the European one, which will help establish a concrete, transparent and efficient energy market model, create an attractive and stable investment environment, develop energy resources through the development of renewable energy resources and the implementation of energy efficiency measures.

On the other perspective the Green Agreement” of Europe is a long-term path to the transition to a low-carbon economy, in accordance with the terms of the Paris Agreement. It envisions Europe as the first

carbon neutral continent by 2050. To achieve this goal, the EU plans to reduce emissions by 50% by 2030 compared to 1990. Naturally, this can only be achieved through the adoption and implementation of relevant strategic documents and decisions. Accordingly, our paper discusses the main essence of the Green Agreement, the challenges associated with its implementation and its impact on the future of the Eastern Partnership, especially Georgia.

Keywords: Energy legislation, Energy security, Emissions Reduction, Renewable Energy Resources.

Introduction

Paper presents potential, economic and forecasting reserves of alternative energy sources (hydropower, solar, wind, geothermal water, biomass and hydrogen). Based on the generalization of the results of many years of research, we have an analysis of the energy sector of Georgia, which allowed us to study the current state of the country and its development trends.

While working on the article, we got acquainted with the European Green Agreement in detail, conducted an energy economic analysis of Georgia, reviewed the target indicators and characteristics of the energy sector, formulated energy safety, energy saving and energy efficiency issues.

1. Energy resources of Georgia

Is our country ready for the implementation of the "Green Agreement" in Europe?

In 2014 Georgia undertook the obligation to harmonize with the third package of EU energy legislation under the Association Agreement. What kind of progress may this process has made in the country and to what extent is our energy sector policy in line with the requirements of the European Energy Union?

For the proper functioning of any field, it is important to have relevant laws in the country, strategic short-term and long-term action plans, existence of specific implementing bodies and definition of their functions, systematic scientific or small practical research, access to necessary technologies, awareness of target groups and more. We may wonder: What challenges the energy sector faces and what needs to be done to strengthen and develop it?

According to the document of the main directions of the State policy in the field of energy of Georgia, the goal of the energy policy of the country is to improve its energy security, which ensures the implementation of national interests by providing sufficient, high quality, continuous and affordable energy. Energy policy identifies the main directions of the field:

1. Diversification of energy supply sources, optimal utilization of Georgia's energy resources and creation of reserves;
2. Utilization of renewable energy
3. resources of Georgia;
4. Gradual integration of Georgian legislation with EU legislation;
5. Development of the Georgian energy market and improvement of the energy trade mechanism;
6. Increasing the role of Georgia as a transit country of the region;
7. Production of clean energy and becoming a regional center for trade in this energy;
8. Develop and implement a unified approach to energy efficiency;
9. Consideration of environmental components during the implementation of energy projects;
10. Improving the quality of service and protecting the interests of the customer.

Despite these areas of energy policy set in 2015, which focus on issues important for the development of the sector, the country still does not have an action plan for strategic energy development. Work has been underway on renewable energy and energy efficiency action plans, although none of the documents have been approved. The country also has not defined the share of renewable energy sources in total energy consumption by 2022, but Georgia is very rich in renewable, non-traditional energy resources, although it can not boast of its level of utilization, follow it consistently. When discussing Georgia's renewable resources, we should first of all mention hydropower, solar, wind, geothermal water, biomass and hydrogen.

2. Hydropower

Our rivers contain a huge amount of hydraulic energy and to some extent fill the shortage of fuel in the country. The existence of powerful hydropower resources in Georgia is directly related to its mountainous terrain. Water flows from the Great Caucasus Ridge and the little Caucasus Mountains create a powerful supply of hydropower due to a sharp drop in short distances. This is especially true in western Georgia.

In total, 26 thousand rivers are registered on the territory of Georgia. Their total length is about 60 thousand km.

According to the Georgian Hydroproject, 319 rivers are distinguished from the total number of rivers in terms of energy value, with a total annual potential capacity of 15.63 million kW, and an average annual energy of 135.8 billion. KWh.¹

Favorable conditions for hydropower construction in Georgia are created by the fact that 40% of the technical hydropower resources of the 319 rivers registered here come from the eight main rivers (Mtkvari, Rioni, Enguri, Tskhenistskali, Kodori, Bzipi, Khrami and Aragvi). The distribution of economic hydropower by rivers is given in Table №1.

Table №1. Economic potential of Georgian rivers;

Name of the River	Economic potential, Billion kWh / year	Share of economic resources %
Enguri	10.7	27.4
Rioni Tskhenistskali	8.3	21.3
Kodori	5.7	14.6
Tusheti Anlazani	3.8	9.7
Mtkvari Aragvi	3.5	9.0
Bzhipi	2.5	6.4
Khrami and Paravani	2.0	5.1
Shaori and Tkhibula	0.8	2.1
Small rivers	1.7	4.4
All	39.0	100.0

¹ Chomakhidze, D., Chomakhidze, K., Chomakhidze, I., "Peculiarities and Principles of Energy Management", Tbilisi-2020.

Georgia is especially rich in relatively small rivers. According to the Scientific Research Institute of Energy and Hydraulic Structures, their technical potential is 12.3 billion annually kWh.

In recent years, the institute has developed 300 schemes for the use of small and medium rivers, including 229 small rivers. Small hydropower plants can be built on these rivers, with a unit capacity of 1 to 20 megawatts. 229 small HPPs can be located in 47 districts of the country. 155 of them can be built in 28 districts of western Georgia and 73 in 19 districts of eastern Georgia. The total capacity of small hydropower plants is 2.1 million kW. They will be able to generate 12.3 million kWh of electricity annually. Western Georgia accounts for 66.7% of capacity and 68.38% of output. The data presented here indicate that Georgia is a typical country of hydro resources. It will not only meet the country's electricity needs, but also allow us to sell some of the cheap energy to neighboring states if used wisely.²

3. Wind Energy

Georgia has significant wind energy potential, which is practically not used now. As special studies show, in theory, the wind energy supply in the territory of Georgia is 1.31012 kWh per year, and the wind energy supply of more than 4.0 per second speed in the depleted zone exceeds almost 4.5 billion kWh per year.

According to the Production Center of the Georgian Technical University, the average annual wind speed in the country varies from 0.5 to 0.5-0.9 meters per second. The decrease in speed is observed in places relatively protected from the wind - in deep valleys, in the lowlands of Kakheti. High speed (more than 6 m / s) is typical for high and open places of the Great Caucasus Ridge and South Georgia. In some parts of the country, wind speeds often exceed 15 meters per second. Such places are: Rioni and Mtkvari valleys. In the first case, the wind reaches its maximum speed in K. In Kutaisi, in the second case - in Tbilisi-Samgori. The average number of strong winds per year in these areas reaches 35. This indicator is equal to 88 in Kutaisi, 132 in Tbilisi, the number of strong windy days in a separate year exceeds 120, in Tbilisi - 170. High frequencies of strong winds are noted on open mountain peaks and passes. For example, the number of strong windy days in Kazbegi averages 98 per year, in Mta-Sabueti - 142; Here the maximum - 222 days was celebrated in 1954. The territory of Georgia is zoned according to the natural energy potential of wind. In particular, the whole area is divided into 5 zones. The first zone (with a working period of more than 5000 hours) includes Ninotsminda, Akhali Shahr, Oni, Kutaisi districts. Here we can effectively use wind units of all capacities. In the second zone (Kobuleti, Gardabani, Kazbegi and other districts). The total duration of active winds is 4500-5000 hours per year. Here it is advisable to operate mainly medium (several hundred kilowatt capacity) wind machines. In other zones, where a large part of the area suitable for wind use is located in Khashuri, Gori, Lanchkhuti, Tskhinvali and other districts, we can successfully use small-capacity wind engines.³

The existing micro-relief of the territory of Georgia is a very important factor for the wind regime. This is especially felt in the Mtkvari and Rioni valleys. The most windy area in the West Georgia is in the Poti-Supsa district and near the Surami ridge and in the East Georgia – in Gori and Tbilisi. The average annual

² Chomakhidze, D., "Georgian Energy in Numbers", (Economic-statistical indicators of the field development), Tbilisi, 2021.

³ Vezirishvili-Nozadze, K., Pantskhava, E., Renewable, non-traditional energy resources management and development of their development program in Georgia ", International Scientific Conference " Science for Practice and Development ". February 22-24, 2019, Baku, Azerbaijan.

wind speed in this zone exceeds 4 m / s, while in the whole area this figure is in the range of 0.5-0.9 meters. Table #2 shows the total duration of the active wind speed by seasons.

Table №2. The total duration of the active wind speed according to the seasons of the year;

Station	Wind speed							
	Winter		Spring		Summer		Autumn	
	≥ 3	≥6	≥3	≥6	≥3	≥6	≥ 3	≥ 6
Gagra ridge	1029	445	959	356	503	87	904	312
Mamison Pass	1856	895	1605	606	1753	599	1766	751
Kazbegi (highland)	1132	872	1143	810	1085	687	1231	921
Chkhratskaro	1800	1100	1753	923	1615	791	1566	635
Rodionovka	1469	687	1373	448	1502	401	1453	412
Poti	1210	573	1222	421	1126	162	722	261
Batumi	1782	896	1382	420	1520	204	1558	533
Jvari	1066	789	884	549	467	196	1072	726
Samtredia	1121	452	1134	407	716	132	737	255
Kutaisi	1635	959	1688	1002	1323	569	1368	640
Sabueti (Mountain)	1724	1055	1871	1146	1805	958	1727	1058
Kobuleti	1037	444	1091	418	779	202	930	359
Skra	862	535	1492	834	1459	567	1204	599
Tbilisi Airport	894	663	1194	802	1396	908	954	639
Rustavi	861	513	1140	648	1237	700	893	475
Martkopi	755	521	836	568	892	670	762	531

In general, the first and second zones are especially important out of the 5 zones which are zoned according to the natural energy potential of wind. The seasonal nature of wind speeds throughout the year is evident throughout Georgia. In the mountainous zone of the Great and Little Caucasus, as well as in the Kolkheti lowlands, the maximum value of the average monthly wind speed is observed in the winter period from November to March, and the minimum - in the summer from May to August.

The compilation of the wind energy cadastre in the Republic is of great importance for the definition of wind resources and its practical use. Intensive work was carried out in this direction in Georgia. Back in 1959, A.G. Balabuev and I.S. Meskhi theoretically assessed the wind energy supply in the country, as well

as calculated the amount of possible energy production. Later, E.M. Sukhishvili conducted surveys on wind speed and directions and compiled a map of the distribution of these meteorological parameters. Significant scientific-research and organizational work in this direction was carried out at the Transcaucasian Scientific-Research Hydrometeorological Institute, as well as at the Scientific-Research Institute of Energy and Hydraulic Structures, in Georgian Wind Energy Atlas, in various scientific-research organizations. In these organizations, in addition to the latter, similar work was carried out on other non-traditional forms of energy. Meteorological stations contributed to the study of wind energy.⁴

These materials are the basis for the assessment of existing wind energy resources in Georgia, which is given above.

4. Solar Energy

According to the Hydromedcenter, the total solar radiation capacity is 4.1023 kilowatts. From here to the earth comes about 1014 kilowatts of power, which corresponds to 1015 kWh of energy. The distribution of the sun on the earth is extremely uneven and averages 1 kW per 1 sq. M. Georgia, as a southern country, is rich in solar energy and is located in the so-called In the "sun belt of the world" (45 ° north latitude - 45 ° south latitude). The theoretical amount of solar energy that falls on our territory during the year reaches 1014 kWh, or 32.5 billion. Tons of conventional fuel, which is about 1600 times higher than the current level of consumption of the country's fuel resources.⁵

In most parts of Georgia, the annual duration of sunshine is quite long and ranges from 200 to 250 days. For a continuous duration of solar energy flow, see Table №3.

Table №3. Continuous duration of solar energy flow, in % ;

Station	Duration of working period, hours					
	≥ 4	≥ 6	≥ 8	≥ 10	≥ 12	≥ 14
Winter						
Tbilisi	9	6	1	-	-	-
Sokhumi	10	7	5	1	-	-
Jvari Pass	13	10	7	1	-	-
Rodionovka	13	10	6	1	-	-
Summer						
Tbilisi	28	24	20	14	8	1
Sokhumi	25	22	18	15	10	2
Jvari Pass	15	11	8	4	1	-
Rodionovka	28	23	18	14	9	2

⁴ Vezirishvili-Nozadze, K., Pantskhava, E., "Energy efficiency - the cornerstone of modern development of the country", III International Conference, Economic, Legal and Social Problems of Modern Development. 2019, September 20-21.

⁵ Vezirishvili-Nozadze, K., Pantskhava, E., "Analysis of the Development of the Electricity Sector in Georgia and Shadows (Results)", II International Scientific-Technical Conference "Modern Energy Problems and Ways to Solve Them", Tbilisi, Georgia, 2020, 10 December.

According to the representatives of the solar companies, the number of consumers of solar panels has significantly increased since 2018, and in 2019 “we have a situation where the demand is 5 times higher than in 2018. Tomorrow will raise all. This is inevitable,” said a spokesman for the Solar Systems Company. According to the data requested from GNERC, as of September 27, 2019, up to 120 micro-power stations with a total installed capacity of up to 1,300 kilowatts are included in the net metering system. Experts say that although, on the one hand, public awareness about solar systems is low and, on the other hand, it is difficult for a large part of the population to access solar e-mail. By making an initial investment in the stations, the Georgian society is generally open to new technologies. So, in their opinion, in case of increasing their awareness, the consumption practice will soon increase.

5. Thermal Waters

These resources are one of the most studied types of in-depth ground heat and are associated with groundwater thermal waters. Georgia is one of the richest countries in the world with such waters. The total forecasted supply of thermal waters (water temperature 50-110 ° C) is 250 million cubic meters. Thermal waters were used for thermal energy purposes in communal farming (Tbilisi, Zugdidi, Saberio, Rechkhi, Kindgha), in greenhouses (Okhuri, Kindgha, Anara, Vani, Kodori), for technological needs in the tea industry (Kindgha, Zugurdidi, Tbilisi) Nakalakevi, Ujarma, Menji, Simoneti, Kvareli), in pig farms (Khobi, Mtskheta) etc. The forecast supply of thermal waters on the territory of Georgia is located according to the following basins (see Table №4).⁶

Table №4. Major thermal water Pools and forecast supplies;

Pools	Million cubic meters annually	% Of the sum
The southern slope of the Caucasus	2	0,8
Apkhazeti	34	13,6
Kolkhida	81	12,4
Imereti	50	20,0
Adjara-Trialeti	36	34,4
Tbilisi suburbs	40	16,0
South Georgia	7	2,8
Georgia - Total	250	100,0

⁶ Vezirishvili-Nozadze, K., Jishkariani, M., Pantskhava, E., "Energy efficiency - the most important factor in the growth of the country's energy independence", International Scientific and Practical Conference, "The World of Science and Innovation", 10-12 February 2021. London.

The highest temperature (80-106 ° C) is in Okhuri, Zugdidi, Tsaishi, Kindghi, Kvaloni wells; The number of deposits where the water temperature is around 50 degrees is also important. These are Tbilisi, Kulevi, Samtredia, Menji, Rechkhi and other wells. The temperature of Tskaltubo, Mokvi, Tsikhisjvari, Besleti, Udabno, Akhaldaba, Sulori and other ores is in the range of 30-40 ° C, and their average water temperature is about 80 ° C.

As for the mineralization rate, according to the Georgian Hydrogeology and Engineering Ecology Sector, it in most cases ranges from 0.9-2.2 grams per liter, and this rate is about 1 gram in more than half of the water received. Gas content is also low.

According to the data of 2021, there are 206 wells, 8 springs in the thermal waters of Georgia, the temperature varies in a large range and in some places reaches 105-108 ° C (Mokvi, Kindghi), the total flow is 135599 m³ / day, thermal capacity - 307.1 MW, it Can save 458.4 conventional fuels per year.

6. Bio Fuel

Alternative energy resources also include energy obtained from the biological recycling of organic waste from industry, agriculture and the communal-household sector. The biogas obtained at this time can cover a certain part of the energy load, especially in agricultural areas. It is known that the calorific value of each cubic meter of biogas varies in the range of 5500-5800 kcal. The calculation shows that using biomass in Georgia can save about 20 thousand tons of conventional fuel annually.

It is important to use firewood from biofuels in Georgia. In 2018-2021, firewood production in the country amounted to 1000 cubic meters. Quantities of different types of biomass waste The values of their energy potential and the amounts saved using it are given in Table №5.

Table №5. The amount of biomass waste and their energy potential

Biomass species	Quantity (10 ³ tons)	Energy (10 ⁹ kWh)	Saved entrails fuel	Cost (10 ⁶ USD)
Residues of cereals and legumes	870	1.3	112 · 10 ³ tones	80
Livestock and Poultry waste	1670	6.9	760 · 10 ⁶ cubic meters of Natural gas	176
Household waste	900	0.6	53 · 10 ⁶ cubic meters of Natural Gas	14
Tbilisi Canal. From water purification equipment	250	1.0	92 · 10 ⁶ cubic meters	57
Wood and its residues	700	2.7	200 · 10 ³ tons	125
Total	4390	12.5		452

7. Hydrogen energy

Georgia is rich in the raw material needed for the development of hydrogen energy - hydrogen sulfide. It is contained in large quantities in the Black Sea. In the recent past, the State Agency for the Protection and Development of the Black Sea Resources and Development was operating in Georgia for the complex development of the Black Sea resources and the development of hydrogen energy.

According to the most important European document, the Green Agreement, we have to use this huge potential of renewable resources to turn our country into a "green" state, this applies to hydro resources (of which only 15-18% of its existing potential is used), as well as solar resources (of which only 2% used), inclusion in the wind energy system (of which 1% is used) and geothermal energy production (less than 1% is used here as well).

In our opinion, one of the strategic goals of the new energy policy should be:

1. Northern Line and Namakhvani (connection to the transmission network of power plants from Svaneti and Racha regions).
2. Guria and Kakheti (connection to the transmission network of hydropower plants from these regions).

Regarding the renewable energy sources in the draft energy strategy, it is mentioned that in order to improve the mentioned support schemes, it is planned to conduct a feasibility study to determine which support scheme is appropriate for different technologies and generation volumes, from the perspective of technological development and impact on the electricity market. In our opinion, the financial impact of support schemes should be assessed and analyzed, in terms of the expenditure part of the state budget, as well as the specific market and their participants.

Prior to the development of the new strategy, the state program - "Renewable Energy 2008" is being successfully implemented. According to the current law, the following power plants are deregulated: stations built after August 1, 2008, which are not the source of guaranteed volumes, and stations built before August 1, 2008, with an installed capacity of up to 40 MW, which also do not represent a source of guaranteed volumes. Such stations have the opportunity to choose the buyers themselves and set the cost of electricity produced.

In 2015, the Ministry of Energy of Georgia issued a strategic document prepared by the Transmission Network Operator (GSE), "Georgia Transmission Network Development Ten-Year Plan 2015 - 2025", and since then is in the process of annual renewal, the latest version is the 2020-2030 plan. This document is a time-honored program to strengthen the national transmission network infrastructure, presenting existing problems that respond to future challenges and ways to implement new opportunities. One of the key issues addressed in the document is the integration of renewable energy with the grid, which is still the biggest challenge in terms of integration into the electricity grid received from wind and solar.⁷

Conclusion

The "Green Agreement" of Europe is the most important document and is very relevant in our tense reality, especially in the context of the Russia-Ukraine war, with which Europe distances itself from the aggressively oil-rich state in agony. The transition of the developed world to alternative energy will really

⁷ Vezirishvili-Nozadze, K., Jishkariani, M., Pantskhava, E., "Variable renewable and non-traditional energy sources". VIII International Scientific and Practical Conference, „Actual Trends of Modern Scientific Research”, 14-15 March, 2021. Munich.

weaken Russia, and Georgia's "green agreement" will have a chance to use a wide range of renewable resources. This is especially true of hydro resources - hydropower plants are the backbone of our country's electricity and their annual output is 80% of total generation.

Recently, there has been a view that the construction of new hydropower plants is not necessary, and that the rehabilitation of old hydropower plants will increase their productivity. Rehabilitation increases productivity, but many fail. In the case of Enguri HPP, it is 100-120 million kWh, less than 3% of its design capacity. Prior to the pandemic, the increase in electricity consumption exceeded 3% per year, and increasing the capacity of hydropower plants by a single 3% or even 5% would be just a drop in the ocean.

Many small hydropower plants cannot replace one large hydropower plant, nor wind and solar stations, but their combination will significantly increase the total generation and allow the energy-deficient country in all directions to meet its electricity needs and export.

For some reason, they think that talking about energy independence is a slogan, and they believe that there are no certain numbers behind it. Georgia is almost 70-75% dependent on energy for different countries and we are not talking about full energy independence, we can not achieve that. We are talking about improving the characteristics of energy independence.

Recommendations

In our opinion based on our research, the following measures should be taken for the development and advancement of the energy sector of Georgia:

- More full utilization of hydropower potential and construction of new hydropower plants, including small capacity ones;
- Rehabilitation or modernization-reconstruction of existing hydropower plants;
- Rational development of thermal energy, mainly at the expense of installation of air turbine blocks;
- In regions (rural settlements), for utilities and small business needs, where it is possible to build micro and mini hydropower plants, or to use solar, wind and biomass energy resources;
- Promoting the use of geothermal water in the agricultural and communal sectors;
- Minimization of losses in distribution networks, widespread introduction of energy-saving equipment in production and the household sector;
- Flexible tariff policy;
- Restoration and expansion of Georgian energy system connections with neighboring energy systems;
- Facilitation of the introduction of individual heating systems for organic fuels in the utility sector.

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MAIN CHALLENGES, PROSPECTS AND IMPACT OF GEORGIAN ECONOMY UNDER THE CONDITIONS OF “EUROPEAN GREEN DEAL”

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Abstract

Modernization of Georgian economy is quite difficult and nonreversible process. Despite of some success of country's economic transformation, legal or market reforms, the country still stands to a number of challenges.

In last decade, the idea of green economy, green growth and inclusive development of economic have become much more popular. The idea of green economy is based on the sustainable development of the economy and values it on the basis to its natural capital. Georgia is rich in natural resources, including biodiversity, water and mineral resources and landscape diversity. Consequently, country has a great potential for long-term sustainable economic development in areas such as energy, agriculture, transport, tourism and forestry. According to GGND analysis, these sectors are identified as faster yield, both economically and environmentally. For reaching these preconditions is the preparation of specific policies and legislative documents and then harmonization then with EU legislation.

These processes are accompanied by ne policy initiated by European Union, which is known as “European Green Deal.” The main aim of this new imitative is making European continent a climate-neutral by 2050. It represents a completely new vision of establishing a new European order, which may have a major impact on its neighborhood, including Georgia.

What economic impact should have European “Green Deal” on Georgian economy depends on the transformation degree of country's economy and its transformability and compatibility with the EU economy. Here some important factors should be considered: what impact will have Green Deal on Georgian-EU relations in terms of deep and comprehensive free trade agreement? The second and even more important fact is: what impact should have European Green Deal on Georgian economy in the context of formation opportunities of green economy. These processes are analyzed in this article, are outlined ways and relevant recommendations are developed.

Key words: European Union, Green Deal, Green economy, Green growth.

Introduction

The Green Deal represents an EU long-term strategy, aimed at reducing carbon emissions in accordance with the terms of the Paris Agreement. The main idea of these is making Europe the first carbon-neutral continent by 2050. All this is achieved through the establishing some appropriate decisions and at later stage implementation these established decisions.

The plan includes potential carbon tariffs for countries that don't curtail their greenhouse gas pollution at the same rate. The mechanisms to achieve this is called the Carbon Border Adjustment Mechanisms (CBAM). It also includes: a circular economy action plan, review and possible revision of the all relevant climate-related policy instruments, including the emissions trading system. a farm to fork strategy along with a focus shift from compliance performance, revision of the energy taxation directive which is looking closely at fossil fuel subsidies and tax exemptions, a sustainable and smart mobility strategy and EU forest strategy.

It also learns on Horizon Europe, to play a pivotal role in leveraging national public and private investments. Through partnerships with industry and member states, it will support research and innovations on transport technologies, including batteries, clean hydrogen, low-carbon steel making, circular bio-based sectors and the built environment.

The EU plans to finance the policies set out in the Green Deal through an investment plan – InvestEU which forecasts at least €1 trillion in investment. Furthermore, for the EU to reach its goals set out in the deal, it is estimated that approximately €260 billion a year is going to be required by 2030 in investments.

Talking about the green transformation began in 1970s, when the Rome club first announced about the depletion of resources, which was prevented by the growing population and increased demand to be fulfilled. These principles were represented in Brutland report¹, in three conventions of Rio, Climate Change conventions and later in goals of sustainable development.

In addition to the above legislative packages, there exists several approaches which are represented in Paris Climate Change Framework and other policy documents. Some decisions were made in Paris, mainly preparing a special report called as IPCC-1.5. The main idea of these was the increasing temperature by 1.5 point in all region of the world and also, some recommendations were given to countries how to maintain this temperature point². During these period, in European Union and the USA began active preparation about the agreement on Green Deal, which despite to some differences, address common issues and goals on systematic transformation in areas associated with environmental, fiscal and industrial issues³.

In December 2019, European Union was adopted new action plan (COM/2019/640 final) which is publicly known as European Green Deal. The European Green Deal represents new direction, new part of economic and sustainable development of European Union, whose aim is reaching and ensuring climate neutrality of European continent by 2050. European Green Deal should be considered one of the integral part of European Union's strategy for achieving certain goals and aims, also part of UN2030 agenda for achieving economic sustainable development. At the same time, it should be considered as an effective tool for meeting the requirements of the Paris Agreement.

Sustainable development, in turn is an organizing principle for meeting human development goals while also sustaining the ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend. The desired result in a state of society where living conditions and resources are used to continue to meet human needs without undermining the integrity and stability of the natural system. Sustainable development can be defined as development that meets the needs of the present

¹ World Commission on Environment and Development, "Our Common Future." 1989.

² Mikadze, E., "European Green Deal and it's importance for Georgia" Tbilisi, 2021.

³ European Commission – "The European Green Deal".

without compromising the ability of future generations to meet their own needs. It is necessary the creation of such environment, where environmental issues will be taken into account as much as possible.

The modern concept of sustainable development is derived mostly from the 1987 Brundtland Report, is also rooted in earlier ideas about sustainable forest management and 20th century environmental concerns. As the concept of sustainable development developed, it has shifted its focus more toward the economic development, social development and environmental protection for future generations. The UN level sustainable development goals (2015-2030) address the global challenges, including poverty, inequity, climate change, environmental degradation, peace and justice.

A documentation, that is associated with Green Deal and was published by European Union, states that these goals cannot be achieved only by EU. It is a global agreement and not only EU states should be involved in it, but also its partner member-states. This primarily related with Georgia, as a closer partner of European Union and a country that is deeply and actively participates in European Neighborhood Policy and Eastern Partnership format. At the same time, it should be noted that EU and Georgia have signed an association agreement. Another important factor that should be noted is that, under the Green Deal, a number of changes must be made in EU legislation system, including the adoption of new legislative laws, as well as changes to an existing, adopted acts.

If we consider those fact that, most of these legislative acts are reflected in the association agreement, Georgia, as one of the main partner of European Union, is obliged to be involved in the implementation of this agreement. According to the paragraph 301 of association agreement: “The Parties shall develop and strengthen their cooperation on environmental issues, thereby contributing to the long-term objective of sustainable development and greening the economy. It is expected that enhanced environment protection will bring benefits to citizens and businesses in Georgia and in the EU, including through improved public health, preserved natural resources, increased economic and environmental efficiency, as well as use of modern, cleaner technologies contributing to more sustainable production patterns. Cooperation shall be conducted considering the interests of the Parties on the basis of equality and mutual benefit, as well as taking into account the interdependence existing between the Parties in the field of environment protection, and multilateral agreements in the field.” The indispensability of these principles is clear forasmuch Georgia is planning making a requisition form on EU membership in 2024.

1. Modern aspects of Greening an economy and European Green Deal

In modern era, in most studies is expressed an opinion about the unsustainability of production and consumption. This is reflected from the fact that if the same population consume the same amount of resources, then the demand for the resources will exceed 4 times to the total resource capacity of the earth. Therefore, it starting time for making some changes in the structure of resources, otherwise the fight for resources will be intensified. The result of unsustainability of resources may be attributed in a number of environmental risks, ranging from global to local ones. In this context the opportunities of greening economy and forming green business can play a huge role.

“Green economy” can be considered as a broad concept. The main aim of it is to ensure a sustainable development of economic by introducing green principles. As a result, we get improved welfare, high degree of social equality, reduced environmental and ecological risks. Green economy is closely related with ecological economics but has a more politically applied focus. The 2011 UNEP Green Economy Report argues that to be a green, an economy must not only be efficient but fair. Fairness implies

recognizing global and country level equity dimensions, particularly in assuring a just transition to an economy that is low-carbon, resource efficient and social inclusive.

Some economists view green economics as a branch or subfield of more established school. For instance, it is regarded as classical economics, where traditional land is generalized to natural capital and has some attributes in common with labor and physical capital (since natural capital assets like rivers directed substitute for man-made ones such as canals). Or, it is viewed as Marxist economics with nature represented as form of lumpen proletariat, an exploited base of non-human workers providing surplus-value to the human economy, or as a branch of neoclassical economics, in which the price of life for developing vs developed nations is held steady at the ratio reflecting a balance of power that of non-human life is very low.

Green economy is the main force in the formation of ecosystems. If we rely on classical economic hypothesis, the green economy can't be considered as separate, independent direction of the economic science. It is considered as one of the field of sciences. A feature distinguishing it from prior economic regimes is the direct valuation of natural capital and ecological services as having economic values and full cost accounting regime in which costs externalized onto society via ecosystems are reliably traced back to and accounted for as liabilities of, the entity that does the harm on neglects some assets.

The Green economy tries to find a golden mean, a positive economic solution, an alternative, because it doesn't separate public and private sectors. Society comes from the main regulator in the conditions of green economy. In modern stage a green economy is more market-oriented than existing models, because if we neglect environmental and social issues we make wrong economic decisions, business operators misuse natural resources. If we combine the abovementioned factors we can get those type economic crisis, that was in 1978, 1996 and 2008⁴.

There exists two main precondition situation how green economy should be formed. First of all, the changings should be made in the production process. This is mainly expressed using, establishing and introducing efficient energy and resource consumption business operations. Changings should be made in increasing producing environmental products and services and reducing consumptions. Green business opportunities are essential in this process. The main task of any business is to make profit. For making this profit, business operators are producing goods and services that should become competitive in the market. The main difference between conventional business and green business profit maximization is that green business is oriented making profit maximization in long-term period. For reaching this, it uses modern knowledge, information and planning tools. As a result, companies that are involved in green economy are more competitive.

In the context of green economy, we must say a few words on green growth, that is deeply related to the concept of green economy. Green growth can be described as hypothetical path of economic growth that is environmentally sustainable. It is based on the understanding that as long as economic growth remains a predominant goal, a decoupling of economic growth from resource use and adverse of environmental impacts is required. A main driver of green growth is the transition towards sustainable energy systems. Advocates of green growth policies argue that well-implemented green policies can create opportunities for employment sectors such as renewable energy, green agriculture or sustainable forestry.

⁴ Green Alternative – “Green Policy and environmental protection” Tbilisi, 2013, pg.41.

Critics of green growth highlight how green growth approaches do not fully account for the underlying economic systems change needed in to order to address the climate crisis, biodiversity crisis and other environmental degradation. Critics point instead to alternative frameworks for economic change such as circular economy, de-growth, doughnut economics or similar fundamental changes which better account for planetary boundaries.

During the last financial and economic crisis, the UN has developed a new economic concept that is known as global green agreement. This concept should be addressed to the recent world problems and was focused on three main objectives: contribution of recovering world economy and the creation of new jobs, achieving the goals of inclusive economic development by 2015 and reducing the risks of carbon dependence and ecosystem degradation⁵. Later 2009 country members of OSCE was adopted green growth strategy.⁶ The main idea of green growth strategy was development and encouragement low-emission process, minimization of inefficient use of waste and natural resources, keeping biodiversity and using a sustainable and assimilation of soft energy sources.

Most international financial institutions and states viewed green economy as a trade-off concepts, but none of them denies the need of transformation, which is mainly expressed establishing competitive principles, liberalization of economics. As a result, we got such environmental crisis, which is challenge for modern world, including Georgia. Green growth and green economy should be considered as one of the most perspective directions for solving such crisis, which are mainly reflected by dividing the ways of production and consumption. Ecosystem services are natural process. In green economy, this ecosystem services were divided and specific price was set for each of these services.

In recent period, globalization process blurred borders between economic sectors. This was dramatic for industrialization process, because it demanded additional knowledge and skills. In contrast to these complex processes, the main task of green economy is to eliminate the events involved in industrialization process, especially the impact on the environment or the dependence to the natural resources. The task has become to minimize these processes. How to achieve this is depended on several factors, directions. First of all, we have to point the transformation degree of country's economy, the level of technology, as well as requirements that the country has to meet in terms international environmental legislation.

Important role can play those economic stimulus packages that exists within a country, which will be triggered by the existing economic policy and what policy has institutions on promoting green growth. We can give an example those practice that exist in EU, in parallel of developing the energy efficiency or renewable energy, the relationship between CO₂ and GDP must be eliminated. It also should be noted that energy and resource efficiency do not preclude energy consumption or using fewer resources. They both imply increasing efficiency or productivity, which in turn leads to green capitalism.

Green economy has a potential of growth. We have to analyze this growth potential on the basis of sustainable economic development. Here we should note that, European Union, World Bank and International Monetary Fund have so-called the "predominant" view about those fact that with a help liberalization and market can be achieved low-emission development, which prevents even the partial

⁵ Green Alternative – "Green Policy and environmental protection" Tbilisi 2013 pg. 41.

⁶ Declaration on Green Growth Adopted at the Meeting of the Council at Ministerial Level on 25 June 2009 [C/MIN(2009)5/ADD1/FINAL].

exploitation of this great potential⁷. International financial corporations offer countries relatively broad financial assistance for strengthening green economy. One of the financial instrument is called “blending instruments,” guarantees, public and private partnership. In developing countries these financial aids are transferred not only from international financial institutions, but also from new industrial countries and institutions, such as BRICS, AIIB and son on. It is important that green capitalism uses such market mechanisms as emission trading, market development mechanisms for developing low-emission development⁸.

If we rely on the logic of green economy, the main reason of environmental degradation in tradition economics is that, government and large corporations fail to realize the real economic value of the environment and nature. From all above mentioned, it is possible to determine the true value of environment, which comes from the interest of nature conservations. As a result, we get less polluting innovative technologies and more investments in nature conservation projects.

Innovations can play a huge role on the way of formatting green economy. If we closely look the transformation process, production process has shifted to information and biotechnology software. Over the next 30 years, approaches toward the industrial revolution will grow even more and will rely on modern advances in artificial intelligence and robotics, radical resource efficiency, industrial ecology and nanotechnology.

If we review modern researches⁹, innovative technologies can have a positive impact on economic growth. Despite the fact that in short-term period revenues may decline, but long-term effect will be huge and quite large. At the same time, income of highly qualified workers is increased sharply, which can't be said the same for low-skilled workers. There exist several ways for eliminating this imbalance. First of all, we have to talk about the level of education. Level of tax rates are also important. It also be emphasized that the pressure on natural resources will be increased in the case of declining revenues. As a result, we will get sustainability excluding, if the formatting green economy will be depended on technology, without reducing consumption and understanding the ecological limitations.

Georgia's economic outlook is quite optimistic about the further implementation and formation of a green economy and green growth. Government of Georgia introduced a number programs. The main aim of this programs was changing, developing and introducing tradition economic activities. Among them we must highlight such important areas as the efficiency of resources and materials, reduction and prevention of waste generations, sustainable using of water resources, increase of producer responsibility and reasonable using of resources from an environmental point of view.

Georgia is rich in natural resources or biodiversity, much of which is still intact. The main aim of the government is to conserve them untouched. In general, it should be said, economic development represents the main for further modernization of the country. This doesn't mean that it is caused by the development of an industry or other types of business activity. In this process public activity also plays an important role, which often supports such economic development, where environmental isn't taken into account. A Green economy and green growth requires community involvement and doesn't involve a specific stakeholder group

⁷ Knight, Daniel, M., The green economy as a sustainable alternative?.

⁸ Green alternative – “Dilemma of Green Economy” – Essay on public policy Tbilisi, 2019 pg. 3.

⁹ Should We Fear the Robot Revolution? (The Correct Answer is Yes), Author/Editor: Andrew Berg; Edward F Buffie; Luis-Felipe Zanna, May 21, 2018.

By UN green growth and green economy is recognized as one of the key areas for the sustainable development of national economics, which in turn both of them are part of Millennium Development Goals. These goals were adopted by 2015. Georgia also shares these goals and takes the initiative for making green growth as one of the most important directions of country's economic modernization. There exist certain types of initiatives that should be considered as the part of country's further sustainable development. Among these initiatives we must highlight the development of ecosystems, clean production, environmental education and creation of green jobs.

The main basis of green economy is demand-supply chain of resources. Therefore, it is important launching products and services that will satisfy consumers. Consequently, efforts should be made from consumers and manufacturers achieving this point. Some companies, in certain fields, especially in agriculture and tourism, are taking appropriate actions for sustainable production. People has a feeling that buying organic agricultural products are useful for them. As a result, trading in organic food has increased quite a bit. Consumers buy this product not only on price basis, but also on different types of values. Introduction of eco-labeling will also bring positive benefits, which will help manufacturers in terms of reliability of their products.

2. Main challenges and challenges of Georgian economy under green deal

By 2020 were completed those 20 goals, that were set by Easter Partnership. Four key areas were identified by these goals: stronger economics, better governance, more interconnectedness and relatively strong society. The main goal of green economics, is reaching carbon neutrality by 2050. How to reach this carbon neutrality. First of we have identify several sectors that needs structural modification. These sectors are energy, environment and industry

Main attention must be paid to the promotion of circular economy in Easter Partnership countries, especially in the fields of electronics, batteries, packaging, textiles and construction. Biodiversity is another area, that have to be paid much more attention, because European Union has tough approaches to the illegal and unregulated fishing, which in turn reflects Georgia's policy.

One of the important aspect is the issue of sustainability. A comprehensive approach of sustainability covers all sectors of economics but focuses on low carbon emissions that creates jobs. This approach will be beneficial in waste, resource inefficiency and pollution directions, but at the same time improves health, biodiversity and ecosystem sustainability. Despite this, we have to take account such spheres of public policy which can have a major impact on environment. In these spheres unify taxes and subsidies, state procurements, infrastructure design, business development. So, green growth policy facilitates specific measures of sector in short, medium and long term. This requires cooperation and consultations with private sector representatives or business associations.

In recent period, climate changing convention and its related documents are related to the main objects of green agreement. "Paris Agreement, which was ratified by Parliament of Georgia in 2017, the European Union, as a leader organization, helps Georgia for implementation of the agreement. In European Union, climate changing and environmental protections have become priority. Moving to a new strategy will be effective only in those case, if the main partner of European Union will make concrete measures. At the same time, European Union takes consideration partnership in environmental, energy and climate changing with South and Eastern partnership countries.

What kind of impact European “Green Deal” should have on Georgian economy? Several factors have to be identified that associated with this impact. First of we must identify the transformation degree of Georgian economy, and how this is compatible to European Union’s economy. Also, it should be considered those fields, especially innovative technologies and recycling of wastes, that should be economically beneficial. At first this may require large investments, but in long-term period there will exist cost saving. In such circumstances, it is important to define the role government and private sector and the state must dovetail the role of moderator for the implementation of less attractive financial projects. According to this, we must identify two main directions, that this impact should have on Georgian economy – environmental and economic.

The integration of Georgia’s environmental agendas in national development plans should be the priority of the government. Despite the fact that Georgia has overhauled its environmental components and in Georgia’s socio-economic strategy “Georgia 2020” is clearly mentioned about the rational use of natural resources, environmental security and sustainability, reforms, are still incomplete. Several types of goals have been set for climate change. Through the United Nations Framework Convention on Climate change (UNFCCC) and National Defined Contribution (NDC) document Georgia had joined the Organization for Economic Co-operation and Development (OECD) Green growth declaration. It has already finished working the low-emission development strategy (LEDS) and National Energy Efficiency Action Plan (NEEAP) documents. Despite this, there exists gaps on lower-level enforcement regulations and in institutional capacity, that should ensure policy implementation.

On April 2016, ministry of Environmental protection and natural resources of Georgia, within the project of European Union, developed road maps in the field of environmental protection and climate-related activities. Nine such road maps were created: direction of environment, water quality and water resources management, waste management, nature protection, industrial pollution and hazards, chemical waste management, climate actions and forestry sector¹⁰.

The partnership between Georgian and European moved to a new level when was signed the association agreement. This agreement applies almost to all sector and the main goal is to approximate Georgian legislation to European. The agreement introduces a preferential trade regime – Deep and Comprehensive Free Trade Area (DCFTA). This regime increases market access between Georgia and European Union on the basis of relatively preferential regulations.

The funding measures associated with climate changing is not only in the interest of environmental protection. Access to financial resources promotes transferring technologies and creating jobs. Georgian companies saw their future activities in “Green investments” and began their portfolio diversification for gaining competitive advantage. Under the association agreement, Georgia took obligation for promoting efficiency buildings for the next 3 years. In general, construction sector is one of the promising sectors for inculcating green business. Nowadays, one of the main problem in construction business is the fact that they are using outdated thermal engineering norms, which is very far from the European standards. There exists much more cases when these specific standards are nor met, thus causing quite large losses.

¹⁰ Kakulia, E., Gogokhia, T., Bibilashvili, N. “EU-Georgia Association agreement – Green economy support in Georgia” – Proceeding of materials of international scientific conference “Current Problems of formation of Green Economy” dedicated to 75th anniversary of the institute and the 10th anniversary of Journal “Ekonomisti” Tbilisi, 2019 pg. 145.

Despite this, positive steps have been done for eliminating these problems. The clear example of this is an opening plant which produces energy efficiency building materials (building blocks) for Georgian market. Investment was made by State Partnership Fund and Ytong Caucasus.

Association agreement requires the adoption and implementation of a number of legislative acts in the fields of energy and environment. This process is complicated and time-consuming process in existing institutional arrangement and human capital. There is also added setting goals of Eastern Partnership, mapping general terms and conditions of green deal in developing plans, which shouldn't be done without proper energy system. That's why, it is crucial element focusing on increased energy consumption and to those resources from which this increased consumption should be allocated, even more on renewable energy issues.

What about the energy sector itself. On July 1, 2017 Georgia became a member of energy community. Association agreement stipulates a schedule for major energy market reforms, including market of natural gas, electricity, energy efficiency and renewable energy. According to the assessment of energy secretariat, the total level of compliance with the laws related to energy resources in Georgia is 23%. The expansion of South Caucasus Pipeline has already been completed. The main level of Energy Community is creating a common European market, in which we must include the European Union and its neighbors.

Green growth in energy should be based on renewable energy and energy efficiency, demand and supply balance management. In energy sector, government is focusing on security of supply and building generation facilities, mainly based on large hydropower plants and not on a sustainable energy system. Main priorities of energy policy that was adopted by government in 2006 is still unchanged. This is shown in the policy document "Energy Policy of Georgia" that was submitted by ministry of energy of Georgia in 2014.

According to Georgian Electricity Development Plan, the share of wind and solar power plant is only 18%, but it also should be noted that significant increase in thermal power plant is not provided. One of the important point to be mentioned is the replacement of natural gas and its reflection in strategic documents. In 2020 parliament of Georgia got a law about energy efficiency. At the same time, country is obliged to submit annual report about the target indicators to the Energy Union. If we rely on 2019-2020 annual report, by 2025, energy savings in primary energy sources could reach 13% and in final consumption 9%. This figure in 2030 should be 14% in primary energy and 11% in final consumption¹¹. It should also be mentioned, from where is calculated this development trend is not specified. As an example, we can bring an example of European Union data, where, according to the updates directive, by 2030 the primary energy source should be increased nearly 33% in energy efficiency source.¹²

According to OSCE report, country can improve the status of energy efficiency if it has flexible legislation that meets the UNEP-2006 criteria. These criteria include environmental and economic efficiency, budget expenditures, capabilities and skill implementation and supporting of interested party.¹³

From the barriers of the development of renewable energy and energy efficiency we should highlight the existence of independent government structure, lack of new technologies and low level of awareness in the

¹¹ Government of Georgia – "Georgian energy efficiency National Action Plan 2019-2020".

¹² ESIA, "Energy Efficiency".

¹³ Green Alternative – "Opportunities of development of green economy in Georgia" Tb. 2014 pg. 13.

private sector, lack of tax and tariff incentives, limited access to the financial resources¹⁴. Energy efficiency and renewable energy legislation can play a huge role in the development of the sector. Specific state grants will be helpful in this case, because it will encourage introducing new technologies that saves energy. Based on all this, developing certain types of necessary measures, among which we should distinguish the developing energy efficiency and renewable energy legislation, financing research activities through which new professional staff will be trained.

European green deal means a systematic transformation for Georgia. This plays a crucial role in modern, technological period, where the economic model is needed for rearranging to this system. New goals proposed by European Union will be a new challenge for the country, because they can create new perspectives. Among these goals are access to the information, creation new capabilities and increased financial aid. This is necessary in the context of Covid-19 pandemic, because as it shows, that concentrating on only one sector of the economy is wrong approach and it is necessary investment diversification in difference sectors of the national economy. This requires appropriate institutional readiness, which is expressed in greater investments in environmental management, to policy planning and implementation, as well as in administrative skills. Green deal is not considered not just an environmental document. Its main idea is to ensure the social equality as much as possible. It should also lay to the formation and foundation of equal and healthy societies.

Conclusion

In what forms is it possible and what should be considered from Georgia for joining to its partner's new strategy, especially in the conditions the country plans to enter to European Union by 2024. Reforms need to be implemented in three main areas – institutional, legislative and economic.

If we rely on the logic of the Association Agreement, where only part of EU directives must be implemented, we must outline those main areas that need to be considered at the stage. We also take account Georgia's capabilities, when we are talking about those recommendations that Georgia have to do.

First of all, the starting point for Georgia should be the Association Agreement. Accordingly, Georgia should negotiate with European Union in the format of an Association Agreement, because EU will provide financial and institutional support to all its partner countries that will be involved in the implementation of European Green Deal.

The European Green Deal is not only the environmental document. It covers all area of development. Accordingly, it would be desirable from the authorities to set up working groups, which will study the possible impact of Green Deal on the country and then develop relevant recommendations, which will be in full compliance with Association Agreement and in future time, these recommendations should be reflected at the local legislative level.

We have to consider the green growth and green economy factor while talking about the modernization of Georgian economy in the context of Green Deal. At the present stage, environmental and social responsibility is considered the main driving force of economic development. From the environmental point of view, moving to the green activity will not happen instantly, because both approaches are very complex

¹⁴ Center of Business and Economics – “Green Business Support Strategy for Georgian Private Business Organizations” - UBCCE–GIZ joint project, 2011.

and requires scientific knowledge, society's awareness and developing and implementing effective economic policies.

Environmental innovations have a high export potential but requires introduction of modern technologies. Accordingly, European Union is ready for implementing these methods of technologies. This coincides with the interests and readiness of Government of Georgia for facilitating these processes. To do this, at the first stage, it is necessary for implementing principles and policies of sustainable development both in national and local levels

Attention must be paid to energy sector, because under a Green deal, a number of reforms are needed to be conducted. First of all, it is associated with the energy efficiency and renewable energy legislations and preparing some actions plans. Implementation of pilot projects will play a huge role. Conducting energy audit to state building is another important factor for further improvement of energy consumption. The result will be the reduced public finances and energy consumption.

Much more attention should be paid to those companies that are exporting goods to the European Union and their carbon intensity production cycles, because there exist strict requirements on these points. These goods must be complying with those requirements that exists in Green Deal and carbon border control mechanisms.”

Generally, in Green Deal important factor is production of organic products. European Union has made significant changes to the regulations on organic products and on labeling. These regulations will enter into force this year. The main idea of this change is that, exporters to the European Union will be required to do the same as producers in the European Union. Therefore, the country and agricultural exporting companies must be prepared for meeting these new requirements. Despite the fact that government of Georgia is implementing some projects in agriculture, the sector facing a number of challenges. For solving these challenges, it is necessary developing educational programs that will raise public awareness about organic food. Another important factor is the introduction of certification process through internationally recognized schemes.

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THE EUROPEAN GREEN DEAL: YOUNG PEOPLE ECO-AWARENESS FROM THE PERSPECTIVE OF THE ILLUSION OF EXPLANATORY DEPTH

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Abstract

The European Green Deal is the largest economic correction in the history of the EU. Professionals and experts speak about this project during conferences, international meetings, in media and through other channels of communication, but how many people who are not closely related to the field of economics, innovation and science understand the importance of this project? How high is the level of awareness associated with this issue among the other audience – among the active players of this game aimed at improving the environment? A huge number of professionals in the industry are working to find solutions and paths to achieve the Green Deal goals, and, of course, all the scientific representatives who is interlinked with this area strongly support the ideas. But what about young people who are not in the industry – the generation whose role it is to turn ideas into reality? How important and influential is consumer awareness in the context of the European Green Deal course? In order to analyse this issue, the authors consider it important to reveal the topic of the relevance of the problem, consumer behaviour and sustainable mindset from not a strict scientific perspective and paradigm, but from a popular-scientific way. To delve into the study in more detail, the article describes the analysis of the hypothesis of the prism of awareness through the illusion of explanatory depth for young people, who are potential consumers, as well as the engines of the propagation of the movement. . Competent dissemination of information and a positive impact on the young segment in order to increase the level of awareness of environmental aspects is considered to be very important right now, but to what extent are young people, creators of change, are aware of it right now?

Keywords: the European Green Deal, the illusion of explanatory depth, greenwashing, awareness, sustainability.

Introduction

The modern world is full of information that is available from completely different channels. A couple of decades ago, to get this or that information, it was worth making more effort than just writing a query on Google. But besides the fact that it was more difficult to request and receive information on a particular topic, the filter for this very information was also much larger. Today, during targeted advertising, which is not always set up by professionals, the Internet issues millions of signs a day on topics that the reader may

never have been interested in – one did not ask for it, did not choose it. This can lead to information fatigue¹ – when one does not feel like reading at night or watching TV, because there is simply too much information. Also, the so-called information boom, the authors believe, gives way to the development of such a phenomenon as the illusion of explanatory depth².

An example is considered to make it comprehensible: with help of target advertising, a person gets an article on the topic of how the kettle works. The so-called lead clicks on the link, reads this article, without checking the authenticity and relevance, as well as the source at all. After reading, the lead tends to think that now he or she has more knowledge about the operation of teapots, but technically, any of the people who does not understand teapots can write such an article and publish it on a well-packaged platform³. What does this mean and how does it interlink with the topic? Promoting a 'sustainable lifestyle' is one of the hottest topics of our time – a bunch of brands make PR campaigns on it, influencers are making money, and there is information about global issues and campaigns for sorting waste, using less water and cutting down on meat more than ever before. But authors became curious about the following – what is the level of green-awareness of your people? Hence, the perspective of the illusion of explanatory depth was chosen to conduct empirical research on this matter to check the hypothesis whether even with this amount of accessible information and this topic being so hot literally and figuratively, do representatives of the young generation know about the problems that the European Green Deal aims to solve, and is their consumer behaviour influenced by it?

Goals of the European Green Deal are specific and detailed. But an important element in achieving the goals of the project is considered to be the dissemination of information and any popularization of the topic⁴ – not only among politicians, sociologists, economists and professionals in areas closely related to the European Green Deal, but also among the younger generation, whose levers of influence are non-scientific conferences and published pacts, and the Internet, social networks and trends. Consumers tend to buy a new phone even if it is not entirely sustainable in terms of consumption⁵, but because 'being trendy' is being promoted more than being 'green conscious'.

At the same time, it is important to ensure that the consumer receives complete and truthful information about the product. The topic has become so influential in the business world that so-called greenwashing has become accepted. Greenwashing is a form of marketing in which slogans and methods of promotion with green methods are applied⁶, but in fact, it is just a delusion about the goals of the organisation presenting them in a favourable light. The growing demand for eco-products has become an incentive for ecological speculation by unscrupulous producers as well as marketing specialists. This includes the groundless use of 'eco' and 'bio' labels⁷. As a clear instance, a manufacturer positioning a coating from wood as environmentally friendly can be taken. The company deliberately or unknowingly hides the fact that the

¹ Simpson, C. W. and Prusak, L. 1995. Troubles with information overload – Moving from quantity to quality in information provision. *International Journal of Information Management*, 15: 413-425.

² Waytz, A., 2017. The Illusion of Explanatory Depth. Available at: <https://www.edge.org/response-detail/27117>.

³ Schneider, S. C. 1987. Information overload: Causes and consequences. *Human Systems Management*, 7: 143-153.

⁴ European Commission, Directorate-General for Education, Youth, Sport and Culture, Education for environmental sustainability: policies and approaches in European Union Member States: final report, Tasiopoulou, E.(editor), 2022, <https://data.europa.eu/doi/10.2766/391>. [L.s.20.03.2022].

⁵ European Commission, Directorate-General for Environment, Policies to encourage sustainable consumption: full report, Publications Office, 2012, <https://data.europa.eu/doi/10.2779/6032>. [L.s.20.03.2022].

⁶ Rienstra, D. "Is Corporate Social Responsibility the Greening of Industry, or its Green washing?" *Humanitarian Affairs Review*. Spring (2003).

⁷ Barone, M. J., Miyazaki, A. D., Taylor, K. A. (2000). The influence of cause-related marketing on consumer choice: Does one good turn deserve another? *Journal of the Academy of Marketing Science*, 28, 245–267.

wood for the production was obtained with violations of forest laws, and for treatment used impregnations and paints with non-ecological composition. Natural products do not equal ecological products. Greenwashing significantly hinders the development of ecological production and consumption.

As a result, not only the deceived buyer suffers. Environmentally responsible business is replaced by enterprises⁸, which continue to pollute the air and water and do not recycle production wastes. This may create the illusion of competition and, as a result, a chance of failure of truly 'green' firms.

Modern market realities are such that there is little transparency in terms of information from the manufacturer and the buyer. Here the phenomenon, which will be discussed further – the illusion of explanatory depth – comes into the play. Big players are moving more and more to the side of awareness, but what about small and medium-sized businesses? It is considered to be crucially important to develop local rules for small and medium-sized enterprises, because they own a huge share of the markets of European countries⁹, but the same rules do not work in a same way in different markets. Therefore, the adaptation of common goals to the realities of individual micro-markets (countries, regions, cities) is considered to be an important aspect.

Sustainability itself is a very important skill, a set of knowledge and information that is gaining momentum in European countries. In the programs of various universities for several years there are subjects aimed at this topic. For example, at the Warsaw School of Economics, at the Global Business, Finance and Governance programme, there is a course called Sustainable Development, which studies the goals of Sustainable Development, climate, and consumer awareness issues, both on the part of the buyer and the business. So naturally, the pursuit of sustainability has major implications and projects to implement for education, training, and skills. For example: creating a need to increase environmental awareness in curricula (both primary and secondary and higher educational institutions); a need for the development of environmentally friendly technologies, production processes, products, services and business models in all sectors of the economy; a change in the way traditional knowledge is performed (and taught) and new types of learning; a need for close interaction between education and training systems and their environment to create an ecosystem of skills and values in which skills development goes hand in hand with economic, technological and social changes¹⁰.

For the entrepreneur the primary motivator, in addition to the overall eco-objective, should be creating new business opportunities by controlling resources, more innovative methods, and ultimately a better reputation – generating profit, but with a social focus. After all, based on the popularization of the problem, consumers are willing to pay more for products that take care of the environment¹¹. That is, ecology becomes a new competitive advantage. It changes purchasing habits and the demand for new products and services. Taking all the above-mentioned, authors decided to check the green awareness of the taken sample of the young audience from the perspective of the illusion of explanatory depth.

⁸ Alves, I. M. (2009). Green spin everywhere: How greenwashing reveals the limits of the CSR paradigm. *Journal of Global Change and Governance*, 2, 9–34.

⁹ Charlotte Roig-Ramos, Thomas Pellerin-Carlin, *Cities in Europe: what EU innovation can do for climate neutrality*, Jacques Delors, Institute, September 2019.

¹⁰ European Commission, Directorate-General for Education, Youth, Sport and Culture, *Education for environmental sustainability: policies and approaches in European Union Member States: final report, 2022*, <https://data.europa.eu/doi/10.2766/391>. [L. s.20.03.2022].

¹¹ Aryal, K.P., Chaudhary, P., Pandit, S. Sharma, G. (2009). Consumers' willingness to pay for organic products: a case from Kathmandu Valley. *The Journal of Agriculture and Environment*.

1. The illusion of explanatory depth

The illusion of explanatory depth is an assumption that one perfectly understands cause and effect relationships, while, in reality, it is far from the case. Rozenblit and Keil, both Yale psychologists, first studied and coined this term back in 2002 with the study ‘The misunderstood limits of folk science: an illusion of explanatory depth. According to them, the Illusion of Explanatory Depth is the incorrectly held belief that one understands the world on a deeper level than one does¹².

If there is a question about how the toilet works, most people will immediately answer: ‘Yes, I do know how it works, it's just a toilet’. But if the question of how the toilet works becomes exposed to be reflected and thought over, most people are getting confused, because actually the intuitive understanding of the toilet is very superficial, unless the respondent is not a plumber or good at engineering. The illusion of explanatory depth is, in other words, when people inaccurately overestimate their knowledge in a certain thing. The previous example of toilets can be swapped and replaced with refrigerators, zippers, locks, mathematics, history, art, general knowledge assessment or... sustainable development, global concepts of ideas like the European Green Deal. Authors find the phenomenon a relevant prism for analysing the level of awareness and knowledge in the eco-topic. There is an enormous amount of information regarding the topic all over the Internet and other channels, but how much do we really know about it and, hence, understand the importance of the issue?

2. Methodology and research and description

The purpose of authors’ research is to investigate hypothesis as follows: there is a correlation in the level of eco-awareness and the level of the illusion of explanatory depth of young generation (residents of Poland are taken as a research group). Another issue that this article questions is whether respondents are aware about the problems that the European Green Deal aims to solve and is their consumer behaviour influenced by it. An online questionnaire was chosen for collecting the information.

The survey includes the personal data of the respondents (including nationality, age, and direction of study). This is done to enable further research/ hypotheses based on the information received. All questions that followed focuses on people's eco-habits. The authors tried to make them explicable to get answers without cognitive biases. An important factor is whether the co-respondent belongs not only to an understanding, but also to concrete actions from it. Also, is there a factor and acceptance that eco-labels improve the situation of the ecosystem or in their understanding this is just a marketing move.

The age group of students aged from 17 to 25 is chosen. The aim of this idea is to avoid increased bias research by interviewing people belonging to the same age and social group. It is also accessible, since one of the authors is a lecturer, and another author is a student herself. The survey has an online form, so it was clearly distributed among the participants. Since the research does not require physical presence, authors managed to attract the attention of students from different universities, cities and even countries according to the study purpose’s request. Authors chose the group of respondents with the minimal culture, age, and mindset differences. Ethnic groups in the majority: Ukrainians, Belarussians, Poles and Russians. The areas of study are completely different, most of them partly related to the topic of the environment. Authors aim to check whether respondents not only have a certain level of awareness, but also complete concrete actions

¹² Menshykova, A., 2021. *The Illusion of Explanatory Depth from the Perspective of Gender Socialization*. Warsaw: Lazarski University Press.

based on them when it comes to their purchasing and consuming behaviour. A practical significance of the research is that the data may be used for further research to test different hypotheses. The question sets are shown in the Attachment 1.

Conclusions

During the research and the hypotheses presented by the authors regarding the awareness of the problems solved by Green Deal as an indicator of influence on consumer behaviour due to the presence of the illusion of explanatory depth. Based on the answers of the respondents, where 27.5% knew exactly what the European Green Deal was or 43.5% partially, there is a misconception in many areas. Correspondents 'having knowledge in the field' still ended up doubting their power to change and tended to think that their already existing habits were insignificant.

This leads to the conclusion that there is insufficient promotion of the problem to a wide audience in a simple manner of expression. It is also necessary to consider that there is a demand for ecological products. According to the survey, most respondents, in addition to the purchase of green products, have 'green' habits. It is possible to trace a tendency of striving to develop resource saving behaviour (water saving category, electricity saving – 75.4%), the respondents try to take less packages and use reusable bags instead of them (60.9%).

At the same time, the choice of products due to marketing conventions is reduced to incorrect support for the choice of fake eco-labels, as 56.5% of the respondents chose eco and bio marks on a level with the official eco-labels. All in all, it is clear that the dissemination of information is present, but the correctness of its recreation and verification of receiving resources is insufficient.

To summarize, The European Union has launched the European Green Deal, which plans to turn the economy, politics, and people's personal lives towards eco. This is a very large-scale and deep transition, which consists not only in economic and political issues, but also in the awareness of consumers, in changing the usual rules of the market, consumption and choice. By and large, this issue is interesting and important to study from the perspective of behavioural economics and marketing because it is crucial to popularize an awareness and understanding of sustainability are those variables whose task is to change the behaviour of both sides of the market, both consumers and producers, towards the eco paradigm.

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Attachment 1.

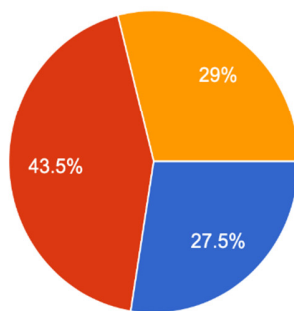
Used questionnaire:

https://docs.google.com/forms/u/0/d/1aPLYr5R7sL57QJvCcmO1Rz_Piwu8D28v92YoVW2G6LE/printform

Attachment 2. Diagrams

Do you know what is the European Green Deal?

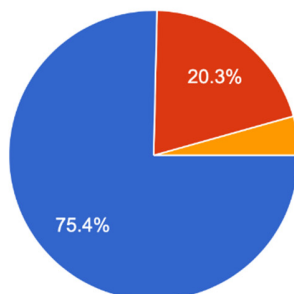
69 responses



- Yes, I know
- I've heard something about it
- No, I don't know anything at all

When you go out of the room, do you turn off the lights?

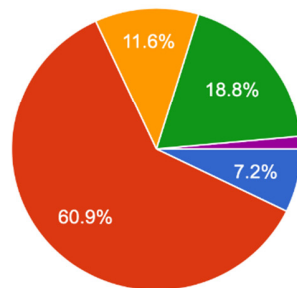
69 responses



- Yes, always
- I am working on it
- No, I don't really care

When you go to the grocery, do you buy a plastic bag?

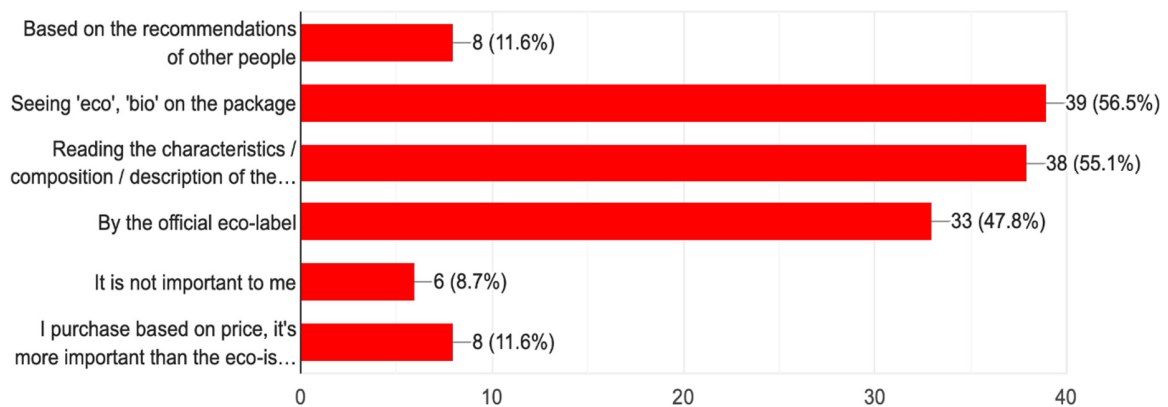
69 responses



- Yes, always
- I have my own reusable bag
- I am working on it
- When there is an option to choose at a grocery, I go for a paper bag
- I use Instacart and my groceries just come in the plastic bags. I then reuse those plastic bags for trash around the house.

How do you understand that the product is 'eco'? (you can choose multiple options here)

69 responses



ANALYSIS OF BIO-PRODUCT CONSUMPTION BY THE POPULATION IN ZUGDIDI AND KUTAISI MUNICIPALITIES

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Abstract

The UN recognizes Green Growth and Green Economy as important factors for sustainable development. The Government of Georgia considers the Green Economy as one of the main means of the future development of the country and announces an initiative to implement voluntary measures to promote sustainable development. In this regard, it is essential to promote the ecosystem services, clean production, environmental education and green jobs. Green Economy and Green Growth require the involvement of the whole community. The transition to environmentally friendly activities is not carried out rapidly as Green Growth is a versatile and complex issue and requires a certain level of public awareness together with other factors.¹

In recent years, the awareness of the population of different countries has shown a growing interest towards the problem of damaging the nature caused by the production, exploitation and utilization of various goods. From an ecological point of view, change of structures of irrational production and consumption will become one of the strategic directions of social development. However, the focus on eco-friendly production must be strengthened by recognizing its profitability and enabling the enterprise to receive both direct financial benefits - through the reduction of raw material costs, waste recycling, insurance and liability, and indirect ones - through more efficient environmental marketing and public opinion.

Green marketing strategies are expensive and complicated and its successful implementation requires a lot of effort.² Firms with green strategies can make a profit if they are able to attain the desired target positions in the minds of consumers towards the green brand in the market. Those green strategies tend to become more successful which are oriented on association, more credibility, enhanced perception of brand quality and brand loyalty among the target groups. It is no coincidence that the effects of these four communications

¹Green Economy <http://recp.ge/wp-content/uploads/2018/01/Green-economy-newsletter-GE-1.pdf> [L. s. 27.02.2022].

² Davari, A., Strutton, D., Marketing mix strategies for closing the gap between green consumers' pro-environmental beliefs and behaviors. London. Journal of Strategic Marketing, 2014, 3.

(i.e., brand associations, credibility (or trust), quality, and loyalty) represent the customer-based brand equity.^{3 4 5}

Keywords: environmental awareness, green growth, green economy, bio-product, effectiveness, product consumption.

Introduction

In today's marketplace, supplying the consumers with green products (i.e., sustainable and environmentally friendly products) have gradually become more active. Compared to regular products, bio-products are either biodegradable, or obtained through non-toxic ingredients, or packaged in materials which are recyclable. Consumers may often not prefer to use a bio-product for various reasons such as volume, labeling and price.⁶ It is also interesting to see if the bio-product is used regularly and whether the type of product (green and conventional) is decisive in determining the amount of a product.

Based on the above-mentioned, we regarded it necessary to study the level of awareness of the residents of Zugdidi and Kutaisi municipalities towards ecological marketing and their readiness for the green growth and transition to a new stage of development. Identification of residents' attitudes will enable the marketers to improve their new green strategies.

1. Research objectives and methodology

The research included the residents of Zugdidi and Kutaisi municipalities. Research topic was the attitude of the residents towards ecological marketing in these municipalities, frequency of bio-product consumption, and the role of product type while determining the product amount. Quantitative and qualitative surveys as well as questionnaires were used as research methods.

For quantitative survey, the sample size was determined through the following formula:

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{\Delta^2}$$

n – confidence level ($z=1,5$ for the probability of 85% confidence); N – population size (161351 people including IDPs – number of residents in Zugdidi municipality); p – sample proportion (0,5); $q=1-p$; Δ – margin of error (confidence interval - 7%).⁷

Thus, we have the following results:

$$n = (1,5^2 \times 0,5 \times 0,5 \times 161351) / (0,0049 \times 161351 + 1,5^2 \times 0,5 \times 0,5) = 90\,759,9375 / 791,1824 = 115$$

for Zugdidi municipality and 114 for Kutaisi municipality.

³ Aaker, D. A., *Managing brand equity: Capitalizing on the value of a brand name*. New York: The Free Press, 1991.

⁴ Chaudhuri, A., Holbrook, M. B., The chain of effects from brand trust and brand affect to brand performance: The role of brand loyalty. *Journal of Marketing*, 2001, 65, 81 – 93.

⁵ Oliver, R., Whence consumer loyalty? *Journal of Marketing*, 1999, 63, 33 – 44.

⁶ Szabo, S., Webster, J., Perceived Greenwashing: The Effects of Green Marketing on Environmental and Product Perceptions. *Journal of Business Ethics*. 2020, 2.

⁷ Baghaturia, G., Chiloglu, I., *Business Research Methods*. Tbilisi. International Black Sea University. 2018.

Different types of questionnaires were used for the research and they focused on different directions:

1. Whether the consumers choose bio-products for frequent use due to their effectiveness
2. What do consumers, who regularly use bio-products, think
3. How can consumers motivation be raised to use bio-products
4. What role does ecological awareness play in product selection

2. Residents' attitude towards bio-products

Residents of Zugdidi and Kutaisi municipalities with the following socio-demographic characteristics participated in the survey:

Zugdidi Municipality - 52% of respondents were women, and 48% - men;

Kutaisi Municipality - 45% of respondents were women, and 55% - men;

27% of respondents - aged 18-25;

31% of respondents – aged 26-35;

14% of respondents – aged 36-45;

28% of respondents – aged over 45.

48% - respondents with secondary and secondary special education;

35% - respondents with incomplete higher education;

17% - respondents with higher education.

The survey showed that 59% of respondents realize that there are ecological problems in Zugdidi, and only 41% of respondents think differently. 83.5% of respondents believe that there are ecological problems in Kutaisi, and only 16.5% of respondents think that there are no ecological problems in the city.

In addition, 73% of respondents in Zugdidi believe that the basic ecological problem is the air pollution, 10% of respondents think that waste problem (household waste and industrial waste landfills) represents the main problem. 17% of respondents choose the column "Other" and add their answers. Less popular answers are deforestation and littering in public places. 63.3% of the respondents in Kutaisi think that the major ecological problem is waste problem; Air pollution represents the main problem for 57% of residents and water pollution for 32.4%.

Main sources for getting information about ecological problems in Zugdidi municipality are the following: TV news – 10%; publications in a local magazine – 2%; Internet – 51%; friends and acquaintances – 19%; 18% of respondents find it difficult to answer. Main sources for getting information about ecological problems in Kutaisi municipality are the following: TV news – 23,4%; publications in a local magazine - 3,9%; Internet - 51,9%; friends and acquaintances - 49,9%; 22,1% of respondents find it difficult to answer.

The majority of Zugdidi respondents (56%) think that the local authorities should be involved in solving this problem. According to the second most popular response, this problem should be tackled by the organizations which are responsible for environment control and protection. 73.7% of Kutaisi respondents think that the problem should be solved by the organizations which are responsible for environment control

and protection, 19% of the respondents expect that the residents should explore the ecological problems themselves and deal with them.

In response to the question "What measures would you suggest to reduce or solve environmental problems?", respondents expressed the following opinions:

- to establish and develop the "environmental non-governmental" organizations;
- to introduce the new, resource-saving technologies in enterprises that will reduce environmental pollution;
- to increase the efficiency of waste management, utilization and recycling;
- to conduct "eco-actions" regularly.

34% of respondents have heard about the environmental actions and campaigns held in Zugdidi (such as "Clean City", "Clean the World") while 66% of respondents have not heard about them. In addition, only 4% had taken part in such activities. It should be noted that most part of them are residents having higher or incomplete higher education, and their average age is 18-25 years. 29% of respondents chose the option "No, but I want to", while 35% of respondents had not attended the actions and do not intend to do so.

At the same time, the majority of respondents (52%) believe that the actions have an impact on public opinion, but they are not effective enough. 35% of respondents believe that environmental campaigns have absolutely no impact; 13% of respondents are fully satisfied with the impact of the actions.

Thus, the first survey showed that most residents of Zugdidi and Kutaisi municipalities are aware of environmental problems, but they think that these problems should be solved by local authorities or special environmental organizations, which indicates a relatively low ecological culture in the city. This also confirms the fact that only a small number of local residents (mostly young people) are interested in environmental actions and campaigns, and the vast majority of them do not intend to participate in these activities.

Regarding the attitude of the local authorities towards the ecological situation and the formation of the public environmental culture, the interviews revealed that the representatives of the municipality are making result-oriented efforts. One of the most important priorities for Zugdidi and Kutaisi municipalities is the implementation of a green policy, which is confirmed by the decision of the Government of Georgia to establish a "Climate Change Council" in January 2020. Within the Covenant of Mayors, a "Municipal Development Coordination Platform" was established, so called "Club of Mayors" and members are Zugdidi and Kutaisi municipalities.

The Club of Mayors is an advisory body to the "Climate Change Council". This fact enhances the role of these municipalities in the process of fulfilling the international obligations of the state and allows them to have direct communication with the top officials of the executive branch of the country about their challenges and success. Municipality makes a commitment to reducing CO₂ and other greenhouse gas emissions by at least 40% by 2030 through energy efficiency measures and harnessing the renewable energy sources, as well as increasing the municipality's resilience through adapting to climate change.⁸

Various important transport, infrastructural or other measures are taken in the direction of eco-friendly policy in Zugdidi and Kutaisi municipalities. In particular, since 2020, the car fleet is completely replaced by new Euro 5 standard buses. Technical characteristics of these buses will reduce carbon dioxide emissions.

⁸ Covenant of Mayors, <http://com-east.eu/ka/about-us/covenant-of-mayors/> [L. s. 27.02.2022].

Water and sewerage works will be completed throughout the town and renewable energy resources will be created through the water treatment plant. Current negotiations with relevant donor organizations aim to establish a municipal waste management plant. Newly built preschools in the municipality have appropriate energy efficient infrastructure. The outdoor lighting system in the municipality are fully adapted to the energy efficiency requirements. The construction of the composting center has been completed, which makes it possible to get compost (bio fertilizer). Separate collection of waste has started in Kutaisi since 2015, particularly plastic and cardboard for their further recycling.

“Green Budget” is being implemented within the concept of green budget approved by Zugdidi Municipality Sakrebulo. Local initiative groups have been set up to create mini-recreational zones in the municipality and pre-defined budget allocations are given in the municipal budget. The main value of the project is inclusive approaches along with the improvement of the ecological condition. "Green Budget" is popular in Zugdidi municipality and the level of citizen involvement is not too low. In the competition "Clean Region 2020", Zugdidi Municipality is the winner in the nomination of the cleanest municipality.

Nevertheless, questionnaires showed that the conducted environmental actions and campaigns do not get proper attention and ecological situation is insufficiently covered.

The results of the research also show that the level of ecological culture of the population and the state of ecological marketing in the region are not sufficiently high. Environmental campaigns in the region are less effective and do not attract a sufficient number of local residents.

As for the consumption of eco-friendly products, more than half of the respondents prefer to use them. They consider that such products are safer not only for their health but also for the environment and this fact indicates that there is a necessity for the changing the environmental situation. Nevertheless, the residents of Zugdidi and Kutaisi municipalities have a mostly passive attitude towards their role in supporting environmental measures in the region.

The following study was conducted to find out whether the consumers choose the green products for frequent use due to their effectiveness.

In response to the question about the use of ecologically clean products, respondents answered as follows: 75% of respondents in Zugdidi and 77.2% in Kutaisi use products that are marked as "ecologically safe", while up to 25% do not think about consuming ecologically clean products.

In addition, among the reasons for the use of eco-friendly products, 76% of consumers name the safety for health and the environment; Only 19% of respondents choose the safety to health, while 9% of respondents care only about the lack of harm to the environment when they use such products.

23% of respondents are ready to pay more for environmentally friendly goods; 46% of respondents are also ready, but not always; 31% of residents do not want to pay extra at all.

The research was conducted in the market chain "Clean House". Consumers of detergents, hand sanitizers, oral care products and bathroom cleaners were interviewed.

In the survey, 55% of respondents answered "I know organic products", "I know green". 59% of consumers think that bio-products are less effective and need to use more in order to get the desired result. For example, the Detergent Customer Interview Questionnaire included the following questions:

1. "I am ready to pay more for products made in Georgia"

2. "I am ready to pay more for Eco- friendly packaging".

3."I am ready to pay more for environmentally friendly cleaners and detergents."

1. "I try to get aware of the products contaminated by environmental pollution and I tell myself not to buy them".

2. "I pay great attention to environmental compatibility when purchasing personal care products and household products."

3. "More often I consciously buy products that have less impact on the environment."

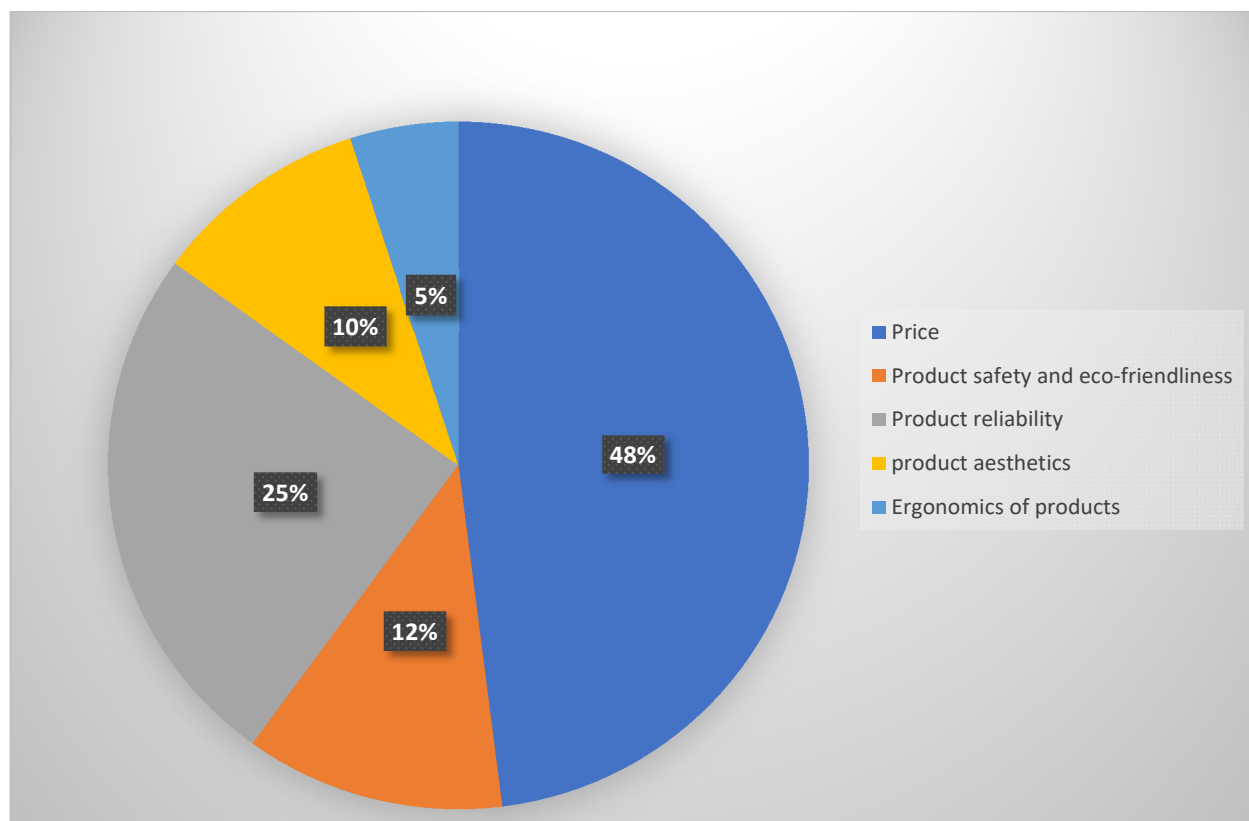
The analysis of the study showed that respondents are less informed about the effectiveness of bio-products. Product strength information is not clearly shown on the product packaging by product manufacturers; When making a decision, consumers rely less on the negative impact of the product and the principles of ethics. The study also confirmed that the impact on human health is considered a priority in decision making. In this case their motivation is high to buy bio-products. An example of this was shown by interviewing respondents when purchasing dental care and Bath Cleaning products. When buying dental care products, 30% more is considered to be the purchase of organic products rather than while buying bath cleaning products.

In order to assess the potential readiness of consumers to receive ecologically clean and safe products, a study was conducted on the example of the Georgian dried fruit brand "Chikori".

Products are sold in 100, 150 and 450 gram packages in natural, without any additives. The company "Caucasus Organic Fruits" also produces dried fruits in Georgia. It is certified by the FFS standard which means the product is safe, harmless, high quality, no chemicals or conservatives are used. The main importers of dried fruits in Georgia are Turkey, Uzbekistan, United Arab Emirates, Iran, Germany, Ukraine.

Analysis of the dynamics of companies' competitiveness has shown that the implementation of a market (competitive) strategy is of great importance for success in the market, it takes into account, firstly, the competitive advantages at the disposal of the company, and secondly, the effectiveness usage of these advantages in the existing market conditions.

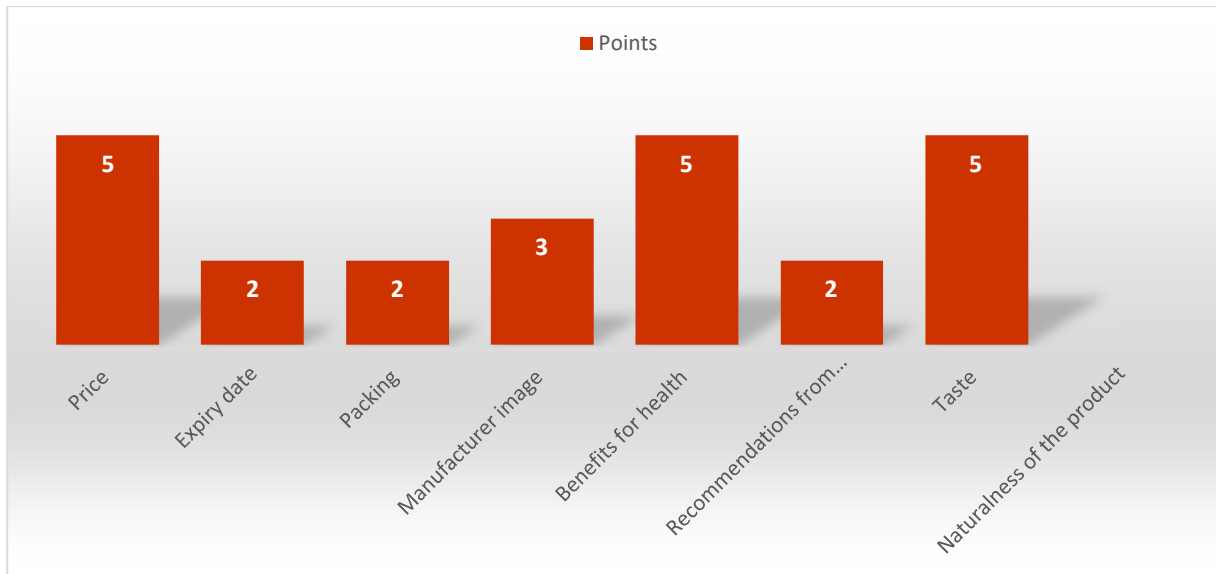
The survey revealed that the fundamental factor for respondents that effects the choice of goods and services is price (48%), which coincides with the opinion of experts on this issue. The next very important factor is the reliability of the products, 25% of the respondents answered the following: according to the reduction in the quality of importance, there are factors such as the aesthetics of the product - 10%, product safety and eco-friendliness - 12%, ergonomic performance of products - 5%. This indicates the need to inform consumers maximally about the importance of consuming environmentally friendly and safe products to achieve the beneficial effects of these products on human health (pic. 1).



Factors that influence on consumers' choice of goods and services. (Pic 1)

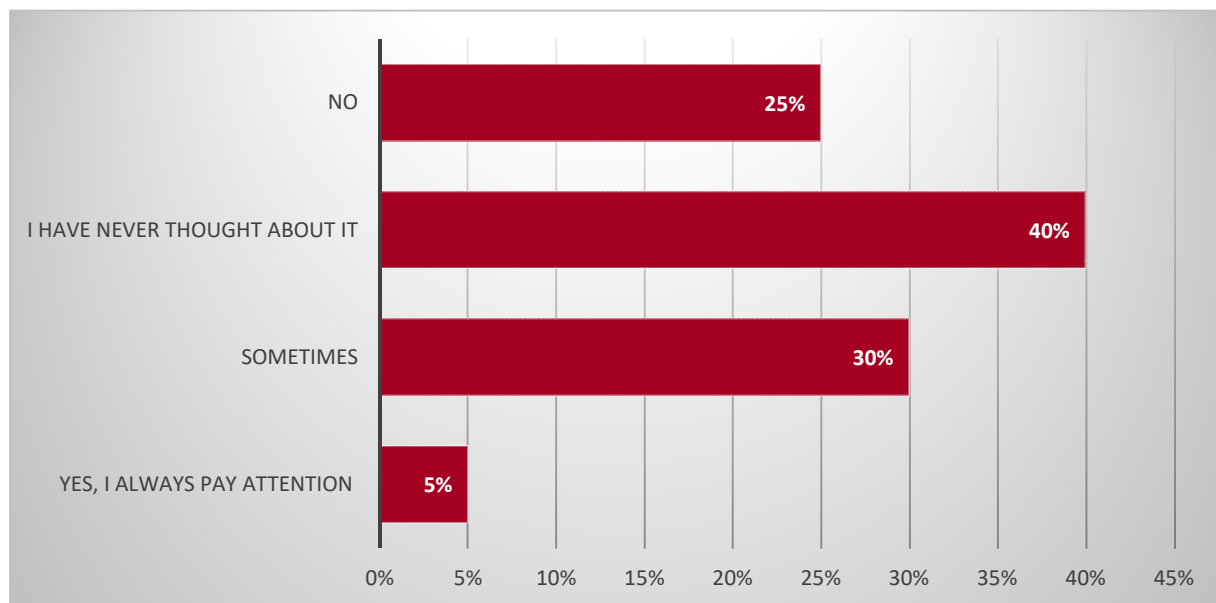
The results of the study revealed the key factors in choosing dried fruit (pic.2). According to the evaluating criteria on 5-point scale consumers named price, health benefits and taste as the most important things. Less important factor when choosing products by consumers is the image of the manufacturer and the naturalness of the product, the absence of harmful additives, and they think that the packaging, expiration date, recommendations of relatives and acquaintances are insignificant to them.

The survey showed that the majority of consumers (40%) never thought about the eco-friendliness of the products they purchased. This is due to the fact that manufacturers of environmentally friendly products do not use marketing tools to promote their products in the market and don't provide consumers with information. 30% of consumers in some cases pay attention to the eco-friendliness of the products and this segment is mainly created by consumers, for whom the naturalness of the product and the lack of harmful additives are important factors in choosing the dried fruit. For a quarter of the respondents, the eco-friendliness of the product they buy is not important and they do not pay much attention to it. And only a small percentage (5%) of consumers always consider to purchase ecologically clean products. (pic.3)



* Columns from left to right

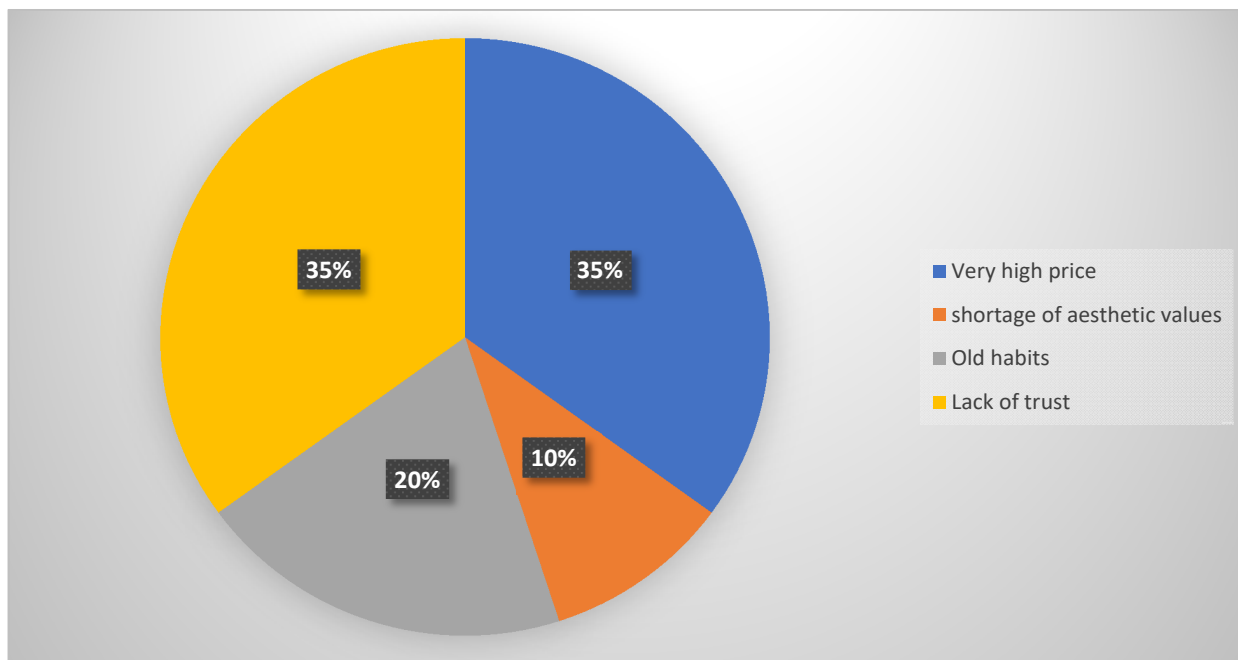
Assess the quality of prioritization of factors for consumers that influence the choice of dried fruit. (Pic 2)



The quality of attention paid to the environmental friendliness of the products purchased by consumers. (Pic 3)

Consumers named lack of trust and high price as the main reasons for low consumption of environmentally friendly products. Respondents are not sure that the offered product is really ecologically clean, as consumers are not competent enough to set standards for the composition of purchased products and without the help of experts they will not be able to assess whether the product meets all the requirements for this

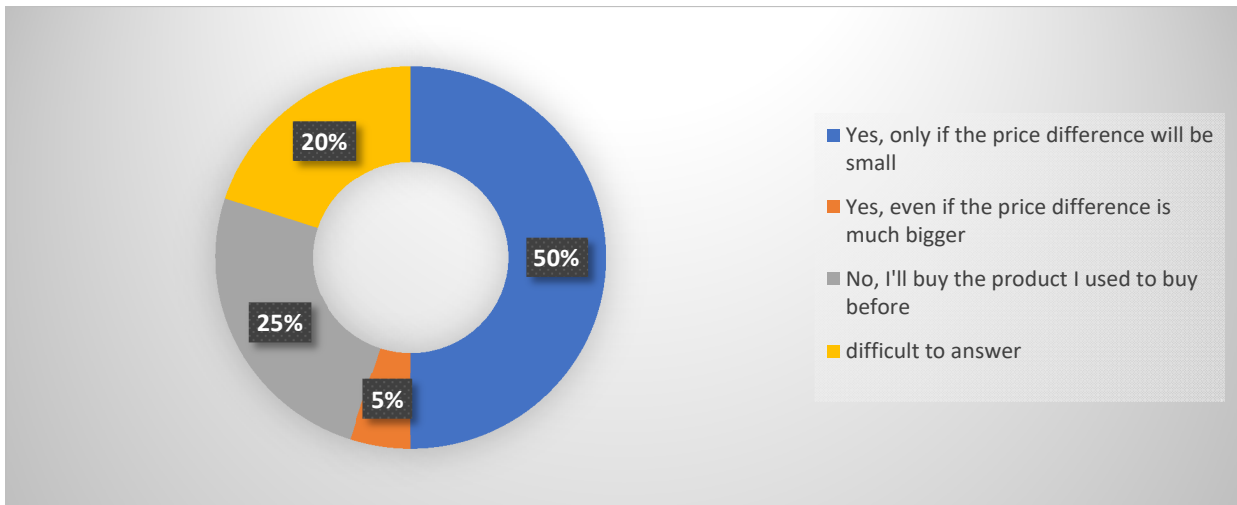
category. So they are not able to objectively assess the ecology and the absence of harmful substances for health in the products purchased by them. Consequently, consumers do not have a firm belief that the goods they are buying are truly ecologically clean and they are not willing to pay more for similar products. 20% of consumers are not ready to replace a familiar product that fully meets their needs and which they have been buying for a long time, with a new one as they might not meet their expectations. Consumers named the deficit of aesthetic values (10%) as one of the reasons for low consumption of ecologically clean products. (Pic.4)



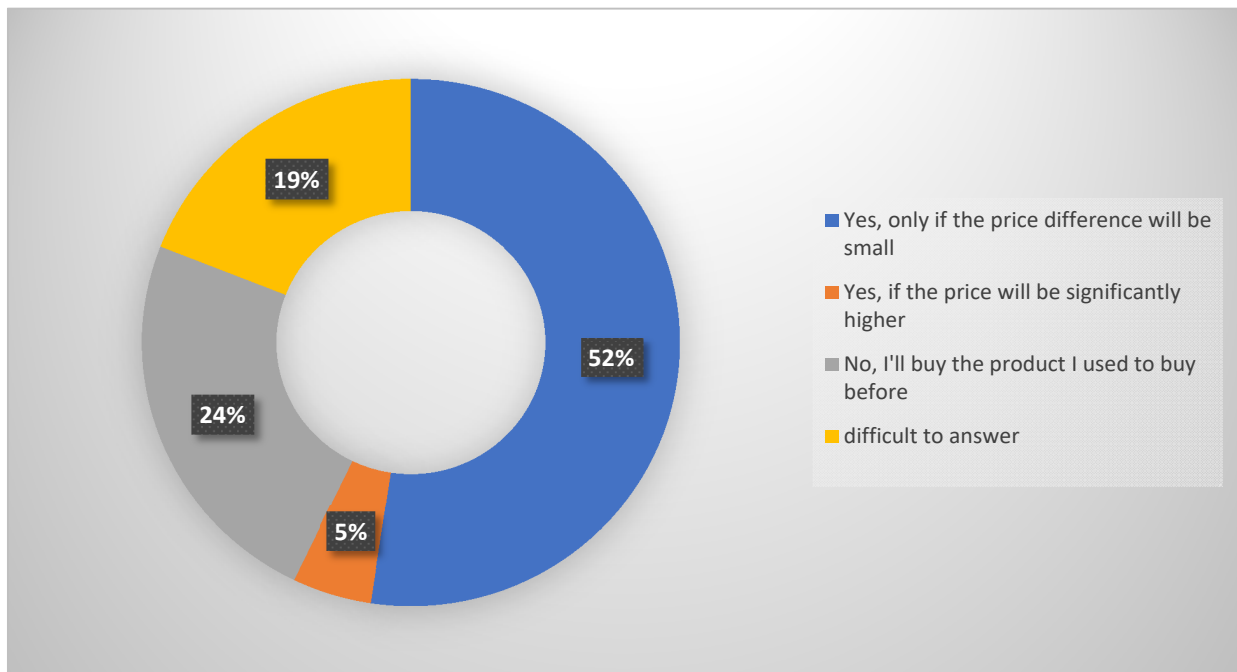
The low level of consumption of environmentally friendly products, the main reasons. (Pic 4)

The survey showed that 50% of respondents are willing to consume a more environmentally friendly and safe product if the price difference will be small. 25% of consumers are not ready to buy ecological products and will continue to buy the products he/she consumed previously. 20% of respondents find it difficult to answer this question, so manufacturers will be able to persuade them to buy environmentally friendly products through the use of marketing tools. Only a small percentage of respondents, about 5%, are willing to buy an environmentally friendly and safe product, even if the price difference is much higher (pic.5)

A similar situation arises with regard to consuming more ecologically clean ice cream: 27% of consumers are willing to buy this product, if the price difference will be small. Quite a large number of respondents 59% find it difficult to answer the question, while 12% of respondents do not prefer ecologically clean ice cream, they think that ice cream is not an essential product, so they are not going to increase their costs to buy this product (pic.6)

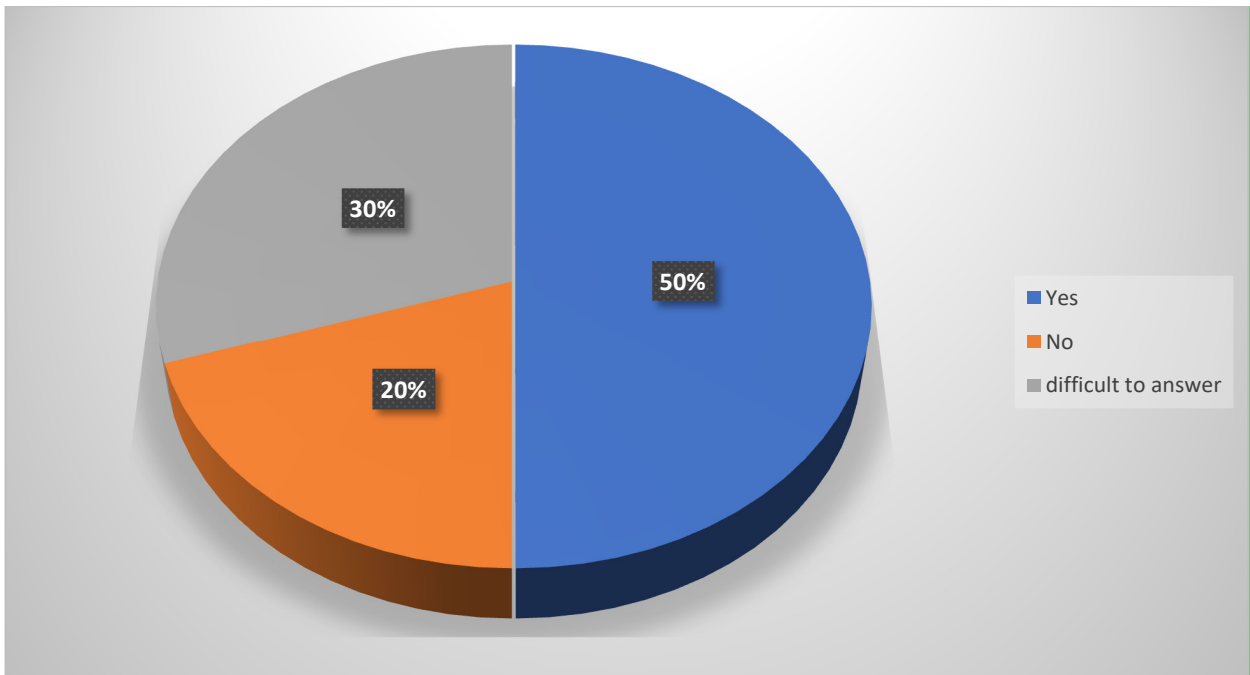


Customer willingness to choose a more environmentally friendly and safe product based on its price (Pic 5)



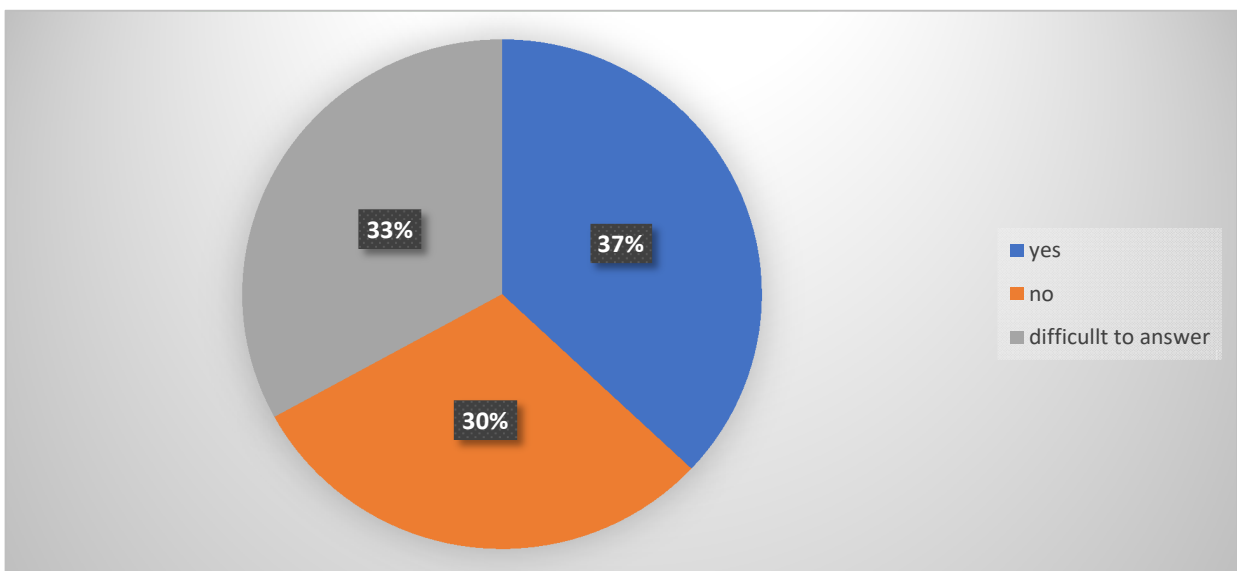
Willingness of consumers to make a choice on a more environmentally friendly and safe ice cream, depending on its price (Pic 6)

As the survey showed, 50% of consumers are ready to buy environmentally friendly and safe product, although the packaging of this product will be less colorful, sharp and attractive. This is explained by the fact that the aesthetics of the product is not the most important factor when choosing a product. 30% of respondents find it difficult to answer the question and only 10% are not ready to make a choice in favor of an environmentally friendly and safe product due to insufficiently attractive packaging (pic.7)



Willingness of consumers to choose a more environmentally friendly and safe product, depending on its packaging. (Pic 7)

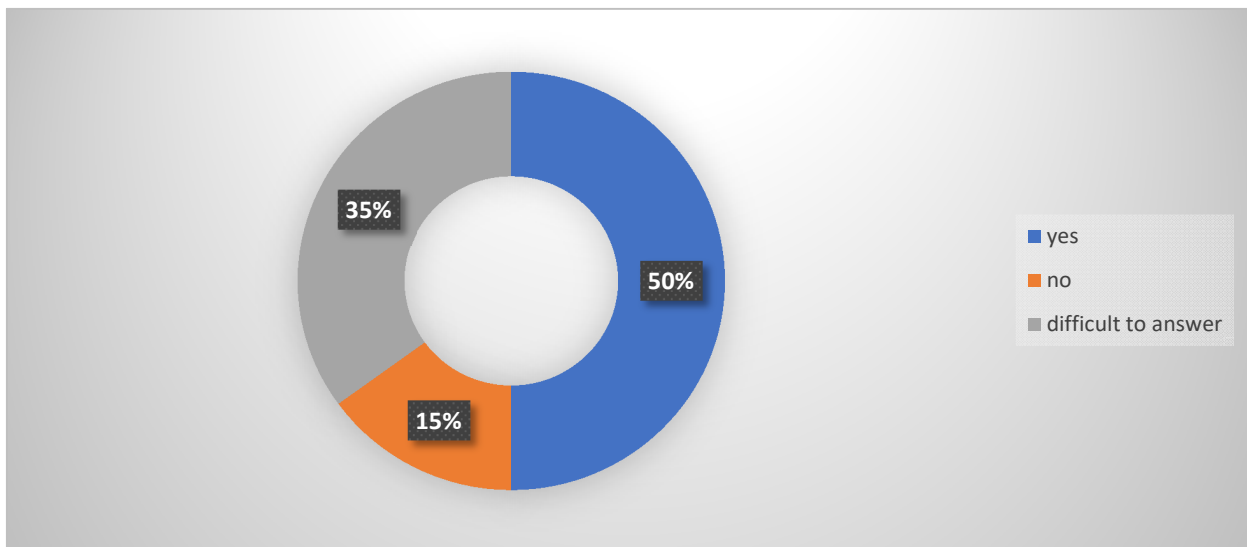
Consumers noted that despite the packaging, they are somewhat willing to buy environmentally friendly ice cream (37%), but at least 30% are not ready to choose this product due to the insufficient brightness, color and attractiveness of the ice cream packaging. A fairly large proportion of consumers (33%) found it difficult to answer this question (pic. 8).



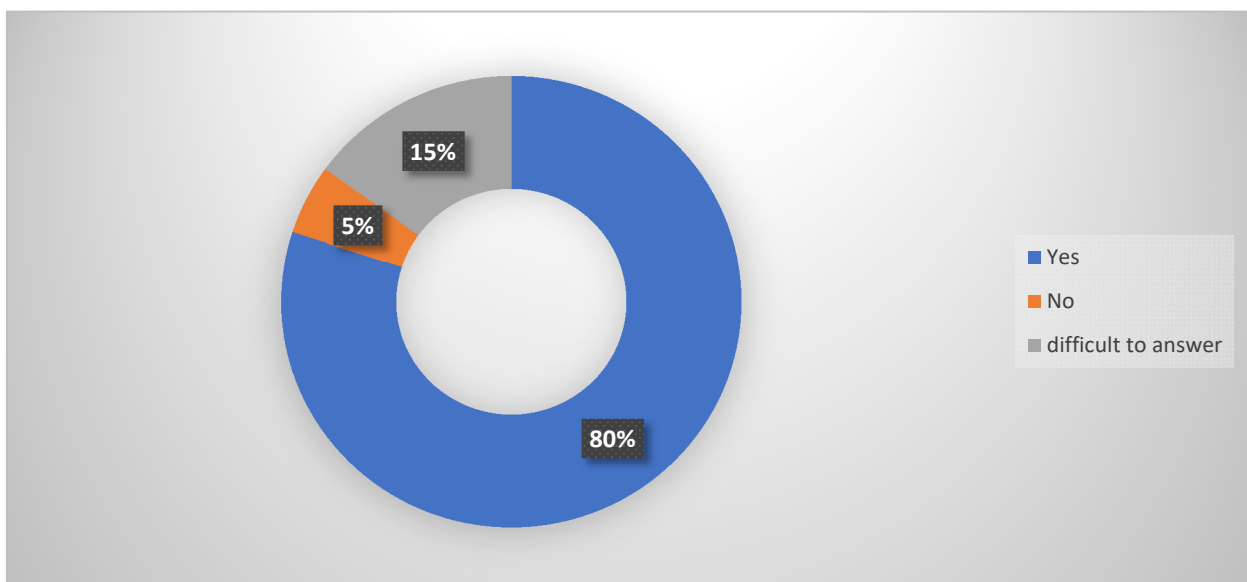
Readiness of consumers to choose more ecologically clean and safe ice cream, depending on its packaging. (Pic 8)

The survey showed that 50% of consumers do not suggest that enterprises are really ready to produce products that fully comply with environmental requirements. This is due to the fact that manufacturing companies do not provide enough information to consumers about new technologies in the production of goods. Quite a significant number of respondents, in particular 35%, believe that enterprises are fully prepared to produce eco-friendly and safe products, but 15% of respondents reject this view (pic. 9).

According to the respondents, enterprises are fully prepared to provide complete information about the ecological components of the products they produce (80%). This requires the use of marketing tools. 15% of respondents find it difficult to answer the question and only 5% of consumers think that enterprises are not ready to provide information on eco-friendliness of products (pic. 10).



Readiness of enterprises to produce products that fully comply with environmental requirements. (Pic 9)

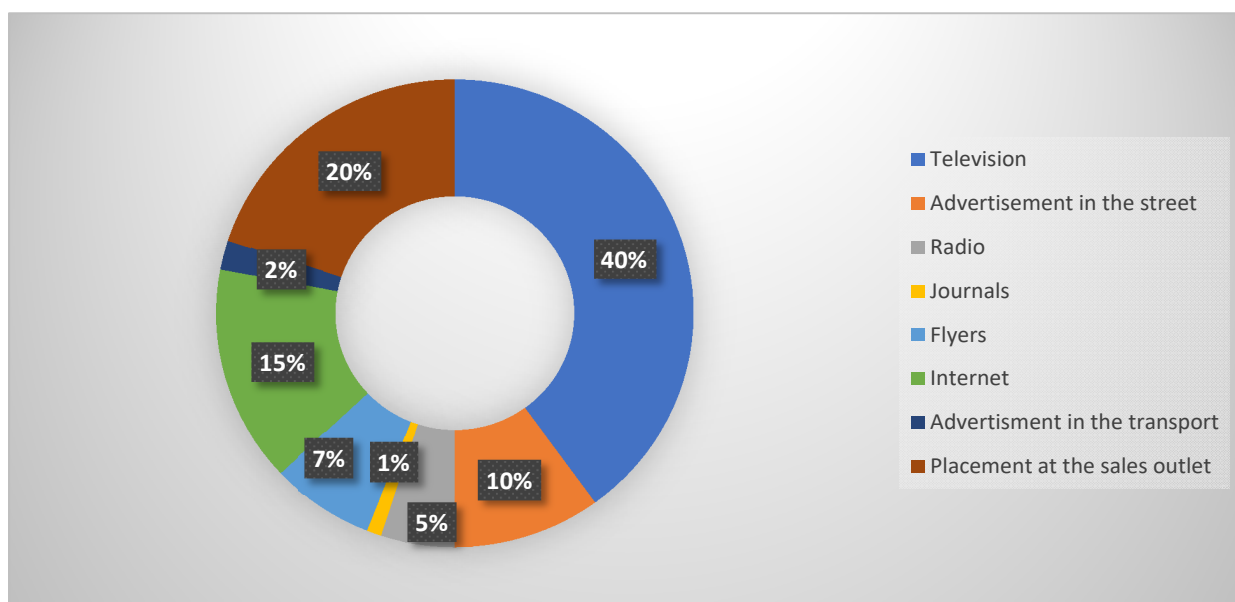


Willingness of manufacturers to provide comprehensive information on the ecological composition of their products. (Pic 10)

The majority of respondents - 40% said that television is the most popular source for the consumers to get information about ice cream, which indicates the psychological impact of advertising has a great impact on consumers' choices. Placement of ice-cream at the sales outlets is the second most important source of giving information to consumers about ice cream in terms of priority (pic. 11). Currently consumers have started to use an internet more actively and it is one of the sources for them to get information about this product.

Thus, the results of the marketing research, which assesses the potential demand of the population for ecologically clean and safe products among the residents of Zugdidi and Kutaisi municipalities, indicate that

- o The most important factor influencing the choice of goods and services is price; The main factors that determine the choice of ice cream for the consumer are price, health benefits and taste;
- o Most of the respondents have never thought about the eco-friendliness of the products they buy and do not pay attention to the purchase of ecologically clean and safe products;



Source of informing consumers about ice cream. (Pic 11)

- o Consumers named excessive prices and lack of confidence about new products as the main reasons for the low level of consumption of ecologically clean products;
- o Consumers are ready to buy ecologically cleaner ice cream only if the price difference compared to a similar product would be small;

To overcome this problem, it would be advisable for manufacturers to show more clearly the effectiveness of green products. When information about a product's strengths is clearly displayed on the product packaging, consumers are less likely to rely on the negative impact of the product and the principles of ethics when making decisions.

In this regard, it is necessary to make number of activities in order to raise the level of public environmental awareness, with the help of projects implemented in the educational system, as well as to introduce a system of financial incentives for the environmental initiatives. At the same time, through ecological marketing

tools, it is necessary to popularize the idea of eco-friendliness in public, as well as to raise the interest of the population towards ecological consumption to a new level.

This study shows that product type - bio-product versus conventional product - plays an important role in the amount that the consumer uses in one case to achieve the desired result.

Conclusion

The results of all three studies indicate that consumers use less bio-products compared to the usual product. In addition, consumers see differences in the use of green and regular products. Customers who are eco friendly use big amount of bio-products and less eco-friendly users don't show an example of such use.

It seems that this phenomenon of using more bio-products is caused by consumers perceiving more efficiency of this type of product. Consequently, when the perceived effectiveness of a bio-product is supported by credible evidence, the distinction between green and regular product use disappears. We found support for our research hypotheses in all three studies using different products (1. Hand Disinfectant, Oral Care and Glass Cleaner 2. Dried fruit 3. Ice Cream), different indicators of product greenness (using green label and company descriptions) and different settings, which shows the actual use of the product.

Thus, green shopping is an expression of what people think depending on their social environment and what their expectations are in general. In this sense, behavior of user is a symbol of differentiation and identification.

It is necessary not only to analyze the motivational factors for the purchase of bio-products, but also to study the results of the use of bio-products. It should be noted that Georgia has an obligation to "green" the development of the sectors provided by the Association Agreement between Georgia and the European Union.⁹ In order to introduce a green economy, it is necessary to change the "consumption model", both in the production and marketing of environmental products, as well as in the reduction of human consumption of "unnecessary" products.¹⁰ Although public concern about sustainability has grown and it is considered that organic products are one way to reduce and alleviate resource pressures, a survey conducted in Zugdidi and Kutaisi municipalities showed that consumer use of organic products is still low.

The transition to "Green Growth" requires profound cultural changes in society, in particular, raising public awareness, their involvement in the decision-making process, which will significantly contribute to the growth of the use of "green products".

⁹ World Bank. Impact of Climate Change on the Georgian Coast: Vulnerability Assessment and Adaptation Options. © World Bank, 2020.8.

¹⁰ Green Alternative. Green Policy and Environment, 2013, 7.

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