

ISMGE 2020**II International Scientific and Practical Conference "Individual and Society in the
Modern Geopolitical Environment"****ECOLOGICAL THINKING OF MODERN SOCIETY AND ITS
VISION OF CIRCULAR ECONOMY**

Maria Andreevna Gureva (a)*, Valentina Vladimirovna Butko (b)

*Corresponding author

(a) FSBEI HE «Industrial University of Tyumen», 38 Volodarsky St., Tyumen, Russia, gurevama@tyuiu.ru

(b) FSBEI HE «Industrial University of Tyumen», 38 Volodarsky St., Tyumen, Russia, vvbutko_54@mail.ru

Abstract

The broad academic community considers the concept of the circular development approach in many areas and levels of society, from individual behavioural scenarios to the scale of world production. This fact determines a key feature of the assessment, namely, the specifics of the tools used. The article presents a detailed analysis of conducting and processing the results of an applied sociological survey of public opinion concerning the knowledge of respondents on key aspects of sustainable development, green and circular economies. Diagnostics and descriptive analysis of the development of public opinion on issues related to ecological well-being and, in general, sustainable development of both individuals and territorial space, are important tools in creating and coordinating major national development projects. Including an actual social image of a modern economically active person increases the efficiency of managerial decisions at all levels (micro-, macro- and meso-). It is possible to interpret the formed image of ecological thinking as a long-term forecast that determines stability and forms a certain amount of sustainability, a legacy for future generations. The findings allow diagnosing a number of key features not only in the upbringing, education and personal culture of an individual, but also to predict his or her economic activity, to reveal the points for the inclusion of elements of innovative thinking, and thus, to contribute to the growth of well-being of the whole country, according to the scale effect.

2357-1330 © 2020 Published by European Publisher.

Keywords: Circular economy, green economy, public opinion, sustainable development, questionnaires.

1. Introduction

Starting from the last quarter of the 20th century, an increasing number of scientists turn to the study of the phenomenon and peculiarities of ecological education and thinking due to the increasing need to form a careful attitude of human beings to nature. For example, Ashkhamaf (2010) deals with the problem of defining the concept of ecological consciousness. The work of Chuikova (2012) analyzed the development of theories and principles of ecological thinking at the level of school education. Haliy (2015) considered the ecological consciousness of the population on the basis of mass surveys of "Levada-Center", FOM and WCIOM. From the methodological point of view, Nesterova and Pozharnitskaya (2018) describe sustainable human well-being, including ecological value categories. Harutyunyan (2020) studied the model of ecological management consciousness in the "new epoch", and other studies.

2. Problem Statement

Our previously research defined a general concept of circular economy. The proposed innovation model has structured large-scale levels of its manifestation, including a micro-level that characterizes the development of environmental consciousness of society. Transformational changes in consumer behavior and preferences in society are the core of transformations and can change the global economic system (Danilov-Danilyan, 2019; Guryeva, 2019a; Guryeva, 2019b). According to the forecast announced by the Head of the International Monetary Fund (IMF) Kristalina Georgieva, the world economy will fall into recession throughout 2020, with possible subsequent growth prospects in 2021 (IMF, 2020). We believe that during this period, the attractiveness of moving towards a trend and the widespread use of circular principles is increasing and becoming more evident.

3. Research Questions

The development of highly effective strategic programs for the implementation of principles and business models of circular economy in the territorial space of Russia requires clearly represent the initial and historically formed social image of society, which allows to concretize and make adjustments at the stage of building model scenarios.

4. Purpose of the Study

The purpose of the study is to identify the level of ecological education, awareness and literacy formed among Russian citizens in the conceptual understanding of sustainable development and its attendant new transformational manifestations as green and circular economies.

The object of the study is the ecological culture of the individual in modern Russian society; the subject is the impact of the latest concepts of sustainable development on the level of ecological literacy.

5. Research Methods

To study public opinion, the authors have chosen the most frequently used method of questionnaire. Operational research of knowledge about key aspects of sustainable development, green and circular

economies was performed using the computer assisted interviewing system (CAIS) (Kanygin, 1999; Yakovleva, 2014) through the technological tool of Google Form platform. The developed questionnaire form includes 20 questions divided into three analytical groups as follows:

- level of environmental knowledge (questions 1 - 7, 10, 12, 14);
- ecological compatibility of behavior (questions 8, 9, 11, 13, 15 - 17);
- social image of the respondent (questions 18 - 20).

The full content of the "Circular Economy and Sustainable Development" questionnaire is presented in the corresponding Google Form on the Internet (Google Forms, 2020).

6. Findings

The computer interviewing involved 400 people, the time period from March 23 to April 6, 2020, and is finished on an actually achieved sufficient number of respondents (the required sample size was 384 people). The general totality refers to the number of the permanent population of Russia - according to Rosstat as of 18.06.2019. (146,780,720 people) (Federal state statistics service, 2020); the confidence probability was 95%, the confidence interval was 5% (Figure 1) (Nesterova & Pozharnitskaya, 2018).

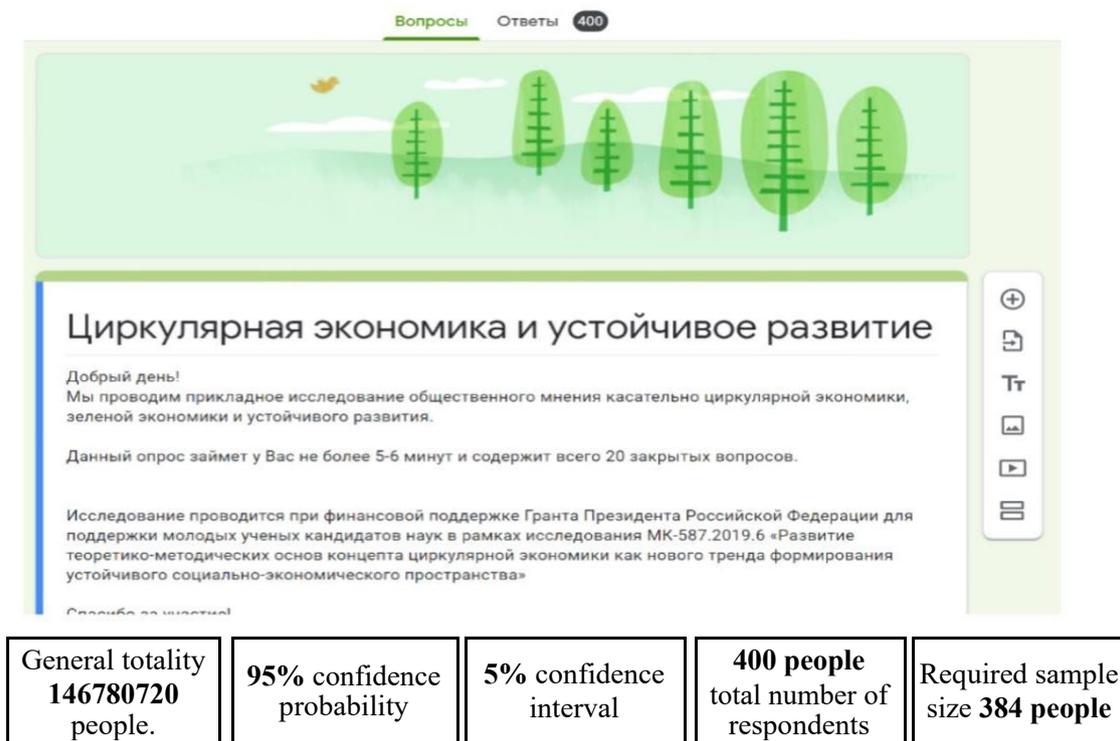


Figure 01. Visualization of the computer interviewing questionnaire "Circular Economy and Sustainable Development" on Google platform Forms (excerpt)

Table 1 visualizes the answers received from respondents on the first block of questions "Level of Ecological Knowledge".

Table 01. Answers of respondents in the questionnaire "Circular Economy and Sustainable Development", block 1 "Level of Ecological Knowledge»*

Total number of respondents	Question number / Question statement / answer choices					
400 people	1. Do you know the term "Sustainable Development"?					
100 %	yes		No		I have a rough idea	
	174 (43,50%)		78 (19,50%)		148 (37,00%)	
400 people	2. Do you know the concept of "Sustainable Development Goals"?					
100 %	yes		No		I have a rough idea	
	136 (34,00%)		126 (31,50%)		138 (34,50%)	
400 people	3. Do you know the term "Green Economy"?					
100 %	yes		No		I have a rough idea	
	145 (36,25%)		165 (41,25%)		90 (22,50%)	
400 people	4. Do you know the concept of "Circular Economy"?					
100 %	yes		No		I have a rough idea	
	90 (22,50%)		223 (55,75%)		87 (21,75%)	
400 people	5. Do you consider "sustainable development" and "green economy" synonymous?					
100 %	yes		No		I have a rough idea	
	44 (11%)		179 (44,75%)		177 (44,25%)	
400 people	6. Do you consider "sustainable development" and "circular economy" synonymous?					
100 %	yes		No		I have a rough idea	
	46 (11,50%)		151 (37,75%)		203 (50,75%)	
400 people	7. Do you consider "green economy" and "circular economy" synonymous?					
100 %	yes		No		I have a rough idea	
	59 (14,75%)		137 (34,25%)		204 (51,00%)	
400 people	10. How do you estimate the level of development by the following parameters...					
100 %	Ecological Culture (Russia)		Ecological Culture (World)		Ecological education (Russia)	
	high	2	very high	3	high	6
	low	175	average	184	low	175
	Ecological Culture (World)		Ecological legislation (Russia)		Ecological legislation (World)	
	very high	5	very high	3	very high	7
	average	179	low	140	average	156
	State Financing of Ecology (Russia)		State Financing of Ecology (World)		State Financing of Innovations (Russia)	
	very high	2	very high	4	very high	4
	low	158	average	150	average	138
	State Financing of Innovations (World)		Ecological Situation (Russia)		Ecological Situation (World)	
	very high	14	very high	4	very high	3
	average	146	low	132	average	153
	12. How do you think widespread implementation of the principles of the circular economy in other countries?***					
	Measurement units	only in developed countries	in developing countries	not common at all	in underdeveloped countries	not sure
400 people	people	289	75	37	7	10
100 %		72.25	18.75	9.25	1.75	2.5
	14. Do you have any idea about the National Project "Ecology" in Russia?					

400 people	yes	no	partial
100 %	50 (12,50%)	229 (57,25%)	121 (30,25%)

- * compiled by the authors. The research uses Google Forms software [14].
- ** there are only answer choices with maximum and minimum results values.
- *** this question implies multiple choice of answers.

Questions 1 - 7 of the first block contain a metaphorical character and aim at revealing the general level of ecological cognition formed in an individual who has acquired a certain educational level and experienced the influence of the modern information environment.

The answers to the first question demonstrate a high degree of recognition of the term "sustainable development", perhaps due to its almost 30-year history of development (43.50% gave an affirmative answer and 37% admitted that the concept is familiar to them). When testing more in-depth knowledge to specify sustainability principles, the number of respondents with some information decreased markedly by 9.5 % to only 34 %; the number of respondents with a negative answer increased by 12 %. Therefore, we can assume that the concept of sustainable development is more familiar to society as a garbled word combination in the information environment, only one third of respondents know its peculiarities.

The number of negative responses will gradually increase, showing that 41.25% of respondents are unaware of the green economy, 36.25% of them answered positively; there is a rapid decline in knowledge: only 22.50% of respondents know about the trend in the new economy towards circular development. We have interpreted this observation as a negative trend, which consists in the lack of sufficient knowledge accumulated by society in the sphere of circular economy and sustainable development.

The following questions aim to consciously use the definitions analysed, so 44.75% of respondents understand the difference between sustainable development and the green economy, but only 37.75% do not consider themselves synonymous with sustainable development and the circular economy. There is a significant decrease in knowledge on question 7: only 34.25% of respondents find different concepts of the green economy and the circular economy. Aggregating the number of received answers with the wording "not sure" (question 5 - 44,25%; question 6 - 50,75% and on question 7 - 51%) we can state that about 34% of respondents know the term circular economy.

Question 10 has a rating scale for the various manifestations of the general concept of environmental knowledge. The table 1 above shows only the answer choices of respondents with maximum and minimum matches. We will consider the parameters proposed for comparison in pairs: ecological culture, ecological education, ecological legislation, state financing of ecology, ecological situation. All of them have the same tendency that the development level in Russia is lower than in the world. One exception is the parameter "state financing of innovation", where respondents rated the development level uniformly as "average".

At the same time, we should note the inaccuracy intentionally made by the survey in the formulation of the question: the concept of "World" is generalized and has no specific description, for example, what is the level of development of countries compared to Russia? This raises an additional number of questions that require detailed study and thorough clarification not provided for the topic of the current study.

Without a clear understanding of the principles of the circular economy and the concept itself, however, an overwhelming number of respondents, 72.25%, believe that the greatest coverage of their dissemination and implementation is in developed countries. Only 12.50% of the respondents know about

the National Project "Ecology" (Ministry of Natural Resources and Environment of the Russian Federation, 2020), and 57.25% gave a negative answer. Consequently, we may doubt the correctness of the assessments in terms of the necessary level of professional knowledge on sustainable development for some respondents.

The analysis of answers in the first block "Level of environmental cognition" raises an assumption that only a third of respondents have formed a correct idea of the concept of sustainable development, and, in particular, of the circular economy.

The questions of the second block are aimed at establishing the level of personal ecological compatibility of respondents' behavior based on their own assessment (Table 2).

Table 02. Answers of respondents in the questionnaire "Circular economy and sustainable development", block 2, "Ecological Behavior"*

Total number of respondents	Question number / Question statement / answer choices						
400 people	8. Can you identify yourself as an ecologically literate person?						
100 %	yes	No		I have a rough idea			
	186 (46,50%)	117 (29,25%)		97 (24,25%)			
	9. What principles of circular economy do you follow in everyday life?*						
	Measurement units	I sort garbage	I prefer public transport	I use the Smart home system	I prefer public transport to ride a scooter/ bike, etc.	I have installed counters	I use a reusable shopper bag
400 people	people	121	122	33	177	217	232
100 %	%	30.30	30.50	8.30	44.30	54.30	58.00
400 people	11. Do you think the development and implementation of circular economy principles is effective?						
100 %	yes	No		not sure			
	158 (39,50%)	39 (9,75%)		203 (50,75%)			
	13. Currently, are there any examples of applying the principles of circular economy in Russia?*						
	yes, in the behavior and lifestyle of individuals	yes, in the practice of individual companies / organizations	yes, at the legislative level of the state	yes, we have formed a mass circular consumption	Not sure	no, I don't have any examples of that	
400 people	216	205	34	3	5	75	
100 %	54.00	51.25	8.50	0.75	1.25	18.75	
	15. Do you share the ideas of the Ellen MacArthur Foundation?						
400 people	I don't know who that		no	partially		yes, completely	
100 %	314 (78,50%)		14 (3,50%)	57 (14,25%)		15 (3,75%)	
	16. Do you share the position of Swedish eco-activist Greta Tunberg?						
400 people	I don't know who that		no	partially		yes, completely	

100 %	103 (25,75%)	154 (38,50%)	129 (32,25%)	14 (3,50%)	
	17. Are you interested in expanding your knowledge and skills in the field of circular economy and sustainable development?				
400 people	rather yes	yes	rather not	no	not sure
100 %	194 (48,5%)	113 (28,2%)	39 (9,8%)	15 (3,7%)	39 (9,8%)

* compiled by the authors. The research uses Google Forms software (Google Forms, 2020).

** we don't take into account the answers that scored less than 1%.

At first glance, the answer to the question 8 looks very encouraging: almost half of the respondents, 46.5%, consciously identified themselves as an "ecologically literate person" and only 29.25% gave a negative answer. If we compare these answers to the number of positive answers on the question about knowledge of the term "sustainable development", we get the result lower by 3%. Consequently, we can assume that 3% of respondents either misinterpreted the concept of sustainable development or did not implement its basic principles in practice, even knowing about it.

The elements of ecologically conscious behavior in everyday life include: the use of reusable shopper bags (58%), public transport (30.50%), sports vehicles for bicycles / scooters, and so on. (44.30%), installation of 2-tariff electricity counters (54.30%), garbage sorting (30.30%), introduction of "Smart House" system (about 2%), etc. An overwhelming number of respondents (50.75%) find it difficult to recognize the effectiveness of applying the principles of circular economy, while 39.50% consider the opposite.

According to the respondents, the scale of implementation of circular economy is limited by the micro level (in the behavior and lifestyle of individuals, 54%) and macro level (in the activities of individual companies, 51.25%). The 18.75% of respondents gave a negative answer, which reflects the insufficient level of their awareness of the current development trends of some companies and the ongoing improvement of the ecological worldview in society. Approximately 8.5 % responded in the affirmative to the question about circularity at the state legislative level. Here it is necessary to distinguish between legislative activity in the sphere of ecology and state activity on the level of implementing circular business models. Less than 1% of respondents unreasonably believe that Russia has formed mass circular behavior, which does not fully correspond to reality.

The following questions are intended to identify the degree of respondents' recognition of the most famous people in the international environmental community today: the founder of EMF, Ellen MacArthur (The Ellen MacArthur Foundation, 2020) and the Swedish eco-activist Greta Tunberg. According to the WCIOM study conducted in October 2019, among Russians, the degree of recognition of Greta Tunberg was 37% (WCIOM, 2020), while only 25.75% in the described survey don't know her, which presumably is the result of hip-strategy in the mass information space. At the same time, the absolute majority of 78.50% is not familiar with the activities of Helen MacArthur, the leader and founder of the circular economy movement around the world. Less than 4% support the ideas they put forward in full, while 14.25% and 32.25% partially agree with their position.

28.2% of respondents expressed an interest in obtaining new knowledge on the studied concept of sustainability and circularity, and 48.5% are "rather agree"; only 3.7% of respondents expressed a

categorical reluctance to receive new information. This demonstrates the high potential of Russians to form mass circular consumption.

In general, the analysis of respondents' answers in the second block demonstrates their tangible lagging behind the mass trends in the development of ecological worldview in everyday life and behavior at the domestic level. The demonstrated willingness and openness to self-improvement and to receiving new information from the majority of respondents is a positive factor and a valuable resource, whose importance requires consideration and effective use when designing development programs and strategies.

The third block analyzes and averages the social image of the respondent (Table 3).

Table 03. Answers of respondents in the questionnaire "Circular economy and sustainable development", block 3 "Respondent's Social Image"*

Total number of respondents	Question number / Question statement / answer choices										
18. Specify your gender:											
400 people	male					female					
100 %	134 (33, 5%)					266 (66,5%)					
19. Specify your age:											
400 people	Measurement units	15-20	21-25	25-30	30-35	36-40	41-45	46-50	51-55	56-60	
100 %	people	15	46	75	85	57	44	27	17	21	13
	%	3.75	11.50	18.75	21.25	14.25	11.00	6.75	4.25	5.25	3.25
20. Specify your level of education:											
400 people	Measurement units	secondary education	student	Higher education (bachelor's degree)	Higher education (specialist)	Higher education (master's degree)	postgraduate student	postgraduate education (candidateofscience)	postgraduate education (doctorofscience)	postgraduate education (PhD)	
100 %	people	7	18	41	155	85	11	69	11	3	
	%	1.75	4.5	10.25	38.75	21.25	2.75	17.25	2.75	0.75	

* compiled by the authors

** the research uses Google Forms software [14].

The greatest number of respondents belongs to the age range of "30 - 35" years, it is 21.25%, and more than half are from 25 to 40 years, i.e. they are economically active population. The educational level is quite high - 93.75% of the respondents have higher education, including 17.7% of candidates of sciences and 2.75% of doctors of sciences. When comparing the data with the previous blocks of questions, we can observe a worrying trend: about one third of Russians with higher education and who are currently engaged in their professional activities do not have an established understanding of the concepts of sustainable development and circular economy. Presumably, it is necessary to focus more on the inclusion of optional

classes in the curricula of all levels of education aimed at developing competencies that advise the ecological concept.

A possible drawback of the analyzed responses on the third block is the homogeneity of the respondents' contingent due to the academic environment of the questionnaire distribution. To expand the objectivity of the survey, it is advisable to further attract more respondents of a different age category and/or level of education. We should mention that the volume of ecological knowledge presumably will be significantly reduced in such case, as the study repeatedly demonstrated the correlation between the level of education and the degree of ecological knowledge. An interesting addition is to conduct a comparative survey on alternative locations, such as rural and metropolitan areas.

7. Conclusion

A sociological survey of public opinion allowed us to identify and describe the level of ecological education, awareness and literacy formed among Russian citizens in issues related to sustainable development and modern concepts of green and circular economies.

In general, the ecological culture of the individual in Russian society is clearly influenced by the latest concepts of sustainable development, but the total amount of accumulated knowledge still remains at a relatively low level. This is largely due to the fact that the acquired knowledge is informational rather than scientific; there is no systematic provision of information about the circular economy. Given the high level of interest of respondents in expanding their ideas concerning this sphere and available practical skills in everyday life, it is necessary to use the formed potential for transformation of mass consciousness by introducing and popularizing the concept of sustainable development and the framework of principles of circular economy.

Acknowledgments

The research was carried out with the financial support of the Grant of the President of the Russian Federation to support young scientists of Candidates of Sciences within the framework of research MK-587.2019.6 "Development of theoretical and methodological foundations of the concept of circular economy as a new trend of formation of sustainable socio-economic space".

References

- Ashkhamaf, A. R. (2010). Ecological consciousness: to the problem of defining the concept. *Bulletin of Adyge State University. Series 1: Regional studies: philosophy, history, sociology, law, political science, cultural studies*, 3, 15-18.
- Chuikova, L. Yu. (2012). Ecological thinking and ecological worldview as a product of ecological education at school: analysis. *Astrakhan Bulletin of Environmental Education*, 1(19), 46-68.
- Danilov-Danilyan, V. I. (2019). Global ecological problem and sustainable space development. *Bulletin of the Moscow University. Series 6: Economics*, 4, 8-23.
- Federal State Statistics Service, (2020). *About the Sustainable Development Goals*. <https://gks.ru/sdg>
- Google Forms. (2020). "Circular economy and sustainable development" questionnaire. <https://www.google.ru/intl/ru/forms/about/>
- Guryeva, M. A. (2019a). Circular economy as an innovative model for the development of socio-economic space. *Economic relations*, 9(4), 1295-1316. <https://doi.org/10.18334/vinec.9.4.41236>

- Guryeva, M. A. (2019b). Theoretical foundations of the concept of circular economy. *Economic relations*, 9(3), 2311-2336. <https://doi.org/10.18334/eo.9.3.40990>
- Haliy, Yi. A. (2015). Ecological consciousness of the population of modern Russia. *History and Modernity*, 1, 189-205.
- Harutyunyan, K. S. (2020). Formation and development of a new form of public consciousness in management of ecological sphere. *Bulletin of North (Arctic) Federal University Ser.: Humanitarian and social Sciences*, 2, 64-71. <https://doi.org/10.37482/2227-6564-V007>
- IMF. (2020). *Managing Director Kristalina Georgieva's Statement Following a G20 Ministerial Call on the Coronavirus Emergency*. <https://www.imf.org/en/News/Articles/2020/03/23/pr2098-imf-managing-director-statement-following-a-g20-ministerial-call-on-the-coronavirus-emergency>
- Kanygin, G. V. (1999). Basic structures of the questionnaire method. *Sotsiologicheskij Zhurnal*, 1-2, 143-155.
- Ministry of Natural Resources and Environment of the Russian Federation. (2020). Passport of the national project "Ecology". http://www.mnr.gov.ru/activity/directions/natsionalnyy_-_proekt_ekologiya
- Nesterova, O. A., & Pozharnitskaya, O. V. (2018). Assessing well-being from the perspective of sustainable human development: opportunities of international indices. *Innovation Economy Issues*, 8(3), 335-348. <https://doi.org/10.18334/vinec.8.3.39338>
- The Ellen MacArthur Foundation, (2020). *Our Mission is to Accelerate the Transition to a Circular Economy*. <https://www.ellenmacarthurfoundation.org>
- WCIOM. (2020). *Greta Thunberg: a fighter for the future of the planet or a puppet in someone else's hands?* <https://wciom.ru/index.php?id=236&uid=9947>
- Yakovleva, N. F. (2014). *Sociological research: a training manual*. FLINT.