

Arctic climate policy development: taking public beliefs into account

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Abstract. For the effective implementation of climate policy in the Arctic, public beliefs must be taken into account in its development. The research presented in this report shows that the majority are inclined to believe that climate change is occurring, where the younger generation associates these changes with anthropogenic impact, while the older respondents with natural causes. The majority are confident that climate change in the Russian Arctic will bring positive change, increase the standard of living in the Arctic, improve conditions for farming, and increase the intensity of traffic along the Northern Sea Route. Thus, the population is not ready to bear the possible costs when the climate policy is tightened; people's expectations are aimed at increasing the comfort of living in the Arctic.

1 Introduction

Public discourse about climate change is based on the fact that climate change is global in nature and brings economic, social, and environmental risks. Therefore, one of the global goals of sustainable development [1] is taking urgent action to combat climate change and its impacts. In the Arctic, the climate is changing faster than in other global regions. Over the past 20-25 years, the area and thickness of the Arctic sea ice has been decreasing [2]. Indicators describing extreme heat in winter continue to grow, and it is predicted that in 10-15 years the average winter temperature will be 4-5 °C higher than in the late 20th century [3]. Based on the projected climate changes in the Arctic, such risks are predicted as more frequent catastrophic weather events, degradation of permafrost, long-term biodiversity stress, and threats to public health [4]. It is well known that concepts adopted by the public have an influence on the practice through the policy choices made by governments, companies, research organizations, NGOs. This was stressed by John Maynard Keynes in his "General Theory of Employment, Interest and Money": "The ideas of economists and political thinkers — both when they are right and when they are wrong — matter much more than is commonly thought. In reality, they alone rule the world" [5]. Therefore, it is relevant to understand public beliefs about the ongoing climate change. This knowledge will help predict the success of public policy implementation. Moreover, adaptation measures are already being developed, such as the

creation of technologies to reduce the risks from global climate change and ensure the stability of remote Arctic facilities located in the zone of permafrost spreading [6]. Many authors predict greater use of carbon-free energy sources in the Arctic [7] and increasing economic attractiveness of measures to mitigate the impact on climate [8].

In frame of the study 40 semi-structured interviews were conducted with 40 experts (scientists, journalists, workers of mining enterprises, students of technical specialties) aged 23 to 73 years. The experts were selected based on the intention to reveal the beliefs of specialists and decision-makers in the mining industry, which forms the backbone of the Russian Arctic economy. The survey involved residents of Russia's Murmansk Region, Krasnoyarsk Territory, and Yamalo-Nenets Autonomous District. The responses were analyzed according to two criteria — age group and occupation. Age group was determined based on the definition of climate: "climate is long-term (several decades) weather" [9]. It was assumed that "several decades" means thirty years. Therefore, three age groups were identified: aged 23-30 years, 30-60 years, and over 60 years old.

2 Climate change

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It was found that 62% are convinced that the climate is currently changing, 10% that it is not changing, and 28% are not sure or do not have their own point of view.

A higher percentage of those having doubts was found among students aged 25 to 30 years (55%). The majority of surveyed researchers are convinced that the climate is changing. Almost all respondents aged 23-30 are confident that the climate is warming and that the process is linear. In the second age group (30-60 years old), the prevailing opinion is that the climate changes cyclically. In this age group, three opinions were found that the climate is too unstable to highlight specific repetitive patterns or a single trend. In the older age group, the respondents believe that it is impossible to trace the cyclical nature of climate change over a human life. Although, in general, they tend to believe that the change is cyclical: "I believe that it changes cyclically, but this cyclical pattern is long-term. In a short-term perspective, climate change tends to unfold for the worse for humanity. But the global cycles are very long-term — here I mean natural cycles."

The opinions of the interviewed researchers about the causes of climate change also differed. In the first age group, regardless of profession and occupation, 90% of respondents believe that the climate is changing due to anthropogenic causes. In the second age group, there is a diversity of opinions: eight respondents (six researchers, one student, and one journalist) put the anthropogenic factor first place in the list of causes of climate change. Twelve survey participants are inclined to believe that the anthropogenic factor is either overestimated or does not lead to climate change at all (eight scientists and four journalists). Another two respondents consider both factors to be responsible for climate change (one student and one journalist).

Thus, there is no consensus among the respondents about the existence of climate change, the direction of climate change, and the cause thereof. Despite the fact that the majority of respondents believe that the climate changes cyclically, they found it difficult to indicate the duration of one climatic cycle. Only one stable tendency was revealed — the younger the respondents, the more of them believe in anthropogenic causes of climate change, while the older generation is inclined to believe that if the climate is changing, it is due to natural reasons.

3 Economic implications

The second group of questions was devoted to economics. The respondents were asked how climate change is expected to affect the Arctic economy and what positive or negative consequences that can have. It should be noted that almost all respondents agreed that climate warming is currently taking place, regardless of the cyclical or linear nature of the process.

Among 39 respondents, 27 admitted the impact of climate change on the economy of the Arctic. In the first age group, half of the respondents did that, in the second age group the impact of climate change on the economy was admitted by 78%, and in the third age group, 66%

believe that climate change will affect the economy of the region.

Respondents who do not consider climate change to be a factor affecting the economy explained this by their lack of knowledge on this issue, or by the fact that political forces influence the economy much more strongly: "I think the economy will not be particularly affected, unless the people who set the political agenda decide that climate change should somehow affect the economy," said one respondent.

Among the 27 respondents who answered affirmatively to the question about the capability of climate change to affect the Arctic economy, 15 respondents (56%) positively assess the hypothetical warming in the region. The main benefits for the economy, according to the respondents, will be the improvement of the situation in the agricultural industry. This opinion is shared by six representatives of the second age group, two representatives of the first age group, and one of the oldest age group. "Of course it will. Even during the harsh climate period, in the 1970s and 1980s, agriculture, which used unpaid labor, flourished. Murmansk Region achieved 80% self-sufficiency in agricultural products. Obviously, agriculture in this region will be more profitable, even without unpaid labor," said a mining industry employee belonging to the third age group.

Some of the respondents pin great hopes on the growth of traffic along the Northern Sea Route — this expected advantage was noted by six respondents, among them two journalists (from age groups 2 and 3) and four researchers (three from age group 2 and one from age group 3): "So far, we see that year-round navigation along the Northern Sea Route has not yet opened, but if there is climate warming, the route will be easier to navigate, which will lead to an increase in ship traffic," replied a journalist from age group 3.

The most important challenge for the economy caused by climate change, according to the respondents, is the melting of permafrost. This problem is especially acute for the residents of Norilsk — all respondents from Krasnoyarsk Territory named this problem. "We see facades collapsing due to soil thawing — this is a problem. A lot of money will have to be invested in stabilizing the foundations. Since the city was designed assuming permafrost, looks like it is suffering. Many buildings are falling apart. If this continues, the city may cease to exist," noted a journalist from Norilsk.

Thus, respondents, regardless of age or profession, for the most part, positively assess the possible economic consequences of climate change in the Arctic. It is assumed that warming will cause melting of glaciers, which, in turn, will increase cargo traffic along the Northern Sea Route. Positive changes for agriculture are also stressed. In the opinion of the majority of respondents, climate change will expand the arable land range beyond the Arctic Circle, and will make it possible to grow a number of crops outside of greenhouses.

4 Sources of information

Since the public perception of climate change is studied, it is important to find out from which sources respondents receive information about climate change, who they consider to be experts in this issue, and which sources they trust most.

Our study shows that the younger age group is more inclined to consider scientists as subject-matter experts — this opinion is shared by four students. The only researcher in this age group believes that Green Peace activists are experts in this field, but he does not follow their work. A mining industry employee considers Discovery Channel and National Geographic TV show hosts as subject-matter experts. Another student thinks that relevant international organizations are experts on climate change. Three survey participants from this age group did give any answer.

The second age group, perhaps due to the prevailing number of journalists and researchers, believes that climatologists and other related scientists are experts in the field of climate. Another six respondents were unable to give an answer due to either lack of information or mistrust of any unfamiliar sources of information. Only two respondents from the youngest age group named activists or opinion leaders (e.g. Greta Thunberg) as experts on climate change.

In the older age group, almost all respondents named researchers or relevant scientific organizations as climate experts.

Concerning trust (or mistrust) in information sources, the respondents were more unanimous — 69% (27 respondents) of them believe that only scientific publications can be trusted. At the same time, the percentage of those trusting scientific sources noticeably prevails in each group over the rest — 60% in age group 1, 70% in age group 2, and 90% in age group 3.

It is important to note that when asked specific questions about scientific sources of information, many respondents could not name specific articles, publications, journals, etc. It can be concluded that the very fact of the presence of the word "scientific" significantly increases the level tolerance in the perception of information about the climate.

Distrust in any sources of information about the climate was expressed by four people - one researcher and one student from age group 1, and one researcher and one journalist from the age group 2. They refer to the bias of scientific research in the field of climate: "All scientific articles on climate change, in my opinion, are highly politicized. Therefore, many of them cannot be considered independent. I would be very wary of any article related to climate change," noted one of the respondents.

Among trustworthy sources of information on climate change, mass media, such as groups on the social media platform VKontakte, Telegram channels, or even the Google search engine, were singled out — this is the opinion of one young student, one student from age group 2, and a young mining industry employee. Two respondents — one mining employee from the older age group and a researcher from age group 2 — responded

that one can trust colleagues or friends in this matter. At the same time, the mining industry employee believes that the scientific literature on this topic is biased. Information from official sources (regional, municipal, or corporation leadership) was considered trustworthy by only one respondent — a researcher from age group 2. Mass media (meaning conventional media such as print, radio, television, licensed Internet publications) were described as a trustworthy source of information about the climate by only one respondent — a researcher from age group 2.

Thus, we can conclude that people, regardless of profession and age, are willing to trust scientific sources and scientists in matters of climate change. At the same time, it should be noted that the majority of respondents are not directly interested in scientific literature on climate. They trust the information they receive from scientists. Also, regardless of age, respondents do not trust conventional mass media.

5 Conclusions

Thus, the study showed that young people mostly believe in climate warming, believe that the climate is changing under the influence of anthropogenic factors. Opinions about the direction of climate change divided almost equally — 60% believe that it moves linearly towards a global warming, while 40% believe that it has a cyclical nature. Exactly half of the respondents believe that climate change will affect the economy of the Arctic. The majority were unable to name any positive aspects of this process. Among the young respondents, there is no conviction that the climate discussion is in any way biased — this is supported by the fact that some respondents are willing to trust activists, international organizations, and always scientists. Only two out of ten respondents did not trust anyone in this matter. They get updates on the issue from the Internet and, very rarely, from conventional mass media.

The age group 30-60 predominantly believe that the climate changes cyclically. This is the opinion shared by scientists. Among those who believe that the climate is changing in a single direction, the majority are journalists. Most of the respondents are inclined to believe that the anthropogenic factor does not affect the climate as much as natural processes, however, almost 40% of the anthropogenic factor supporters are students and researchers. The impact of climate change on the economy of the Arctic, in the opinion of the majority of representatives of the second group, is positive, mainly in agriculture. Since in this age group researchers represent the greatest share, they can only trust their colleagues. Same opinion is shared by journalists and students.

The older age group believes that the human impact on the climate is overestimated, but the climate itself is changing towards warming. Among the benefits for the economy of the Arctic, they also highlight agriculture and an increase in the ship traffic along the Northern Sea Route. Older respondents trusted only researchers. The older generation prefers to get updates on climate change

from scientific articles, ignoring mass media, social media, and other sources.

Thus, the population is not ready to bear the possible costs when the climate policy is tightened; people's expectations are aimed at increasing the comfort of living in the Arctic.

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