

# Local perceptions of global climate change in the Komi Republic in Russia

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## Abstract

This article explores perceptions of climate change in the Komi Republic (Russia). It focuses on connections between local perceptions and global concepts as well as discourses of climate change in the local contexts. The study is part of the global change project TUNDRA and the research material consists of thematic interviews of occupational groups and policy makers as well as a general survey study. It seems that although we can perhaps speak about globalisation of the environment, it has only partly homogenized public perceptions and opinions. An individual's engagement with the surrounding environment, local conditions and socio-political contexts shape perceptions of climate change. It is important to grasp the difference between two kinds of strategies in perception research: one is to investigate "top-down" people's knowledge or attitudes of global environmental problems (defined by global discourses) via surveys, whereas the other strategy is to take the local context and individual's life-world within it as a reference point of changes. In the latter case, climate change in the Komi Republic is actually more a personal concern of daily existence (health and well-being) than an environmental, a societal or a global issue. However, it is a 'background issue' connected to other societal and environmental changes, and thus, not actively manifested in daily life.

**Key words:** Climate change, Perception, Glocalization, Komi Republic

## Introduction

It is an old idea in environmental discussion to refer to the globe, which is common to all people. During the past twenty years or so, an effort has been made to create a common framework of global environmental change – global warming as a major indicator – which is largely leading the creation and designing of global environmental institutions and discourses. This process is led by the Western industrialised societies. We may ask, if this kind of globalisation of the environment increasingly homogenises national environmental policies, public opinions and perceptions of environmental changes, as some scholars (e.g. Mol 2001, Frank et al. 2000) would have us believe. Some other scholars are more sceptical about this, and argue at least that the global discourse takes its shape in each country and in different locations on the basis of local conditions and socio-political context (e.g. Engels 2003; Bush et al. 2002; Burningham and O'Brien 1994). It seems to us that the concept of “Glocalization” (e.g. Robertson 1992; Ritzer 2004), developed in globalisation studies, is useful when approaching this problem.

In this article, we explore glocal perceptions of climate change in the Komi Republic (north-eastern European Russia). This region is particularly interesting, because the East-European Russian Arctic has experienced significant temperature increases over the last 50 years. Climate models suggest that in future warming, there will exceed that in Southern regions and, for example, in Northern Fennoscandia (Serreze et al., 2000; Kuhry et al., 2002, ACIA 2004). Warming in the East-European Russian Arctic could be as much as 5° C over the next 50 years, although cold years cannot be excluded due to the high variability of the regional climate.

Glocal perception means that an individual's perception of the environment is embedded in his/her everyday engagement with the surroundings -this is why it is local (Ingold 2000), but the

framework for interpretation of perceptions is influenced by global concepts and discourses (e.g. 'global warming'), and thus it is also global. Consequently, climate change may also have regional or national 'shapes' of interpretations or meanings. Kempton et al. (1995) have stated that people are capable of directly perceiving weather but not climates. However, people do interpret the validity of environmental information through their own local perceptions (see e.g. Bickerstaff & Walker 2001), and it is said that direct experience is a forceful shaper of attitudes (Fazio 1995 cited by Bord et al. 1998). However, is this also true in the case of climate change, in which long-term climate patterns are harder to perceive than are short-term, localised changes in weather?

We are interested here in the relationship between local perception of environmental changes, especially climates/weather changes, on the one hand, and the global environmental discourses, on the other hand. How do they 'match' in the Northern contexts of people's everyday life, and are perceptions of climate change indeed becoming similar all over the world? Before the ratification of the Kyoto Protocol in October 2004, high-level Russian politicians and scientists impugned the Kyoto process and the scientific facts behind it (Tynkkynen 2005). It is interesting to find out what is the perception of climate change among lay citizens living in the area where climatic changes are projected to have major impact soon.

This article presents the results of a study conducted as part of a multidisciplinary project on global change, TUNDRA Degradation in the Russian Arctic (1998-2001). The TUNDRA project, funded by EU, focused on climate change, industrial pollution and social perception of environmental changes. We will try to integrate here the findings of a quantitative survey and in-depth qualitative interviews undertaken in the TUNDRA project, examining administrators' and local inhabitants' perception, knowledge, and risks of climate changes in everyday contexts in the Komi Republic.

First we present the idea of glocalization and apply it to the study of climate change. To put climate change perceptions in context, the next part is devoted to describing our research sites and methods. Next we will explore how climate change is situated among other environmental and social problems in the Komi Republic and in comparison to Russia as a whole and to other countries. We also compare two different kinds of data, thematic interviews and survey data, in order to find out if surveys overstate a concern over environmental issues, as has been suggested (Sterngold et al. 1994). In the glocalization of environmental change, specific local cultures and contexts give climate- change perceptions distinct characteristics, and this is discussed lastly by using our face-to-face interview data.

## **Glocalization of the environment**

It has been typical of environmentalism since its rise in the 1960's and 1970's to emphasise the international or global character of environmental problems. Today it is even more so, as global issues such as climate change and biodiversity largely dominate environmental discourses, and the focus of problems has shifted towards the 'global biosphere'. In the 1990s particularly, several important international environmental agreements were established. Surveys and opinion polls in Western countries have suggested that public concern has also shifted towards global environmental issues from more local environmental problems.

In this way, global environmental change has become a problem area which is largely approached by using a shared, common framework. In Arthur Mol's view, "since it is the Western industrialised societies that are leading the way in creating, designing and governing global environmental institutions and in determining environmental-induced transformations in all kinds of social practices and institutions, this institutionalisation of the environment is causing increasing homogenisation rather than

increasing heterogenisation” (Mol 2001, 222-223). A quite similar argument comes from the world society approach (Frank et al., 2000): the world society of international and intergovernmental organisations has diffused the norm of nation-state responsibility for environmental protection, and the high level of nation-states ties to the world society increases the likelihood of state environmentalization.

There are, however, many scholars who disagree strongly. Fred Buttel (2000) and Steven Yearley (1996) referred to the unequal and divided world order as a severe challenge to the “world society”. Similarly, Anita Engels (2003) believes that the common framework will come up against great economic, political and cultural inequalities, and that the “globalisation of the environment” is a process full of conflicts. According to Engels’ findings (mainly in Senegal), the global discourse takes its shape in each country about local conditions. The local environmental issues and global environmental discourse intertwine, and global issues will be approached largely from the local perspective (for another critical perspective, cf. Altvater & Mahnkopf 2002).

It seems that the concept of glocalisation and related theorising would be useful here. The word glocalisation originated in Japanese business practices and was employed by some Japanese economists in the late 1980’s. It was adopted by Roland Robertson and some other sociologists, who have used it, mainly in the cultural sphere. According to Robertson, globalisation is characterised by two distinct but closely connected processes. Globalisation is marked by an increasingly subjective consciousness of the world as a whole in that the social actors possess a greater sense of globality. It is also characterised by a global intensification of social and cultural 'connectivity', such as through telecommunications and international travel. Moreover, globalisation is marked culturally by processes of “Glocalization”, whereby local cultures adapt and redefine any global cultural

product to suit their particular needs, beliefs and customs (Robertson 1992; 2002).

According to Robertson (1992) in the globalisation process any particular experience, identity or social process must be understood through its relationship to be universal phenomena. The term Glocalization helps to explain how the symbiosis of the local and the global differs according to particular cultural circumstances, but when it is applied to explain broader cultural projects, it can be argued that the projects of Glocalization are the constitutive features of contemporary globalisation (Giulianotti & Robertson 2004). Adopting this argumentation, globalisation is not somehow externally imposed upon the environmental; rather, environmental discourse can be seen as one representation or manifestation of globalisation.

Perhaps we can tentatively illustrate the glocalization of environmental discourse by applying the phases of the glocalization of football, as analysed by Giulianotti and Robertson (2004). At first, some countries rejected environmental discourse when it was introduced. Second, after a more favourable cultural reception (and, in the case of environmental discourse, some kind of international pressure from the world society), it was localised according to a 'universalisation of particularism' process. Specific local cultures worked inside universal rules to establish their own 'traditions', as illustrated by distinctive environmental policies. Third, glocalization was marked also by the particularisation of universalism, as international treaties and different tiers of governing bodies were established.

Many social scientific research on climate change have been devoted to the perceptions, cognitions, concerns and attitudes of global warming in different strata of the lay public, particularly in Northern America and in Western Europe (e.g. Dunlap 1998; Bord et al. 1998 and 2000; O'Connor et al.. 1998 and 1999; Brechin 2003). Overall conclusions from these survey studies reveal that the public worldwide “demonstrates a general awareness and

concern for global warming” and perceives a substantial threat from global warming, but the threat levels tend to be perceived as significantly less than those from other environmental and social problems” (Bord et al. 1998, p. 83). Citizens in all studied countries are also prone to confuse global warming with other environmental threats, particularly with ozone depletion. Kempton et al. (1995) concluded, based on other studies in Austria, Sweden and Germany, that American environmental perceptions (which misapply the pollution model and overextend the ozone hole model to global climate change) are held in other industrialised countries as well. However, we may ask if this is the case in the countries of the former Soviet Union?

Less attention had been devoted to ascertaining how people perceive and experience global warming in their everyday lives and “in the comparative contexts of other social and personal concerns” (Bord et al. 1998, p. 76). It has been observed that surveys overstate respondent concern (Sterngold et al. 1994), and environmental issues, especially are topics, which generate ‘socially desirable’ responses. Bord et al. remark that almost no one in any country would like to be ignorant and uncaring in the case of environmental issues and say that they are not concerned for environmental degradation. (Bord et al. 1998.) In this study we have tried to avoid these limitations and put climate change in the comparative context of other social and personal issues, and we also compare the interview data with survey data in order to find out differences on responses.

Darier and Schule (1999) tried in their study among citizens of Manchester and Frankfurt to find out the “‘structure of feeling’ of segments of the population which do not have had strong predetermined interests in or knowledge of ‘climate change’”. They asked how people did “perceive and understand ‘global climate change’ and how did they relate it to everyday life” (Darier and Schule 1999, p. 316). Darier and Schule emphasise that for their participants climate change was a complex and interconnected set

of issues, which is not only 'environmental' but includes global (in)equalities, health, consumption and economic concerns. This seems very logical since climate change has been referred as a prime example of 'wicked problems' that cannot be separated from issues of social justice, values and equity (Ludwig 2001).

The salient point for the perception studies of global environmental problems is, as Tim Ingold (2000) says, that the global environment is not a life world, it is a world apart from life. He states that "with the world imaged as a globe, far from coming into being in and through a life process, it figures as an entity that is, as it were, presented to or confronted by life" (Ingold, 2000, p. 210). The global perspective (the environment as a globe) presumes one big 'Environment' "from the street corner to the stratosphere" (Cooper, 1992, p. 167). By contrast, if the environment is understood as a life-world, from the dwelling perspective, the 'environment' surrounds the individual (Ingold, 2000). From the dwelling perspective global warming is one tiny part or piece of worries (connected to/) resulting from globalisation processes and country/regional-specific issues. This means, as regards perception studies and global change research, that we should look carefully at the context-specific features in studying environmental concerns in order to understand responses to environmental changes. Some researchers have referred to this. E.g. Jaeger et al. (1993) note that differences between mountain regions and urban agglomerations can be hidden when national samples are used in climate change studies. Clearly not all the 'lay people' are similar in the case of perception and understanding of climate change. Furthermore, thus, "effective communication about climate change issues requires understanding of the frames of reference being used by all participants" (Thompson & Rayner 1998, 336).

In the Arctic regions, some climate change studies have been conducted among and in cooperation with indigenous people (e.g. Krupnik and Jolly 2002). The interest in the indigenous communities is pertinent because they are already witnessing disturbing and severe climatic and ecological changes (ACIA



2004). In addition, they have special and detailed knowledge about how their environmental conditions have changed and are changing since their means of livelihoods and the whole way of life and culture are interconnected directly with local ecosystems. The climate-change-perception research in the European and Russian North, Arctic and sub-arctic regions has, however, been marginal. This is especially true of the research among newcomers, people who came to the northern areas during the industrial boom after the Second World War.

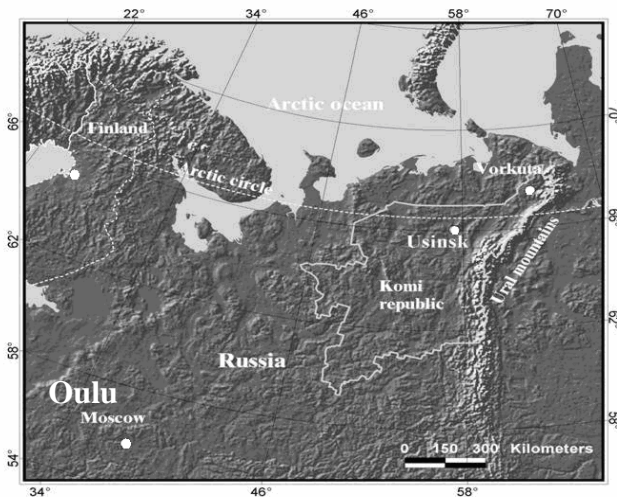
### **The contexts and methods of the research**

Russian tradition regards Siberia and the Northern regions as a huge reservoir of resources and this can also be seen in the economic policies of the Soviet Union and in practice as a rather inefficient use of resources (e.g. Hedlund, 1990). For much of the Soviet period, the notion of conquering nature played a central part in the official ideology. According to the Stalinist version of Marxism, natural resources were without value until remolded by human labour. It followed, therefore, that in the Soviet Union all land, water, forest, minerals and other natural resources were allocated to users free of charge. Seeing natural resources as free goods has been inimical to their rational utilisation and conservation (Bater 1989).

The marks of the Soviet strategy of industrialisation are still evident in the Russian North, a tundra and forest region characterised by towns built for minerals and hydrocarbon extraction, housing a population of newcomers. Even today the area is marketed to investors as “rich in natural resources” (e.g. Borisova, 2002). The dominant frame of environmental and natural resource policy discourse in the Komi Republic emphasises industrialism (Karjalainen, 2001). Here the regional economy is seen within the framework of “economy based on natural-resource extraction”. The priority is therefore, seen in industrial and economic growth based on resource extraction.

The towns in the north of the Komi Republic can be defined as resource communities, because they were built to operate oil and gas fields (Usinsk) or coal mines (Vorkuta), and the main industry still constitutes the unifying social bond that sustains the community. Around Vorkuta as well as around Usinsk, indications of environmental pollution can be seen with the naked eye: layers of soot in the accumulated snow and areas of dead forest around the old oil wells<sup>1</sup>.

**Figure 1:** The research sites: The Komi Republic as part of Russia and two towns of thematic interviewing in 1998 (Vorkuta and Usinsk)



**Source:** Karjalainen, Timo P. (2006): "The environment in contexts: Environmental concern in the Komi Republic (Russia)", *Acta Universitatis Oulensis, Scientiae Rerum Socialium E 85*. University of Oulu, Oulu (Finland). Available also in pdf-format in the URL: <http://herkules.oulu.fi/isbn9514282507/>

<sup>1</sup> The oil spill that occurred in autumn 1994 close to the river Kolva, north of Usinsk, caught the attention of the international media, although it was neither a unique event nor the largest oil spill that has ever taken place in the North of Russia. After a number of smaller leakages in the pipeline leading from Khar'yaga to Usinsk, in autumn 1994 the situation culminated in a temporary closure of the pipeline, while an estimated 110,000 tonnes of oil poured out into the bogs of the forest tundra. A portion of the oil reached the river Kolva during the same autumn, but the main charge came down the river after the snow melt in spring 1995, at a time when the clean-up was still in its initial stage. The lower course of the Kolva, the mouth of the Usa and therefrom the Pechora suffered heavy pollution.

The Komi Republic<sup>2</sup> coped fairly well economically, at least by Russian standards, during the crises of the 1990s, but the economic development within the republic has been unequal in the various districts and industries. The adjustment of the coal mining industry to the new market conditions has been difficult. The low levels of processing and technology as well as the rise of transportation charges had made many of Vorkuta's coal mines unprofitable<sup>3</sup>.

During the 1990s, the city dwellers of Vorkuta underwent a crisis that affected the local economy as well as self-identification. The fact that the town is located in the treeless tundra with its harsh temperatures makes the plight of the city-dwellers of Vorkuta more severe; whereas Usinsk is located in the northern forest zone, where small-scale food production at the cottage (*dacha*) is to some extent possible. On the practical level, the work provided by the mines could no longer provide the same kind of social safety net as previously. Savings were devastated by inflation, and the government withdrew many privileges that were meant to compensate for the "hard living conditions of the North". On the symbolic level, Vorkuta and its workers lost their prestige and the dispensations they had been enjoying as 'élite workers' in one of the Soviet Union's key industries. In comparison to Vorkuta, Usinsk is affluent because the oil industry brings in revenues.

Our research material comprises thematic (open-ended) interviews among different occupational groups of the town dwellers (n=177) in Usinsk and Vorkuta in the Northern Komi Republic in 1998 as well as interviews among environmental policy 'makers' (7 state administrators<sup>4</sup>, 5 scientists and NGO actors<sup>5</sup>),

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<sup>2</sup> The Republic is inhabited by 1,1607 million people, 76 % living in towns, on land with an area of 416,300 square kilometres (Goskomstat, 2001).

<sup>3</sup> The fact that the town is located in the treeless tundra with its harsh temperatures makes the plight of the city-dweller of Vorkuta more severe. Usinsk is located in the Northern forest zone, where small-scale food production at the cottage (*dacha*) is to some extent possible.

<sup>4</sup> Three interviewees from the (Republican) Ministry of Natural Resources and Environmental Protection (Minpriroda), one from the Centre for the Hydrometeorology and Monitoring of the

which were conducted in the capital of the Republic, Syktyvkar, in October and November in 1999. In addition, we utilise here the results of survey interviews conducted in two towns and five rural areas of the republic ( $n = 520$ ) in 2001.

In the TUNDRA project, we first dealt with environmental perception and awareness among the town dwellers of Usinsk and Vorkuta. Since we assumed from the start that environmental changes and issues are closely connected with other socio-economic issues, we examined people's living conditions and their ways of thinking rather extensively. Semi-structured, open-ended questions focused on the interviewees' life-history, hobbies and meanings in relation to the surrounding environment, perceptions and acuteness of socio-economic problems and changes in the state of environment. In addition, questions aimed to gauge interviewees' knowledge, responsibilities and solutions to environmental issues. Climate change was not stressed during the interviews, but it was studied as a part of other social and environmental issues. However, people's own definitions of global concepts, such as the greenhouse effect and ozone depletion were investigated.

Environmental perception and awareness were studied within three occupational categories: managers/administrators, teachers and workers. The research material was gathered in each town from August to October 1998 by interviewing. The base group of interviewees in Vorkuta ( $n=88$ ) and Usinsk ( $n=89$ ) totalled 177, of which 64 per cent were labourers ( $n=114$ ), administration staff ( $n=33$ , both in enterprises and state administrations) 19% and teachers 17% ( $n=30$ ). The groups studied were chosen because of

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environment in the Komi Republic (*Gidrometzel*), one from the Centre for State Sanitary and Epidemiological Inspection in the Komi Republic (*Gossanepidnadzor*), one from the Ministry of Education (*Minobrazovanie*), and one from the State Committee on the Northern issues (*Gosgomsever*).

<sup>5</sup> Interviewees (one each) from the Committee to Save the Pechora River, the regional office (Syktyvkar) of the WWF, the regional branch of the All-Russian Society for the Protection of Nature and the Komi People's Congress.

their “strategic” position. Administrators have, particularly in Russia, a great deal of influence over environmental decisions; teachers are largely responsible for environmental education. Furthermore, industrial workers, as a large and organised group, have their say in some social problems, as the miners in Vorkuta (Burawoy and Krotov 1994), for example, have shown. The selection of the groups was also influenced by the theorising of K-W. Brand (1997), and we will make comparisons between Oulu (in Finland), Usinsk, Vorkuta and Jaroslavl using Brand’s theoretical approach in future articles.

Within the TUNDRA project, we also conducted a survey in two towns and five rural districts (*raion*) in the Komi Republic<sup>6</sup>. This was originally needed for the comparisons with our material gathered in the towns of Usinsk and Vorkuta, in order to find out what environmental issues and problems can be considered specific (e.g. the evaluations of climate change) to these areas. The questionnaire was formulated partly based on the themes, which arose in thematic interviews in the Northern Komi, but we focused particularly on climate change questions used in global environmental surveys (Dunlap 1998) in order to be able to make comparisons.

### **Climate change among social and environmental problems**

First of all, it is interesting to see how the people interviewed estimated the importance of the environmental issues in

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<sup>6</sup> The sampled areas and towns in our 2001 survey differed strongly. Syktyvkar (n=204) is the capital of the republic with 242 500 residents and hence has most heterogeneous economic activities, including a major forest industry complex and administrative and educational structures. Uhta (n=101) is an industrial town with 125 000 citizens. Its economy is mainly based on oil refining and energy industry. Izhemskii (n=52, 23 200 residents in 2002) is a northern district (*raion*), where agriculture (along with reindeer herding and food industry) is the major field of industry. In the more southern districts, Ydorskii (n=55; 24 700 residents in 2002) and Ust'-Vymskii (n=28; 38 200 residents in 2002) and Ust'-Kulomskii (n=50, 36 400 residents in 2002) *raions*, forestry and forest industry dominate economic life. Syktyvdinskii *raion* (n=30; 27 500 residents in 2002), surrounding the capital, has a more diverse industrial life, where food and forest industries have the biggest share of production.

comparison to the pressing economic and social issues in Komi and in Russia as a whole. As shown in the table 1, environmental issues hold a low profile compared with other personal and social problems among the townspeople of Usinsk and Vorkuta in 1998. Under transitional or transformational circumstances income level and employment were clearly more important to people than environmental concerns. The survey results (2001) reveal that people in other regions also considered income levels the most acute issue for themselves and their settlement or town (table 1).

**Table 1:** The percentage of interviewees regarding the following social issues as most acute for oneself/for settlement or town in the survey 2001, and for oneself in the thematic interviews in the towns of Usinsk and Vorkuta in 1998<sup>7</sup>.

	Survey, for the settlement/town %	Survey, for oneself %	Interviews in Usinsk and Vorkuta, for oneself %
<b>Threat, problem</b>	(N = 520)	(N = 520)	(N = 175)
Environmental situation	13,6	4,9	6,9
Income level	24,1	39,7	26,9
Unemployment	19,1	5,1	25,7
Housing condition	6,3	14,9	6,3
Health Issues	6,1	22,6	16
Crime	13,6	2,9	2,9
General economic situation	11,9	5,3	10,3
Ethnic relations	1,2	1,8	0,6
Other	4,1	2,8	4,4
<u>Total</u>	<u>100</u>	<u>100</u>	<u>100</u>

People in the Komi Republic are, however, very much concerned about the local environment (see table 2), especially about water pollution, because it affects their livelihood, hobbies

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<sup>7</sup> Question in thematic interview: What are the worst problems which threaten you at present? Question in the questionnaire formulated on the basis of thematic interview: What is the most important or acute problem from the listed questions above for your village/town and for you personally?

and health in multiple ways: fish populations in the rivers are decreasing and the quality of drinking water is poor in many settlements and towns. Water pollution is mainly caused by sewage water from industrial enterprises (and oil spills in the northern regions), but also from households. Air pollution is also an acute issue in most industrial towns.

**Table 2** Percentage of interviewees very concerned about the following issues in the Komi Republic in 2001.<sup>8</sup>

1. The water pollution	75,1
2. The nuclear Wastes	62,5
3. The decrease of forest resources	62,5
4. The air pollution	59,3
5. The transportation of toxic wastes	38,2
6. The climate change	32,2
7. The industrial and household wastes	24,2
8. The nuclear power stations	22,2
9. The pesticides in agriculture	21,2
<b>The average percentage</b>	<b>44,2</b>

In the same vein, they are also worried about nuclear wastes and the decrease in forest resources. Lively discussion on nuclear wastes has been going on at the regional and national level during the 1990's. At first the discussion was about storage of nuclear wastes somewhere in the Russian North, and at the end of 1990's it centered on the importing of nuclear wastes from the West. There is no nuclear power station in Komi but in some locations of the republic nuclear explosions were conducted with the purpose of testing the feasibility of using nuclear explosions in the

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<sup>8</sup> In single environmental issues the percentage refers to the proportions of those who regard the issue in question "very dangerous". NA's excluded.

mining industry and in diverting water from northern rivers to the catchment area of the Caspian Sea. In the Northern towns, some people are concerned about radiation spreading from the nuclear bomb testing area of Novaya Zemlya (an island located in the Arctic Ocean).

The research in another EU-funded project SPICE gave parallel results. The people surveyed living (n=255) in the Pechora region listed the severest environmental issues and climate changes below ten per cent of the first problem ranks (three ranks), whereas water pollution received almost 90 per cent, air pollution and the decrease of forest resources both about 30 percent (Kuhry et al. 2005).

International comparisons are essential here. Dunlap (1998) found that citizens in Canada, USA, Mexico, Brazil and Portugal believed that global warming will occur in their lifetime, but that was not the case in Russia. Debardeleben and Heuckroth (2001), however, analysed worldwide public-opinion surveys and concluded that Russians are rather concerned about global environmental issues, even if their level of knowledge about global warming and other global issues is lower than that in Western countries. Our findings (based on data collected in 2001) are summarised in the next table and in comparison to the international comparison presented by Dunlap (1998, p. 478). Dunlap used data collected as early as the beginning of 1990's, which may affect the comparison.

**Table 3:** People concerned about global environmental issues (%) in Canada, USA, Mexico, Brazil, Portugal, Russia and Komi.<sup>9</sup>

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<sup>9</sup> The percentage of people, who think that the issue is “very serious” represented in the figures (the other ratings including “somewhat serious”, “not very serious” and “not at all serious”. Likewise the alternatives of DK/NA are all included in the comparisons). The data for Canada, USA, Mexico, Brazil, Portugal and Russia is collected from Riley E. Dunlap’s (1998, p. 478) comparative analysis. The questions used in this survey were the same as Dunlap’s.: “How serious a problem you personally believe it to be in the world”?



	<b>Canada</b>	<b>USA</b>	<b>Mexico</b>	<b>Brazil</b>	<b>Portugal</b>	<b>Russia</b>	<b>Komi</b>
Air pollution	61	60	77	70	78	71	64
Water pollution	76	71	78	69	81	74	72
Soil problems	57	54	77	56	71	63	62
Loss of species	58	50	81	74	68	61	54
Rain forest loss	70	63	80	78	82	66	37
Global warming	58	47	62	71	72	41	40
Loss of ozone	70	56	71	74	79	58	61

The attitudes of the people in the Komi Republic are very much the same as in Russia in general. However, the citizens of the Komi Republic consider air pollution, extinction of species and especially rain forest loss as less serious than the Russians in general. Global warming is regarded neither in Russia nor in Komi as serious an issue as in the other countries surveyed. This is partly due to the weakness of global environmental discourses in the Komi Republic and in Russia as a whole (Kotov 2002; Karjalainen & Habeck 2004).

**Table 4:** The self-assessed informedness of global warming<sup>10</sup>

<b>Level of understanding</b>	<b>Canada</b>	<b>USA</b>	<b>Mexico</b>	<b>Brazil</b>	<b>Portugal</b>	<b>Russia</b>	<b>Komi</b>
Very well	13	11	6	10	3	4	3
Fairly well	47	42	19	34	18	19	33
Not very well	21	22	13	16	26	20	49
Not at all	15	22	51	17	36	29	14
DK/NA	3	4	11	24	18	28	1
Mean	2,61	2,44	1,78	2,49	1,84	1,95	2,26
N	1011	1032	1502	1414	1000	964	520

The (self-assessed) level of understanding of the global warming seems to be lower in Russia and in Komi than in the highly-modernised countries like the USA and Canada. It is, however, worth noticing that the differences disappear when in comparison to Portugal and Mexico. While the proportion of people not understanding global warming at all is 51 per cent in Mexico, it is only 14 per cent in Komi. This may, however, to some extent depend on the high level of DK/NA answers in Mexico and, in the case of Komi, also on the sampling method used. As Brechin (2003) notes, people in many countries actually share the misconceptions of the main source of anthropogenic contributions to global warming (Brechin, 2003, p. 119). Obviously there has been a remarkable change in people's knowledge and concern during the past few years at least in Western countries, but we have no space to comment on that here.

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<sup>10</sup> The data for Canada, USA, Mexico, Brazil, Portugal and Russia is collected from Riley E. Dunlap's (1998, p. 478) comparative analysis. The questions used in this survey were the same as Dunlap's: Thinking about the issue of global warming or the "greenhouse effect", how well do you feel you understand this issue – very well, fairly well, not very well, or not at all?"

## The perceived changes in the climate and the weather

Climate change is not regarded among our respondents as especially dangerous (table 2), and global warming has a low profile in comparison to local environmental problems (air and water pollution) and ozone depletion (table 3.). In general, global environmental issues are not much discussed in our research locations. This is in line with the results from other countries and among U.S. citizens who ranked water and air pollution highest, but global warming only ninth out of ten environmental problems listed (Brechin, 2003, p. 113). Global warming is not a 'front-burner' issue globally when in comparison to other personal, social and environmental issues (Bord et al. 1998).

However, when people living in the Northern parts of the Komi Republic were asked about environmental changes in their living area ("Has the state of the environment changed during the time you have lived in this area?"), 33 interviewees of 177 (18,6 %) talked spontaneously (without prompting) about their local experiences of climate or weather changes. When asking to depict in their own words how they understand the concept 'greenhouse effect', 10,2 per cent of interviewees (18 of 177) gave a scientifically acceptable answer<sup>11</sup> (most of those were teachers). Sixty four (36,2 %) said that it means a warmer climate globally; but here only ten (5,6 %) referred to local indicators of an enhanced greenhouse effect. It is clear that education appears as a critical factor in the precision of scientific knowledge in the issues of global environmental problems: administrators and especially teachers (i.e. those with more school education) knew better, for example, what the ozone layer is and what a 'hole' in it means. In many cases, the reasons mentioned for climate change and its

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<sup>11</sup> "Most of the heat energy emitted from the surface is absorbed by greenhouse gases which radiate heat back down to warm the lower atmosphere and the surface. Increasing the concentrations of greenhouse gases increases the warming of the surface and slows the loss of heat energy to space". (ACIA, p. 2)

causal links by the urban interviewees of Usinsk and Vorkuta are completely different from those presented in scientific models. A quite common reason given by respondents in the Northern town was Novaya Zemlya and nuclear tests, which were also associated with other environmental changes. These findings are in line with the results of other studies (e.g. Kempton et al. 1995).

Question: Has the state of environment changed during the time you have lived in this area?

*“...Winters are warmer now, and in my opinion this happens because of environmental change, like nuclear explosions”*  
(Novaja Zemlja) (worker, male, 30s, Vorkuta).

In the survey research, 86 per cent of respondents either strongly agreed or agreed with statement “you can already notice the effects of global climate change on the weather around here” (see table 5). The interpretation could be that the survey framework overstates the “degree of perception” as surveys often overstate citizens’ level of concern about some issues (Sterngold et al. 1994). This finding suggests – as in Kempton et al.’s (1995) data – that people overemphasise the extent to which the climate has already changed. However, in our case it is more the survey framework, which presumably made people exaggerate their own observations. The survey studies were conducted in the southern regions of the republic where climatic or weather changes are not so obvious as in Vorkuta and Usinsk, where the answers to environmental change questions and global concepts mentioned how winters have become milder in last decades.

Question: Has the state of the environment changed during the time you have lived in this area?

*“Worsened [the state of environment], oil spills have polluted water in rivers...Previously, winters were cold, but now they are more temperate and summers were previously warmer, lately they have been coldish”* (teacher, female, 40s, Usinsk).

*“Greenhouse effect... frankly speaking I don’t know, but 20 years ago here were really harsh frosts, and now I think the weather is warmer and warmer in summer and wintertime”* (administrator, male, 40s, Usinsk).

*“The environment has changed a lot. You can see changes clearly in forests. Big loggings have been carried out all over the district and many forest fires have occurred... And climate, previously winters were like winter, frosts lasted. In that time weather was sustained, but now rapid changes can happen. And the weather is windy now... Climate changes, all changes...”* (worker, female, 40s, Usinsk).

There were few spontaneous views about what kind of climate changes if any are desirable and whether a particular impact is perceived as negative or positive. However, most interviewees who said something about climate changes yearn for the stable climate and weather patterns which prevailed about 10 to 20 years ago. One could have expected that in the harsh Arctic conditions urban incomers would wish for warmer climatic conditions (if not thinking or knowing about the contingency of melting the permafrost), as the high-level politicians in Russia suggest. President Putin said at the Climate conference in Moscow:

In Russia you often hear that Russia is a northern country. Warming by 2-3 degrees is of benefit: we will have to spend less money on furs. And crop yield will increase (*Izvestiia* 29.9.2003, cited by Tynkkynen 2005).

Question: Has the state of the environment changed during the time you have lived in this area?

*“Changed (...). I think that the climate has changed to a bad direction, because of global warming, and here there are no more such freezes as there used to be. And summers are cooler now” (chief engineer, 40s, male, Usinsk).*

*“Previously freezes were 50-60 degrees, but now these kinds of freezes don’t occur any more. This affects birds; the course of climate change is good” (driver, 40s, male, Usinsk).*

**Table 5** People indicating how much they agree with the following statements. (%)

The statement	Strongly disagree	Disagree	Agree	Strongly agree
1. The weather has been more variable and unpredictable around here.	3	8	40	48
2. You can already notice the effects of global climate change on the weather round here.	2	12	48	38
3. Scientists are just speculating about global climate change. We shouldn't take action until they have proof.	32	41	17	10
4. We should be optimistic and assume that we are innovative enough to meet the challenge of global climate change.	24	31	30	15
5. I can't do anything about global climate change. I have no power.	7	15	30	48
6. We should have started dealing with the problem of global climate change years ago.	3	5	34	58

About 90 per cent of the people surveyed in the Komi Republic agree that the weather has been more variable and unpredictable and have noticed the effects of global climate change on the weather locally. The recent Arctic Climate Impact Assessment validates the citizens’ observations in this region: annual average temperatures have increased by 1-3 Celsius over the

past 50 years in the studied sub-regions II (Siberia and adjacent seas), and most of the warming occurring during the winter (ACIS 2004, p., 113)<sup>12</sup>. However, scientists from the Northern Komi do not confirm the statement about definitive local indicators of global climate change: it cannot be excluded that the temperature increases are just natural oscillations of the region's climate (Habeck 2003).

The findings among indigenous reindeer herders and fishermen of the Northern Komi Republic confirm the local scientists' statements. They also had observations about changes in the regional climate and weather conditions. However, J.O. Habeck's (2003) respondents suggested that extreme weather events can be associated with the high variability of the regional climate. These people gave contradictory conclusions about the question of whether there are general tendencies of cooling or warming. In our study in Utsjoki, Finnish Lapland, many interviewees stated that these climatic changes may occur in cycles between 3-7 years (compare the mechanism of North Atlantic Oscillation, NAO), which they see as part of normal climatic variation (Kuhry et al. 2002). Unstable weather patterns and sharp short-term variations are connected to the way of life in uppermost Lapland, and for local inhabitants it is as yet hard to see dramatic climate change and its impact on local life.

Most respondents in Komi felt personally powerless in the case of global climate change; this is in the line with the finding from other places (e.g. Darier & Schule 1999). What is different in Russia is that in the Russian context it is hard to find (from the main media or daily talks) any discourses of personal environmental commitment (especially regarding global environmental problems). Secondly, Russians still regard 'power structures' as responsible for solving these issues.

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<sup>12</sup> According IPCC (2001) report there is no clear agreement among climate scientist concerning changes in frequency or structure of naturally occurring atmosphere-ocean circulation patterns such as that of the North Atlantic Oscillation (NAO).

A majority of Kempton et al.'s (1995) interviewees in the USA also believed that climate has already changed, and they also reported noting milder winter and fewer predictable weather patterns. If climate is manifested by the long-term patterns of weather, Kempton et al. (1995) wonder how people claim to have personally observed weather changes during their lifetimes. They argue that "people have a historical propensity to perceive weather change, whether or not it is occurring, and to attribute it to human perturbations". They ponder several psychological factors: the "good-old-days effect", "in which we remember a distant past when the summers were consistently hot and the winters cold, just as they should be". Memories of more recent years of hot summers and mild winters outweigh and contrast with these more distant memories. The current publicity about global warming also gives people an appropriate framework within which they can interpret their own observations of more variable and violent weather (Kempton et al., 1995, p. 83).

The 'good-old-days effect' is also certainly a pattern working in Russia. This is especially related to the yearning for Soviet times in the heavily subsidised northern towns. The collapse of the old practical and symbolic world has caused a strong feeling of insecurity, especially in the heavily subsidised northern cities among middle-aged and older people. Environmental problems are considered part of the social instability faced after the collapse of Soviet Union, and thus, when people are yearning for a stable climate, they may actually pine after a stable society (see Karjalainen & Habeck 2004).

Now, in uncertain social circumstances in which former privileges are gone and the future is uncertain, the North now appears even colder and more confining; these are conditions from which inhabitants may wish to escape. Especially workers, who are threatened by unemployment and unpaid wages, seem to be less



comfortable in the North than government officials and teachers (Karjalainen & Järvikoski 2000).

Question: How do you enjoy your living in this environment?

*“...I don’t like these climate changes. Previously the weather was sustained, winters cold and summers sunny” (worker, male, 50s, Vorkuta).*

*“I like the natural environment here, but the climate, of course, doesn’t appeal.... These conditions are indeed harsh for living” (assistant manager, male, 50s, Vorkuta).*

*“For the sake of one’s health, Vorkuta is not a very good place - this isn’t the South. There’s no good health, and this is caused by the climate and working in the mines” (male miner, 47 years, Vorkuta).*

Question: Has the state of the environment changed during the time you have lived in this area?

*“Worsened. Some kind of abandonment of the North has happened. Previously we felt Vorkuta was needed... Now we feel no one needs us” (teacher, 40s, female, Vorkuta).*

We reason based on our data that when climate change is interpreted as the changes in the seasons (cooler summers and warmer winters) and the high and quick variability of the air temperature, it is perceived as a problem of personal health and well-being, especially for the newcomers in the harsh northern conditions where societal changes have been radical over the last ten years. People here view the deterioration of the environment

mainly in terms of the threats to their own and their children's health, and climate change is one aspect of this deterioration. Overall, health issues seem to have a very special meaning in the northern conditions, which is strengthened by the discourse of "the lack of oxygen in the atmosphere" in the high latitudes. This assumption is not supported by any scientific evidence; however, people talked about it.

It appears that weather, and climate, is given special local or regional importance. In the thematic interviews, we asked how interviewees enjoy living in their town, and, on the other hand, where they would like to live. Forty-nine per cent of respondents mentioned the harsh climate, and most of them pointed out that they would like to live in a region with a temperate climate. To conclude, climate change in the Komi Republic is actually more a personal concern about daily existence than an environmental, societal or global issue. However, it is a 'background issue' connected with other societal and environmental changes, and thus, not actively manifested in daily life.

In Russia, there is no great publicity either about global warming or other global environmental issues (at least during our research period 1998-2002; see also Tynkkynen 2005), which means that our interviewees do not have an applicable "global warming" framework within which they can interpret their own observations – although our research certainly somehow strengthened this framework. Actually, in Russia a counter discourse to global warming and its scientific consensus has recently emerged. Anti-Kyoto statements issued from the Russian Academy of Sciences, according to which the protocol "lacks a scientific basis" and would hinder Russia's economic development. These statements had presumably something to do with political debates and negotiations between EU and Russia over Russia's entry into the World Trade Organisation and ratification of Kyoto (Schiermeier & MacWilliams 2004).

Question: Do you see any risks for the Northern areas of the Komi Republic from climate changes?

*“The question is problematic, but for now there are not any risks. Human beings have not yet affected significantly climate patterns. At the moment a cycle of warming is taking place, this is nothing extraordinary. After this cycle comes a cycle of cooling. (...) This results from the activity of the sun. Scientists have known these risks [from global warming] for a long time, but they are not yet significant” (...) (meteorologist).*

*“I cannot see any risks for Northern areas, although in my opinion this problem has to be taken seriously. (...) In addition, my own perceptions tell me that it has become warmer in recent decades”. (professor in natural sciences)*

*“So far, we don’t know for sure. There are only different models, and climate changes can result from natural cycles and variations” (geographer).*

It has been said that the major human and ecological impact of environmental change is not so much about mean changes but about extreme events (Berkes 2002, p., 339). The current experienced climate changes are more corporeal, extreme and acute for the communities in the Western Canadian Arctic, Alaska, and now also in Siberia than in the regions we have studied (see Krupnik and Jolly 2002, ACIA 2004). These regional and group specific differences must be born in mind when planning and conducting perception studies of climate changes<sup>13</sup>.

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<sup>13</sup> In addition, social and occupational groups differ in their perception of environmental changes (e.g. ‘reading signs’ of changes in vegetation that are valuable for their activities). That’s because they mainly engage in different tasks; they have a different kind of functional relationship (e.g. reindeer herding and hunting as ways of life vs. recreational customs and a more aesthetic view to nature) with local ecosystems. Besides of occupational lines, an ethnic and rural-urban divide can be noticed,

## Conclusions

The main goal of this paper was to find out how local context-specific factors affect responses to global environmental change. Our results show that people in the Komi Republic are quite concerned about the environment. However, environmental issues hold a low profile compared with other social problems. Current Russian living conditions, e.g. income level and employment, are clearly more important to people than environmental issues. It is also clear that global warming or climate change is not a ‘front-burner’ issue – as it is not globally - when in comparison to other environmental issues, like the most evident problems of water and air pollution.

It seems that international environmental discourses and policies have had at least some influence on the ways people in Komi see environmental issues, although environmental concern is there obviously less dependent on media and global environmental discourse than in Western countries. More specifically, the discourse on climate change has also had some influence, although people's exact knowledge about the issue is rather minimal. When we made comparisons between the Komi republic and the Oulu region in northern Finland, it was clear that people in Finland were more prone to subscribe to the global environmental discourse (Järvikoski et al., 2008). Therefore, it would perhaps be an exaggeration to speak about the globalisation of the environmental discourse in Komi; it is more accurate to speak about glocalisation, in which global discourses and information emanating from the media has been adapted to local beliefs, customs and personal experience of everyday life. Furthermore, what is interesting in Russia, the counter discourse (the rejection of the idea of global warming) is still detectable both in international politics (the

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and this is connected mainly to the livelihood and subsistence patterns, but also to the time of being in a particular place or area (Karjalainen & Habeck 2004).

coupling the Kyoto protocol and the membership of WTO) as well as in science.

We assume that the process of glocalisation will gradually strengthen the climate change framework in Russia. International pressure and the profits from investments by Western countries will advance such development, although Russia with its Great Power syndrome (see Tynkkynen 2005) and its distinct contexts as a vast country will surely establish its own traditions.

In the conditions where environmental discourses are not clearly discernible among public discourses, people's own perceptions and experiences provide the crucial basis for environmental awareness and concern – although misconceptions about reasons and causal mechanisms (from the scientific point of view) are widespread. This is the case in local pollution issues, in which the influence of external sources of information on public perception is minimal (see Bickerstaff & Walker 2001): but in Komi primary personal experience also seems to be crucial regarding global environmental issues.

In general, scientific knowledge does not (straightforwardly) play a major role in influencing the public's formation of views on environmental issues. In reading signs of climate change, mediated and often incoherent scientific knowledge is evaluated against the background of personal memory, practical knowledge and experience of inhabiting particular locales. It is important to acknowledge that climate is recorded by meteorologists, but weather is experienced by locals (see Ingold & Kurttila 2000).

Because of the uncertain and long-term nature of climate change, evaluations of its effects and causes based on local observation and experience are mixed with effects of other societal and environmental changes. Thus, when taking the local context and individual's life-world as a reference point of changes, "relevant knowledge in the climate discourses is not composed solely of scientific facts about climate chemistry, dynamics, and impacts, but also derives from various experiences of social change

and societal responses to natural change” (Thompson & Rayner 1998, p. 336).

Local dwellers in the Komi Republic have noticed climate change(s), if this is understood as a weather-related or ‘local climate’ phenomena. It is evaluated based on individual perceptions and experiences of local situations: variations in weather and temperatures in different seasons during the past decades. Climate change is perceived mainly as changes in seasons. The seasons have supposedly become more moderate: the winters have become milder and severe freezes to occur less frequently, while summers are cooler nowadays than they used to be. Some respondents remarked that the weather patterns have become more unpredictable and unstable.

The cycle of seasons has a major importance on people’s experience of the weather in the far North (Ingold & Kurttila 2000), and thus the talk and observations of changes in seasons have to be put in this context. A distinctive feature of our data was that climate change was viewed among the newcomers of the Russian far North more as a personal concern for health and well-being than as an environmental or global issue. The climate in the far North has a special meaning, and it is experienced as harsh and having an effect on one’s health along with environmental (e.g. water pollution) and social problems (e.g. unemployment) and working conditions (in coal mines or on oil derricks).

However, climate change, interpreted as the unpredictable weather and the unstable cycle of seasons, can also be understood as a ‘background issue’ within the context of radical societal changes. When our interviewees yearn for stable climatic conditions, they actually pine for such a stable and predictable society, which prevailed during the time of the Soviet Union. At that time people living in the towns of far North used to have a steady and good income guaranteed by the Northern privileges. This supports the notion that global concepts and risks of

environmental change are always localised in particular socio-political and cultural contexts (Burningham & O'Brian 1994).

Although these findings describe the glocal conditions in Komi, they include matters, which obviously are not typical only of Komi. Most importantly, it seems reasonable to maintain that environmental concerns in general – not only in Komi - tend to have a glocal character. It appears that public knowledge of global climate change does not yet form a firm basis for the 'global concern' of climate change, as cross-cultural comparisons (Bord et al. 1998; Brechin 2003) reveal that most people are still poorly informed about the anthropogenic causes of global warming. Nevertheless, people are aware of the issue and believe that they can notice the effects of global climate change locally, as our results from the Komi Republic and from other places indicate.

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