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06| Discussion Paper: The Global Climate Challenge – How Does Individual Action Correspond to Global Climate Policy?

A comparative analysis of individual perceptions, attitudes and behavioral intention towards global warming in Germany and other EU member states



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The Global Climate Challenge – How Does Individual Action Correspond to Global Climate Policy?

A comparative analysis of individual perceptions, attitudes and behavioral intention towards global warming in Germany and other EU member states

Discussion Paper 02/06 by the research project
“Global Governance and Climate Change”

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Abstract

Officially addressing global warming at the international level does not necessarily translate into individual action: even though international agreements on climate change have been successfully negotiated, emission rates from households and individual activities are still increasing, and not only in the first world. Hence, the question arises as to how the complex threat of anthropogenic climate change is perceived and acted upon individually. To analyze the contributions of individuals to this problem it is crucial to consider the political framing of climate change and the (lack of) public understanding of the issue.

In this paper, individual climate consciousness and attitudes towards climate change and protection are analyzed from the viewpoint of perceived ecological threats. The paper presents empirical findings on how global climate change is perceived by lay people in Germany and other EU countries. The focus is less on differences found between countries and more on the attempt to draft an outline of the *European perception of climate change* and the potential for behavioral change in relation to an increased awareness regarding climate protection. Representative survey data (the Eurobarometer 2005 and the German Environmental Awareness Study 2004) is analyzed and interpreted.

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1. Introduction

Results of representative surveys confirm a high environmental consciousness in Northern, industrialized countries. In these studies increasingly global environmental problems, i.e. loss of biodiversity and climate change, are mentioned as extremely dangerous. At the same time, complex global environmental threats like climate change or the ozone layer bring up the question of whether lay people understand their determining factors entirely. One might expect that a global environmental issue such as global warming is closely related to uncertainty and information deficits regarding causes and consequences of the environmental threat.

The increasing complexity of environmental issues, meaning an increase in contributing factors of these problems, is a challenge for individuals not only in order to understand the problem, but also in order to translate the information into individual action. In regards to climate change, complexity has to do with an unequal distribution of Greenhouse Gas emissions worldwide and regionally diversified consequences that is an increase of extreme weather events, which are not exactly predictable in place and time. Problem solving strategies become more complicated when one thinks of the diverse national responsibilities for CO₂ emissions and different vulnerabilities facing nations- especially when comparing Northern, industrialized and Southern, developing countries. The issue is raised as to how much each country must contribute to the problem's solution in relation to its historical responsibility for the present scenario. In this context, the debate on global environmental justice of climate change considers different grades of industrialization and therefore accountability towards the globally diversified impacts of global warming.

Moreover, regarding the solutions of 'global climate governance,' different governments, civil groups, such as non-governmental organizations or industry, have different positions and a dissimilar will to contribute to climate protection. Distinct national vulnerabilities evoke varied perceptions of the problem, which lead to controversial debates over solution strategies. Therefore, the (controversial) political framing of climate policy, especially the internationally negotiated solution strategies

presented by the Kyoto protocol, contributes to the public perception of global warming, too.

On the national as well as the international level, governments claim civil environmental awareness. Not least, this demands sufficient information and knowledge about the issue, as well as about its predominant solution strategies from civil society, in order to understand the necessity of individual action as being important for solving environmental problems. Here, well known discrepancies between environmental consciousness and performance in everyday life play a role, too.

All these issues - questions of responsibility and justice, spatiotemporal factors, vulnerability, mitigation and adaptation, lack of understanding - will be described in more detail in the paper in relation to the following questions: How does the lay public perceive global warming? What happens to environmental awareness with regard to global issues like climate change when regarding behavioral consequences? Do lay people feel responsible and willing to act? Furthermore, questions arise on how global warming and its problem solution strategies are perceived by lay people regarding complexity, dominant solution strategies like the Kyoto protocol and the potential of individual action.

These questions will be analyzed with a focus on anthropogenic climate change. A threefold perspective will be applied which is the result of a multi-dimensional-approach towards the analysis of lay consciousness of climate change: it is assumed that the objective dimension of climate change as well as the problem's spatiotemporal dimension, contribute to individual perceptions. This thesis results from the assumption that climate change, as compared to other environmental problems, is characterized by a high degree of complexity, making it necessary to have a closer look at its characteristics as well as its dominant political performance. The first two dimensions (the objective and spatiotemporal dimensions) deliver broad access to the analysis of lay perceptions of global warming (the socio-cognitive dimension).

First, the *objective dimension of climate change* will be discussed, here it will be shown that insufficient objectives and results of international political solution strategies with regard to CO₂-emissions' reduction make further action on all levels necessary (it is a 'multi-level problem'). Vice versa, the objectives of internationally negotiated strategies influence people's awareness and (non-) willingness to act towards climate change as well. Not least, the socio-political framing of the issue contributes to individual perception also, in the way the problem is constructed by dominant actors. Thereafter, it will be discussed that a simple distinction of climate change as either a natural threat or an anthropogenic risk is difficult, which has an impact on the lay perception of climate change whenever the encouragement of environmental consciousness and individual action is wished for.

Second, in the section about the *spatiotemporal dimension of climate change* the focus is on the relationship between globally diversified vulnerable regions and the time span between causation and impact of increasing greenhouse gas emissions. It will be shown that the construction of the 'global' dimension of the problem contributes to the European perception of climate change. The question, to what extent the terming '*global* environmental threat' is a summarizing term of an international problem with specific regional and individual outcomes, and to what extent it provides opportunities for construing the issue, will be discussed.

Third, in the section on the *socio-cognitive dimension*, empirical results of European lay perceptions of global warming will be presented. Of major interest is to discern to what extent complexity and problem construing may determine peoples' perceptions and intended actions towards climate protection. In this section tables and graphs will present empirical results from Germany and the European Union as a whole, and also differentiated between old and new member states.

The overall task of the paper is to present findings on the relationship between lay perceptions of climate change, lay awareness of climate protection strategies, and resulting consequences for individual action and therefore, partly to the problem's solution as well.

2. The 'objective' dimension of climate change

The 'objective' dimension of climate change focuses on the empirical evidence of an anthropogenic influence on the Earth's natural climate system and its solution strategies. Not least this is confirmed by the existence of an international climate regime which is associated with those nations having ratified the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto protocol. Deficits of this 'global solution' will be summarized in order to suggest that there might be a correlation between shortcomings of public awareness and prominent solution strategies.

Deficits of lay awareness already correlate with the distinction between environmental threats caused by nature itself on the one hand, and threats caused by human action on the other. These are not easy to understand from a lay perspective, which will be shown in section 2.2, applying the work of Luhmann and Beck.

2.1. The objectives of the Kyoto protocol compared to real emission rates

The Kyoto protocol, signed 1997 by more than 140 states, holds a high degree of symbolism for the general public. The ongoing political negotiation process points to the problem and keeps it in the minds of many. Various studies confirm that media reporting before and after the protocol's passing led to a massive rise in public awareness towards the pact (Carvalho and Burgess 2005; Saad 2006). But focusing on the Kyoto Protocol's ratification process² and not on the problem led to the eventual fading away of the real issue. Instead, the new political-economic solution strategies of the Protocol were given priority. The protocol aims at greenhouse gas emissions reduction, which was declared to be responsible for the dangers of global warming, of 5.2% between 2008 and 2012 (using the global emissions rates of the

² For the protocol to come into force it was necessary to fulfil two conditions: at least 55 states had to sign the protocol and these 55 states together had to be responsible for at least 55% of the global greenhouse gas emissions. When, in 2001 the USA, as one of the biggest emitters that had signed the United Nations Framework Convention on Climate Change (UNFCCC), refused continue the negotiation process, the protocol's success became questionable. The first condition was easily reached- but not the second one. It was only in 2004 when Russia was convinced to sign the protocol, that it could come into force in 2005.

year 1990 as the baseline). In contrast, in this same timeframe climate experts and non-governmental organizations claim that a 45% (Graßl, Kokott et al. 2003) to 80% (Germanwatch 2002) global reduction of CO₂ is necessary to prevent a dangerous impact for nature and society. But even the relatively miniscule, little ambitious, objective of 5.2% does not seem likely to be achieved as recent calculations have shown (UNFCCC 2005).

Aside from providing an overall emissions reduction goal, the Protocol offers opportunities to reduce greenhouse gases (GHG) with the so called flexible mechanisms: instead of reducing GHG at home, states which have signed the protocol and must reduce emissions, have the opportunity to either buy emission rights via the emission trading system (ET),³ to finance emissions reduction projects in developing states via the Clean Development Mechanism (CDM), or to finance emission reduction projects in other countries that have signed the Protocol (Joint Implementation). The predominant critique against these measures is that they might turn out to be reduction avoidance measures that offer economic advantages for the dominant investing states instead of climate protection via real emission reduction. Some have already coined the term 'eco-colonialism' in reference to JI, and it is been argued by others to be nothing more than a modern 'selling of indulgences' (Missbach 1999: 266). Furthermore, technical possibilities for carbon capture and sequestration have been criticized because their impact has not been adequately explored.⁴

³ The emission trading system, which has currently only been implemented in the European Union (since 2005), allows countries of the Kyoto protocol to trade emission certificates with other countries under commitment. Each state under contract has a certain reduction limit which was stipulated by the European Union agreement of 'burden sharing.' This accounts for the distinct overall GHG emission rates resultant of different degrees of industrialization of this diverse group of countries. Germany, for example, must reduce GHG emissions by 21% by 2012 whereas France does not need to reduce at all, and Greece can even increase its amount of GHG by up to 25%. The so called national allocation plans determine the amount of GHG reduction of each national sector of industry, and according to these plans emission certificates are distributed to the different corporations. In case a corporation emits more GHG than it is allowed to according to its amount of certificates, it must either reduce GHG by investing into energy saving technologies, or it can buy certificates from other states, i.e. foreign corporations. The idea behind is that it does not matter *where* GHG is reduced as long as it is done somewhere, preferably in a cost effective manner. The country purchasing certificates is then liberated from reducing GHG at home.

⁴ Carbon capture and sequestration mean long term bonding and storage of CO₂, i.e. in biomass or in sinks, or technically via pressing the gas with high pressure beneath the earth or the ocean. But these measures are closely related to scientific uncertainty, i.e. it is not entirely explored yet what happens

With these flexible mechanisms, a fundamental socio-economic reconstruction of industrial states built upon fossil energy systems is avoided. Meanwhile measured data shows that overall emissions rates of GHG are still increasing (International Energy Agency 2004). The German Institute for Economic Research (DIW) discovered that GHG emissions of the Annex-II-countries (industrial countries) of the Kyoto protocol from 1990 to 2000 showed an overall increase of 8% (German Institute for Economic Research 2004). Furthermore, a comprehensive study which was commissioned by the bureau of the United Nations Framework Convention on Climate Change (UNFCCC), collected the official available GHG data of 40 industrial and 121 developing states in a trend analysis from 1990 to 2003. This study does not suggest a decrease of emissions either- on the contrary, the UNFCCC-survey forecasts an increase as well (UNFCCC 2005). These results show that neither a stabilization of GHG nor a convergence towards the Kyoto objectives are currently expected. Additionally, the rapidly rising emission rates of transition and developing states will only accelerate this development (International Energy Agency 2004). In 2003 alone the global GHG emission rate increased at a rate of 4%, which is one fifth higher than 1990 (Ziesing 2003).

Based on critiques of the official political negotiation process and the inefficient problem solving strategies which they have resulted in, some actors claim the need for a significantly more far-reaching climate policy, one that goes beyond the objectives of the Kyoto Protocol (Torvanger, Twena et al. 2004). But nevertheless, the Kyoto Protocol is still weighed as an ample climate protection measurement against the criticism about flexible mechanisms and insufficient reduction rates. It is then apparent that the reason the Kyoto Protocol is perceived to be a successful method of climate protection is due to its symbolism more than to its efficacy. Simply getting more than 140 countries to sign up made it a success to some and, it is the only internationally binding agreement for climate protection. So in this way, regarding perceptions of global warming, the simple existence of climate protection strategies might have become more important than their problem solving capacity.

with oceanic organisms after sequestering (IPCC 2005). Also the plantation of monocultures, alienated trees and other artificial methods of CO₂ storage like applying genetically modified organisms are criticized (Brouns, Ott et al. 2003).

The question then arises, what does the general public really perceive when talking about climate change? Does it predominantly perceive the problem itself or its (political) solution strategies, or both? And how can the public awareness of climate change be characterized given that it is neither directly visible nor immediately hazardous?

2.2. Climate change: risk or threat?

According to Luhmann, dealing with environmental danger means to distinguish between risks and threats. He defines external threats as a harm related to nature itself whereas risks are the outcome of decisions. Natural threats are therefore unrelated to decisions or cannot be limited by calculations (Luhmann 1991). Luhmann also claims that both risks and threats focus on future damage with an undefined amount of uncertainty. This uncertainty can never be reduced to zero because it depends on future events which cannot be entirely predicted. Acting on the premise of uncertainty means to choose from a set of alternatives without knowing if the outcome (and therefore the confirmation of the appropriateness of the action) will be successful. Additionally, having even the best information in the world cannot prevent unforeseen effects. Finally, this also means that our action is influenced by the behavior of others and is therefore continuously challenged, not to forget that taking no action will also influence the outcome.

Beck's work also focuses on the distinction between natural and human induced environmental dangers. His critical term 'risk' introduces the definition of self-endangerment: He claims a different view on human-nature-relations as related to social structures. Beck's 'risk society' represents a self-confrontation of modern societies with its self-induced risks. The difference between classic industrialized societies and industrialized risk societies in his view is that the former are characterized by risks and the latter by self-endangerment (Beck 1992). In the risk society it is explained that risks are produced by the modern societies themselves, they exceed social as well as geographical borders and therefore affect societies entirely- environmental risks become global as well, as the nuclear accident in Chernobyl made spectacularly obvious. Beck argues that modern societies are

increasingly endangering themselves. At the same time, attributing causalities, responsibilities and liabilities becomes more difficult as a result of the globalization of environmental risks. Beck is asking for institutional consequences of this social change- he understands this situation as a fundamental institutional crisis of a nation's modern industry as it becomes more and more reflexive and self-endangering. Beck's answer to the question of ecological self-endangerment is therefore, the 'reflexive society': a society that confronts itself reflexively with the consequences of its self-produced risks (ibid.). Beck's focus is on the perception of and solution to environmental problems, also on the institutional level. He accuses the 'industrial fatalism' and 'organized irresponsibility' of these entities of neglecting to solve self-induced ecological problems. Therefore, the ecological crisis becomes a fundamental institutional crisis of industrialized societies. Refusing the paradigm of Max Weber, who believed that all things can be controlled by calculation, the assumption here is a general uncertainty of action following the consequences of complex decision making processes. Comparing risks and threats, Beck's approach describes risks which are not calculable or controllable as 'second order threats'.

Considering this information, it becomes difficult to apply Luhmann's distinction between risk and threat to the example of climate change, especially when trying to distinguish between natural and human induced disasters. It is (mostly) agreed that global warming is caused by the burning of fossil sources of energy (oil, gas, coal) which exacerbates the naturally occurring greenhouse effect. This is a non-linear process however: anthropogenic climate change increases the probability of natural dangers (as a consequence the average global temperature is rising as well as sea levels, glaciers are melting and strength and number of extreme weather events like hurricanes, desertification, and flooding increase). In turn, this has an impact on societies. Climate change can then be described as human-nature-interplay and therefore, one cannot describe climate change as either a natural or a social phenomenon. In other words, it cannot be described as either Luhmann's (social) risk or (natural) threat, nor can it be described solely as self-endangerment which, according to Beck, could be solved reflexively, by one's self. Moreover, climate

change involves reciprocities which produce even more side effects.⁵ Hence, anthropogenic climate change must be distinguished as a fundamental crisis of modern industrial societies, involving ecologic, socio-economic, political, cultural, and scientific-technical issues. Climate change cannot be entirely understood without reflecting upon its dynamics of social-ecologic-interdependency. In the next section, the complexity of this issue and its implications on public perception and willingness to act of are considered more in depth.

3. The spatiotemporal dimension. Impacts of global climate change and 'glocality'⁶

When analyzing anthropogenic climate change, it is necessary to consider its spatiotemporal dimension: not only are climate experts already witnessing the impact of global warming (i.e. consequences for health systems resulting from extreme weather events like heat waves; see Kovats, Campbell-Lendrum et al. 2005), but they predict future threats which will become even more dangerous (IPCC 1990; IPCC 1996; IPCC 2001). Presumably, a limited individual capacity to perceive dislocated events, as well as displacement or competing interests (such as the view that CO₂-emissions related to industry are good and necessary because they generate jobs) determine public perception of the future impact of global warming. Climate change does not indicate a simple logic between causes and impacts. Rather it represents a complex spatiotemporal interrelation. Contemporary CO₂-emissions affect the atmosphere not immediately, but in a delayed manner. And the effects of the greenhouse effect are not the same for all countries and populations worldwide but differ among them and have variable time spans – although experts

⁵ Whole societies are already seeking asylum because of sea level rises. For example, the small island state Tuvalu has been seeking asylum in New Zealand and Australia; its population can therefore be characterized as the first climate refugees (Brunnengräber and Weber 2004). Not only the loss of the island, but also the loss of its culture must be considered as consequences of global warming. Another example is the manifold outcome of the 2003 heat wave in Europe, which illustrated the close connection between natural and social factors. The heat wave had an impact on agriculture and forestry (natural) as well as the health system (social, i.e. age, poverty). In France alone 14,947 deaths were counted at this time, with most of the mortality due to causes directly attributable to heat (dehydration, hyperthermia, heat stroke). Unfortunately it must be realized that social preparedness seems to be low for such an extreme weather event. Summer 2003 was the hottest in Europe since 1500 (Poumadère, Mays et al. 2005).

⁶ The term 'glocality' or 'glocal' represents the reciprocal, multi-level relationship of global/international, national, regional and local issues.

largely proceed on the assumption that developing countries are the most vulnerable towards climate change due to their minor socio-economic adaptive capacities (Ott, Winkler et al. 2004).

'Glocality' and spatial leveling

Climate change in the public discourse is perceived as a so called 'global' problem. The underlying argument is that anthropogenic climate change affects populations worldwide. Moreover, it is argued that greenhouse gas emissions worldwide contribute to the global nature of the problem- the perception of global climate change in this respect is of course not wrong, but it needs modification in order to explain the complex structure of the problem more clearly.

Although it is unimportant to know where GHGs are released in respect to overall contribution to global warming, it is very important to know when asking who suffers most from its impacts. This is of course due to the fact that the impacts of climate change are not equally distributed around the globe: flooding, desertification and hurricanes affect various societies and social groups within societies very differently. Therefore the term 'global climate change' needs to be modified to acknowledge this. This is pertinent because public discourse predominantly created by the media (in addition to political, scientific and economic actors) supports the impression that climate change is a worldwide phenomenon with equally distributed causes and impacts. Climate experts do present a more differentiated picture, but there is reason to believe that the lay public is likely to perceive things more from the perspective put forth by the media. Already the example of the ozone layer has shown that a global vulnerability – in this example caused by unfiltered solar radiation – of so called global environmental issues does *not* exist. Instead, regional differences play an important role. Regarding the ozone layer for example, Australia is much more vulnerable than Europe or Asia. Besides regional differences, socio-economic differentiation characterizes social vulnerability towards environmental threats as well: the example of hurricane Katrina impressively showed how undemocratic environmental threats turn out to be. On the contrary, social stratification and skin color were distinctive attributes of vulnerability in this case (Davis 2005). Labeling climate change a *global* environmental threat suggests that a spatial equality does

not exist, neither regarding causes nor consequences of climate change. The naming of global risks or a 'global risk society' suggests equal modes of action and vulnerabilities towards the impacts of environmental threats. Therefore a spatiotemporal differentiation is necessary rather than only spatial leveling.

Nevertheless, the communication of a 'global risk society' caused by climate change leads to an overemphasis of *global*, i.e. international problem solving strategies, such as the Kyoto protocol in the public discourse. This has an effect onto the lay public's perception, for example, it could evoke only minor individual responsibility given internationally binding (although not very ambitious) objectives of mitigation. In what follows, empirical findings relating to climate change perceptions of Europe's lay public will be presented.

4. The socio-cognitive dimension. Perception of global climate change

So far, it has been discussed that the spatiotemporal complexity of causes and impacts of climate change presumably influences the public perception of climate change. The clear distinction between natural threats and human induced risks or self-endangerment must be rejected. But how does society perceive the human-nature-interplay of global warming?

4.1. Public perception of climate change

Opinion polls continuously survey environmental consciousness measuring people's concern about the environment. One of the largest contemporary opinion polls on ecological awareness in the European Union is the Eurobarometer of the year 2005 in which, for the first time, old and new member states were surveyed on this issue. The largest representative environmental survey in Germany is the 'Environmental Awareness Study' which is conducted biennially (Bundesumweltministerium and Umweltbundesamt 2004; European Commission 2005).^{7 8} In what follows, results for

⁷ In the following section only descriptive results are presented. The multivariate statistical models for the German Environmental Awareness Study (multiple regression, logistic and multi-nominal logistic regression) did show some significant effects, such as age, gender and education, but almost no explained variance ($r^2 < 4\%$). This is not surprising as the questions were mostly agreed upon by a vast majority of the respondents which resulted in a low variance and therefore unidimensional

Germany and other EU member states towards the perception of global warming will be presented. The reason for focusing on Europe instead of a wider sample (especially with regard to developing countries) is foremost technical: contemporary empirical studies on global warming including developing countries are rare. The Eurobarometer is one of the biggest internationally comparative surveys focusing on ecological awareness which gives insight into people's awareness, attitudes and status of information on the issue in general. Nevertheless, it lacks survey questions which go more in depth, especially with regard to the knowledge base (causes and impacts) of climate change. Moreover, questions surveying levels of concern or an evaluation of climate protection (mitigation and adaptation measures) are missing. That is the reason for including the German Environmental Awareness Poll in this study. The comparative perspective between Germany and other European states helps to spot presumable differences in perception, attitudes and status of information towards climate change, but the focus is not on country differences in particular (if necessary, country differences will be described below). Rather it is on the attempt to gain a more generalized picture of European perception of global warming and behavioral potential towards climate protection.

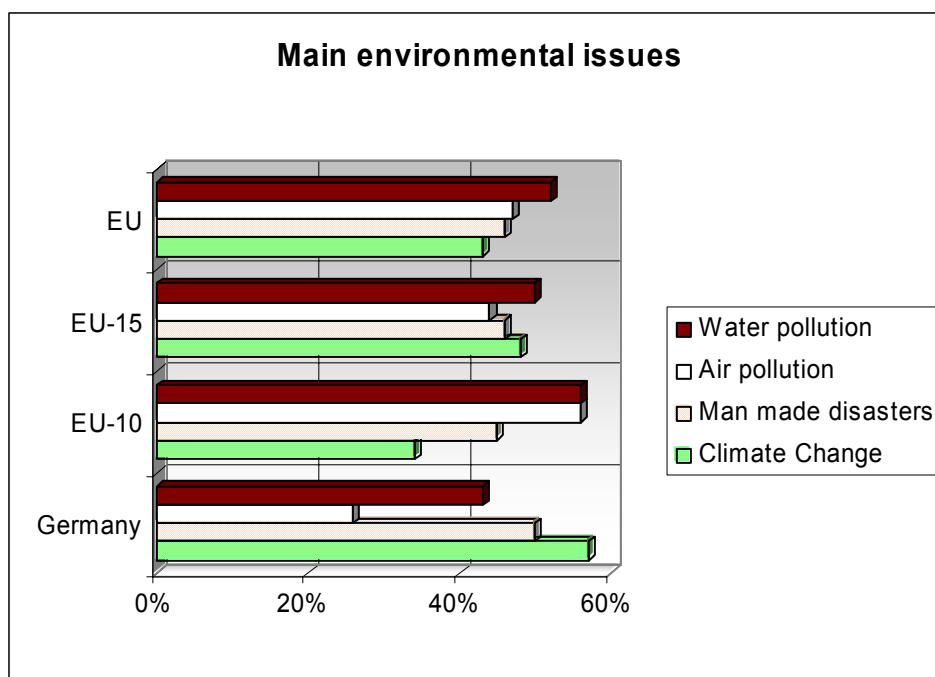
Considering the mean values of the European Union, in both old and new member states (and Germany in particular), the environmental poll shows that populations of western industrialized countries regard climate change as one of the most dangerous environmental problems today. The new member states value climate change as slightly less dangerous in comparison with the EU-15, but the overall picture is a high affirmation to global warming (see graph 1 and 2). In the graphs, only the mean values of EU-25, EU-10 and EU-15 are shown. There are differences when comparing the single countries of old (EU-15) and new member states: In the EU-15, the range is between 39% (Ireland) and 68% (Sweden). In the EU-10 the confirmation ranges between 32% (Poland, Hungary) and 50% (Cyprus) (ibid.).

distribution. The small degree of explained variance in the multivariate models therefore illustrates that there is only little correlation between socio-demography and attitudes towards climate change, but a high common agreement towards climate change as a major problem.

⁸ Both polls use standardized items instead of open questions. The interviewees chose out of a limited set of items.

Confirmation that climate change is an environmental issue of primary concern comes with the observation that in all member states no percentage is under 30%.

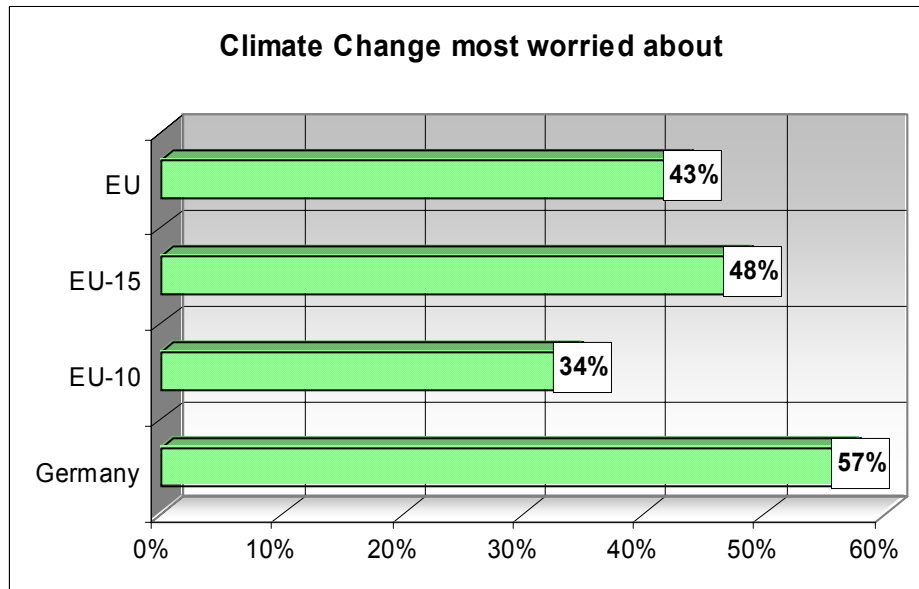
Graph 1⁹



	EU-25	EU-15	EU-10	Germany
Climate Change	43%	48%	34%	57%
Man made disasters	46%	46%	45%	50%
Air pollution	47%	44%	56%	26%
Water pollution	52%	50%	56%	43%

⁹ Survey question Eurobarometer 217 (Wave 62.1): “Please list the five main environmental issues that you are worried about.” (max. 5 answers out of 15 environmental issues, plus ‘none of these’ and ‘don’t know’). Graph shows only those categories that were most frequently mentioned in the EU-25.

Graph 2 (see footnote 8)

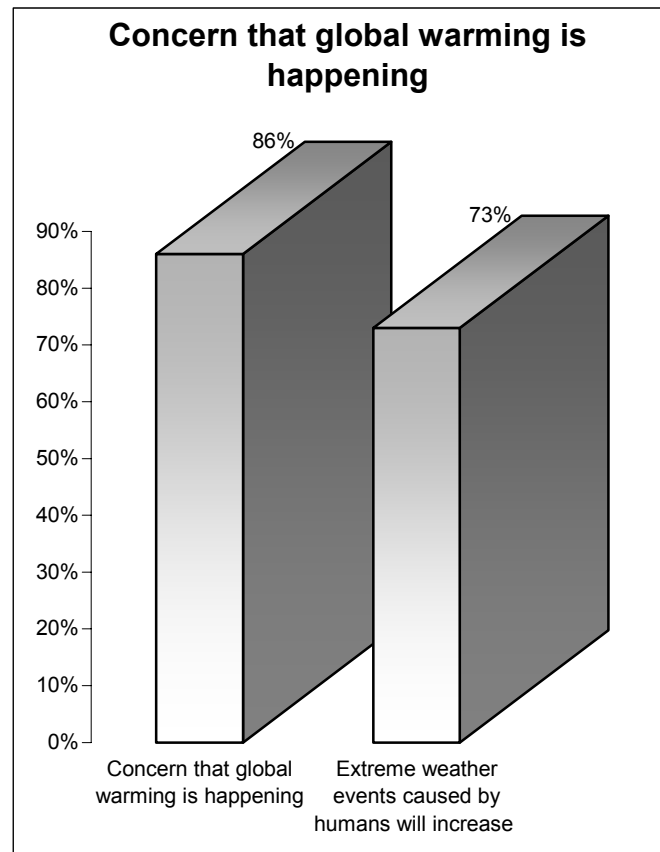


Also the German Environmental Awareness Poll confirms that most interviewees are convinced that climate change is happening (see graph 3).¹⁰

The respondents of the German Environmental Awareness Poll also believe that the number of extreme weather events rises due to anthropogenic climate change (see graph 3).

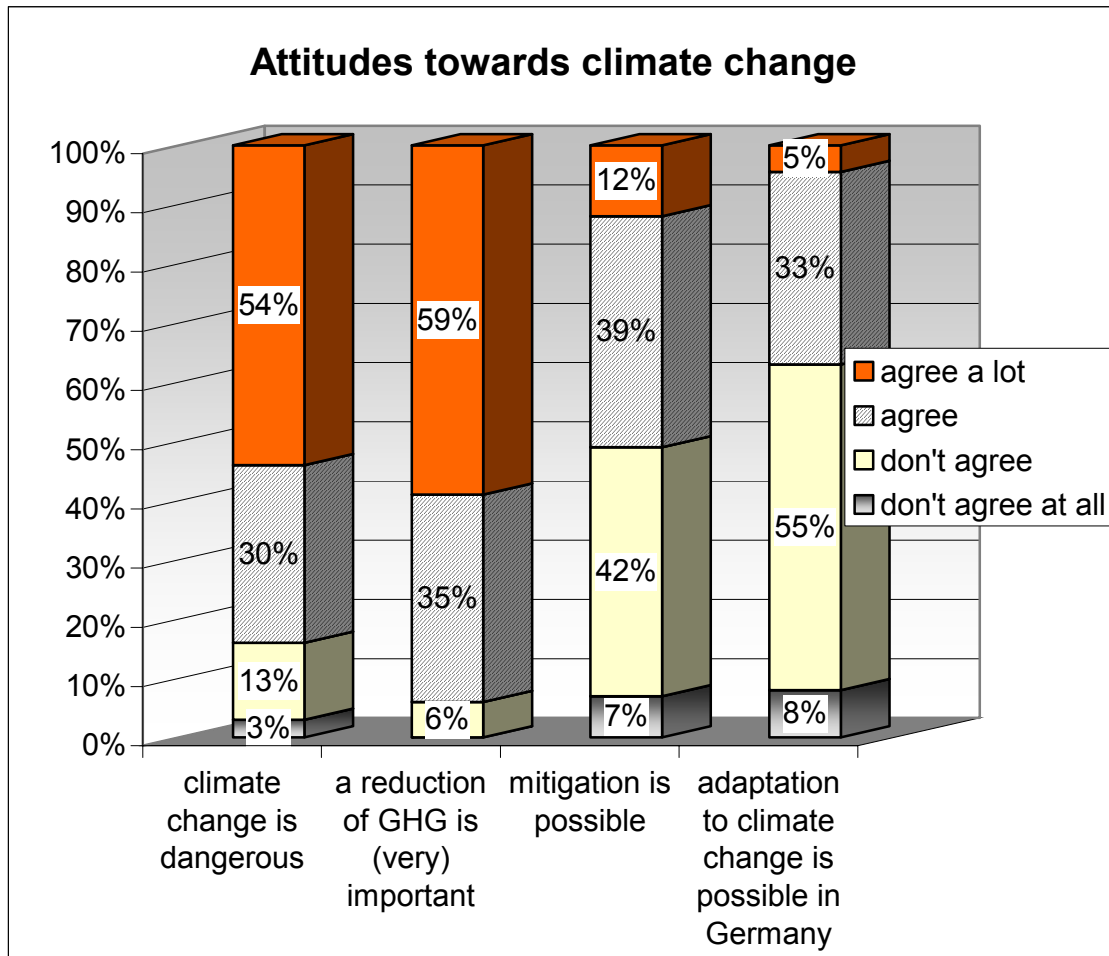
A vast German majority also believes that climate change is dangerous (84%) and a reduction of Greenhouse Gas (GHG) is important (94%). But half of the German respondents do not entirely believe in mitigation (49%) and more than half do not believe in adaptation strategies (63%; see graph 4).

¹⁰ All calculations and graphs by author, except for those explicitly marked. All calculations for Eurobarometer have a total N=24.787, EU-15 n=15.529, EU-10 n=9.248 Germany n=1.561. Eurobarometer data made available by the Central Archive for Empirical Social Research, University of Cologne, Germany.

Graph 3¹¹

¹¹ Survey questions from German Environmental Awareness Poll 2004, fear on global warming and its impact: "Most climate researchers forecast global warming. For instance, they expect a sea level rise and a shift of climatic zones. How much are you convinced that those expected climate changes will occur?" (4-scale-item, bar shows very much / much convinced). Total N=2.018. Data made available by Prof. Udo Kuckartz, Philipps-University Marburg, Germany.

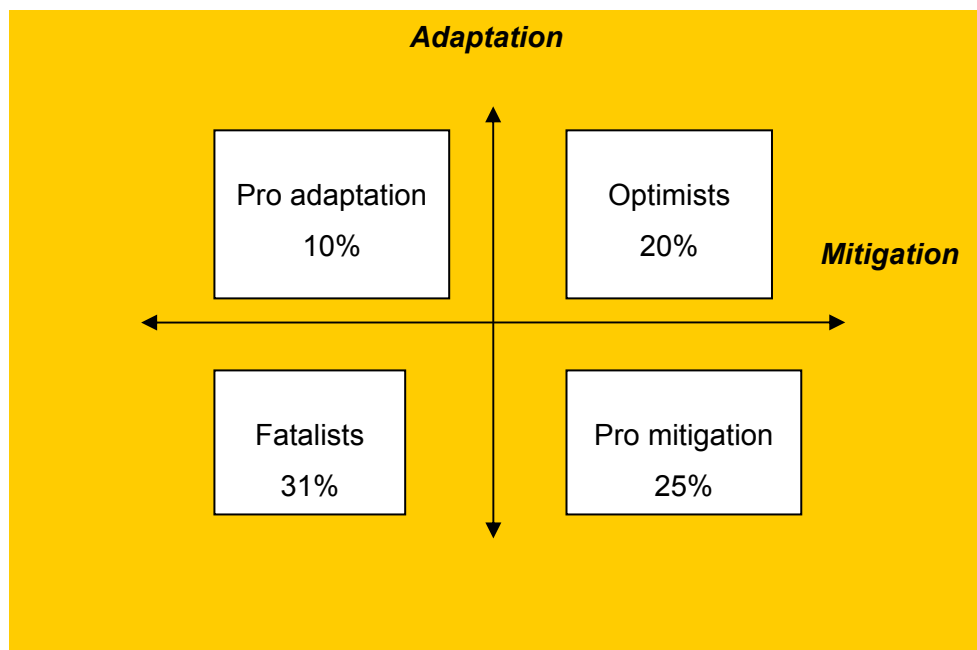
Second bar, extreme weather events: "How much do you agree to the following statement: The amount of extreme floods is going to increase in the future caused by human impact into nature." (5-scale-item, bar shows agree / agree to a great extent). Unfortunately these questions were not posed in the European poll.

Graph 4¹²

Comparing only those Germans who believe in anthropogenic climate change, 31% believe that climate change cannot be avoided and adaptation measures are not useful (see graph 5; first group: 'fatalists'). The biggest group of people who believe in anthropogenic climate change can therefore be described as fatalists.

¹² Survey questions German Environmental Awareness Poll:

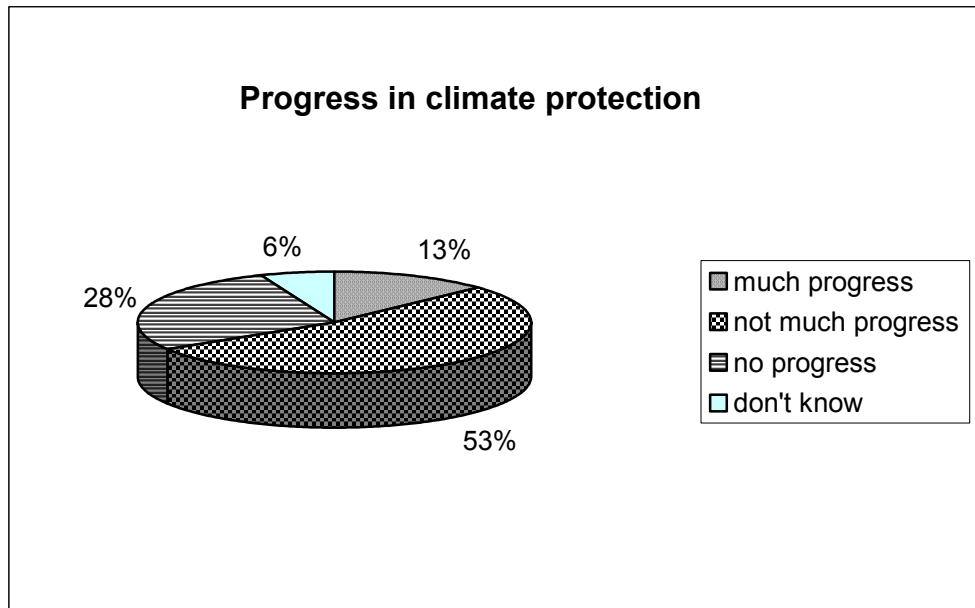
- 1) "How dangerous do you think is global climate change caused by the Greenhouse Effect for you and your family?" (5-scale-item, reduced to 4)
- 2) "How strongly do you agree to the following item: How important is an explicit reduction of GHG, i.e. carbon dioxide?" (4-scale-item)
- 3) "Most climate researchers believe in human induced climate change, especially related to burning coal and oil (i.e. when driving a car or heating). How much are you convinced that climate change can be avoided by adequate measures?" (4-scale-item)
- 4) "Assuming climate change cannot be prevented anymore, how much do you believe that Germany is going to successfully adapt to the impacts of climate change?" (4-scale-item)

Graph 5¹³

A second group supports the idea that climate change can be avoided, but in case it cannot be avoided, adaptation measures are also not possible (25%; second group: 'pro mitigation'). Another 20% believe that climate change could be avoided and adaptation would also be possible (third group: 'optimists'). A small group of 10% believes that climate change cannot be avoided but adaptation is possible. The four-dimensional-graph 5 shows the distribution as well as the group labels.

Therefore, 45% of German respondents believe that climate change can be avoided, and more than half of them (56%) do not believe in adaptation measures. Asked about climate protection, the German majority sees only little progress (81% no or not much progress, see graph 6).

¹³ A new variable was generated filtering those who believe in anthropogenic climate change in the German Environmental Awareness Poll.

Graph 6¹⁴

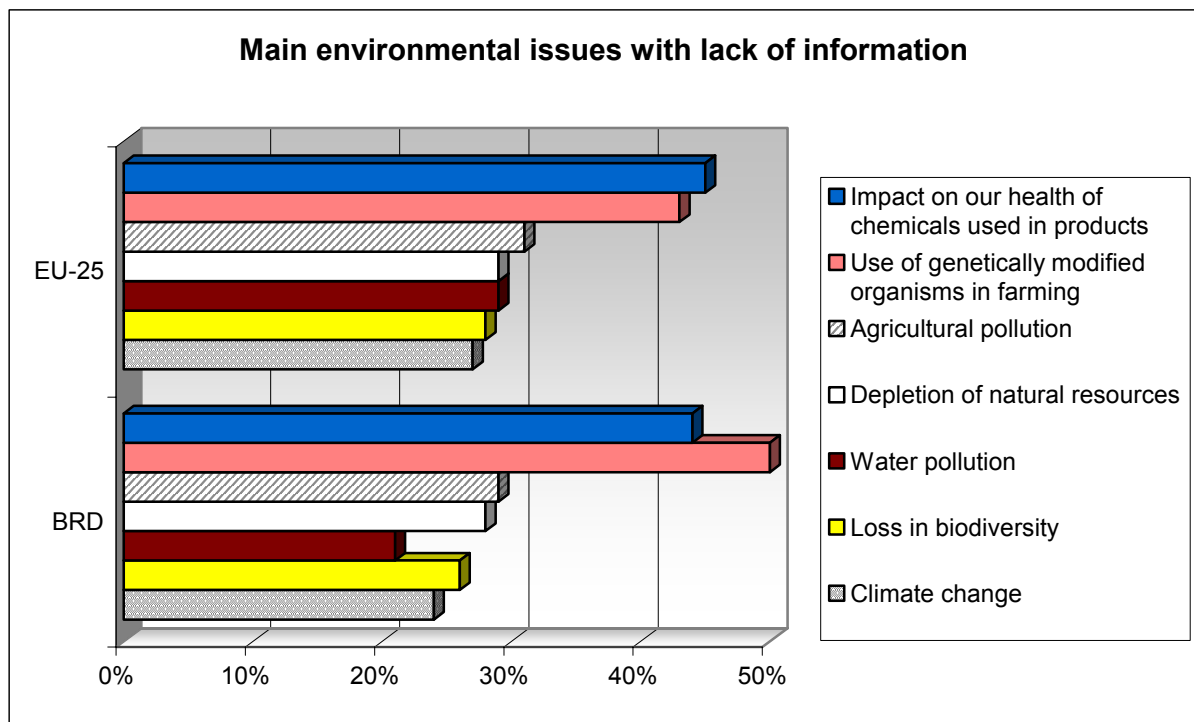
Returning to the mean values of the European poll, nearly half the respondents (43%) feel badly informed about environmental issues in general and about global warming in particular. Comparatively climate change is in the 7th position (27% of Europeans) out of 15 environmental issues with lack of information ranked (see graph 7). Looking at country differences, confirmation ranges from 19% (Finland) to 36% (Ireland) in the EU-15, and it ranges from 19% (Latvia) to 33% (Hungary) in the EU-10. If one regards a rate of 19-36% as considerable, lack of information has to be valued as an important factor to explain the perception of climate change (European Commission 2005). Next to climate change, chemicals, genetically modified organisms, agricultural and water pollution and loss of biodiversity are mentioned as issues people feel badly informed about.

Although deficits in understanding are not measured in the poll, information deficits about global warming could possibly be a hint for knowledge deficits (instead of desire of additional knowledge) that might be due to the issue's complexity. The wish for additional knowledge instead of general information becomes also probable by the fact that the issue of global warming is highly present in the media.

¹⁴ Survey question German Environmental Awareness Poll: "Do you think that in the area of climate protection much progress has been made?"

Other studies have also confirmed that lay people lack a good understand of global warming, which is in particular, closely related to its complexity. It is interesting that the same lay people who have a high degree of concern about this problem also do not understand it entirely (Dunlap 1998).

Graph 7¹⁵



	EU-25	BRD
Impact on our health of chemicals used in products	44%	45%
Use of genetically modified organisms in farming	43%	50%
Agricultural pollution	31%	29%
Depletion of natural resources	29%	28%
Water pollution	29%	21%
Loss in biodiversity	28%	26%
Climate change	27%	24%

¹⁵ Survey question European Environmental Poll: "From the following list, please tell me the five main issues about which you feel you lack information in particular?" (max. 5 answers out of 15 environmental issues, plus 'none of these' and 'don't know'.) Graph shows only those categories that were most frequently mentioned in the EU-25.

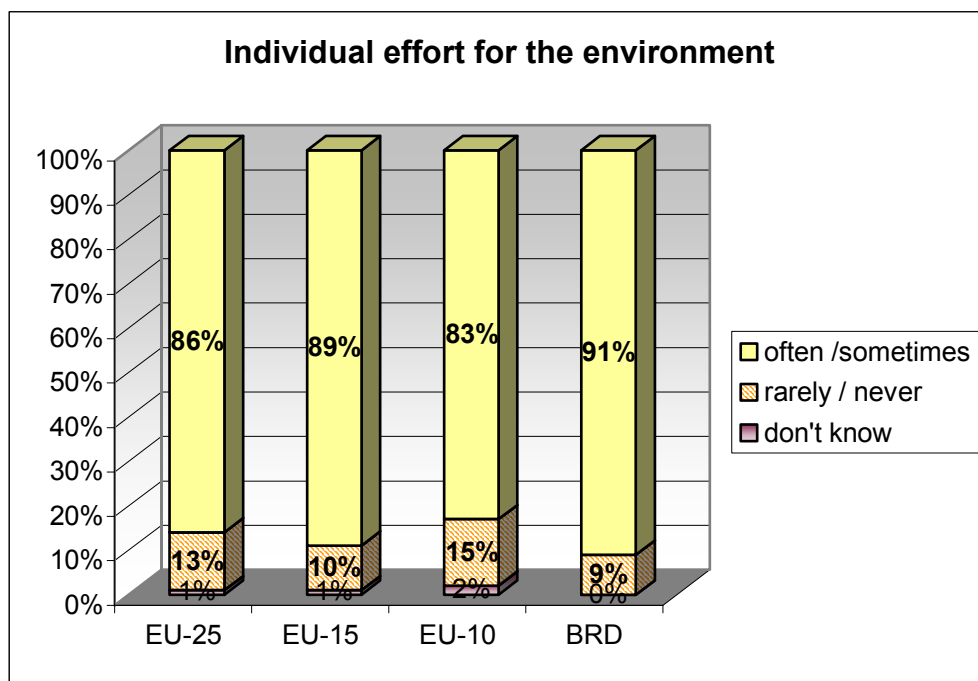
Compared to locatable environmental issues like deforestation, air pollution, or contamination of land or water, the discovery of the greenhouse effect is possibly more difficult to understand for lay people due to its complex characteristics and the socio-political framing of the dominant actors by which the communication of global warming is filtered. This influences individual environmental awareness as well as attitudes and the translation into action. The consequences of climate change, which are anthropogenic and not naturally caused, can only be understood indirectly via the communication and translation of actors in the contested field of climate science and climate policy, as lay people are not able to distinguish between normal weather and abnormal climatic changes. These actors can be experts, i.e. climate scientists, as well as political, media or economic actors related to the issue. Direct local consequences of changes in the climate system cannot be predicted with certainty (Barnett 2001), which led to long-lasting debates about the seriousness of climate scenarios (Edwards 2002). Although nowadays only a very small minority of scientists can be seen contradicting the existence of anthropogenic climate change, uncertainties about effects of global warming remain and can never be reduced to zero (ibid.)- leaving room for skeptical views as well as policies of interest (McCright and Dunlap 2003).

Against this background, the communication of climate change becomes important. In the first place, the media is communicating the issue from climate scientists and climate policy actors to the general public which is the starting point of raising public awareness. At the same time, the media is interpreting facts from the scientists by the way the issue is transported, filtered, illustrated and visualized (Weingart, Engels et al. 2002). In addition to real, existing climate change, a media version of climate change is communicated to the lay public, sometimes called "the social construct of climate change" (Stehr and v. Storch 1995). This leaves room for a constructionist potential which becomes even more significant together with the above described complexity of the issue.

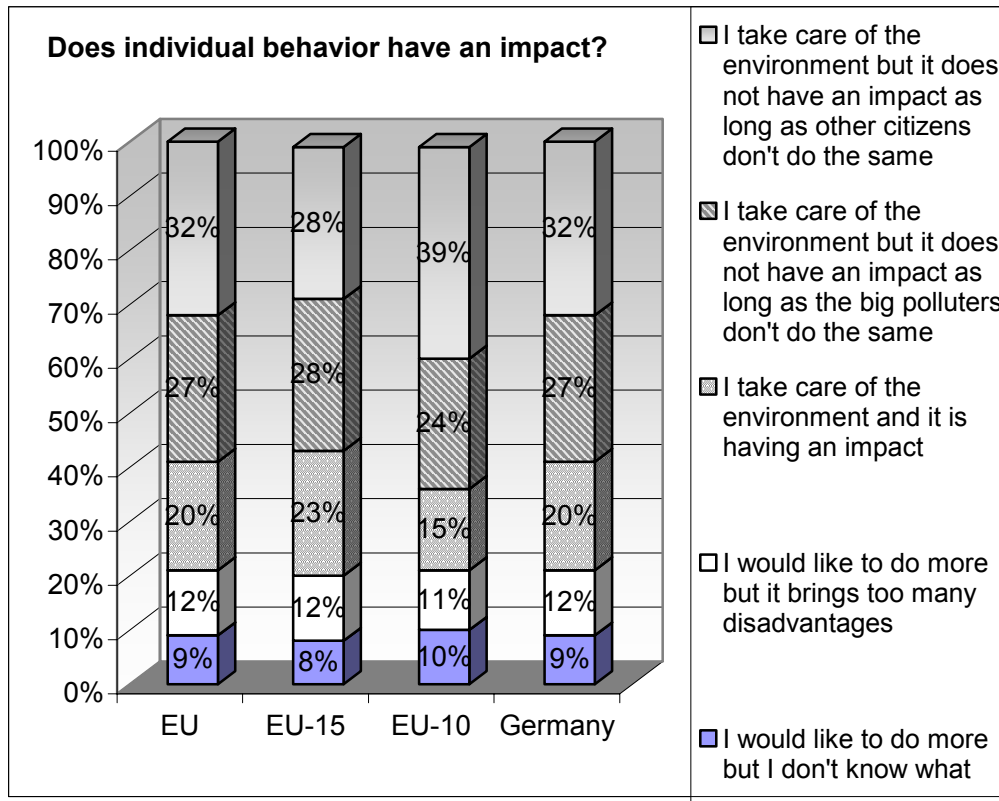
4.2. Willingness to act?

In regards to individual action, the majority of respondents to the Eurobarometer poll describe themselves as environmentally conscious citizens (see graph 8). Affirmation towards the issue is therefore very high. (Looking at national differences, the variance of confirmation towards the issue lies between 70% (Poland) and 98% (Slovenia)). But they mostly do not believe that this has much of an influence on the overall environmental situation as they do not ascribe the same attitude to other people or to industry as main polluters (see graph 9).

Graph 8¹⁶



¹⁶ Survey question Eurobarometer 217: "Would you say that, you personally make an effort to protect the environment?"

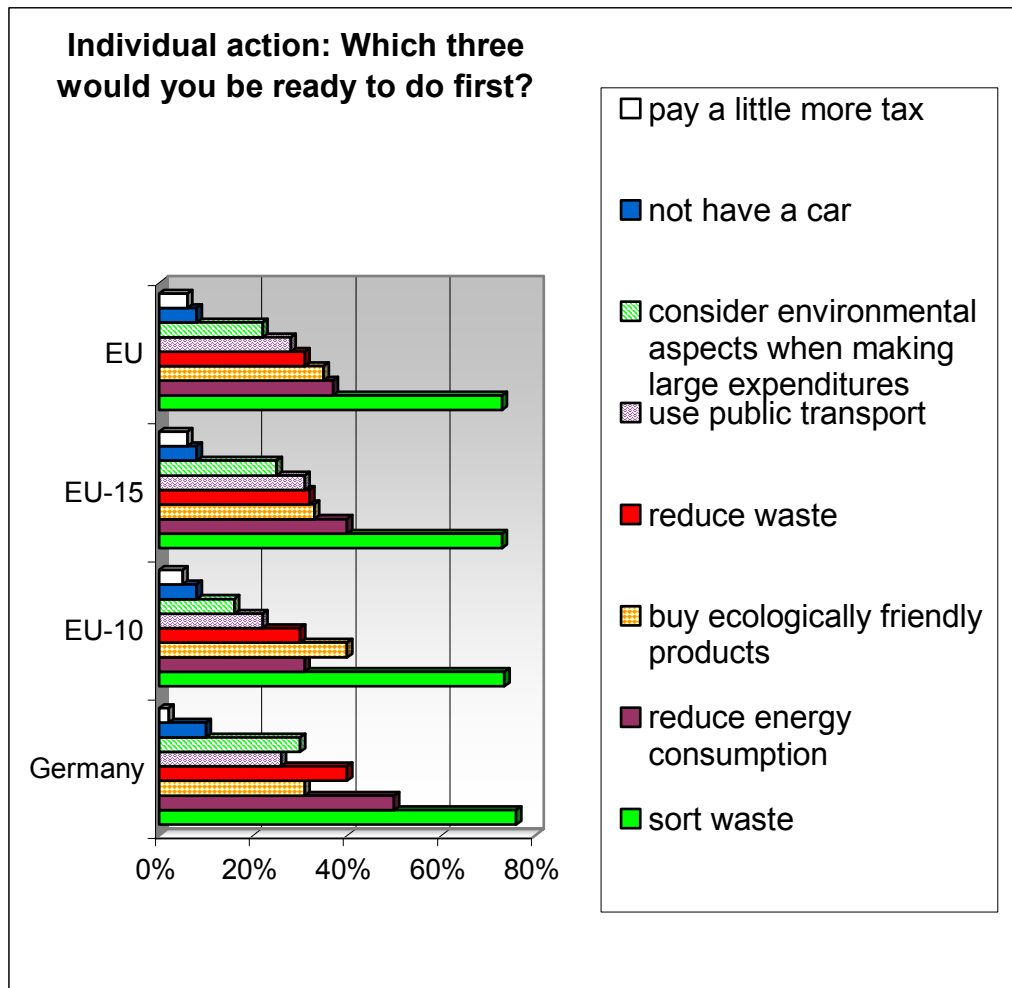
Graph 9¹⁷

Rather, environmentally sound behavior remains in “low cost” sections of everyday life: sorting waste, saving energy or buying sustainable products (see graph 10). Although there is a variance of the items’ distribution when looking at country differences, these are not considered in detail, because the focus is on the relative affirmation- and therefore importance of different fields of environmental behavior, rather than on explicit country differences.

¹⁷ Survey question: “Which of these statements best reflects your own situation?”

There is variance between the countries analyzed in the variable presented in graph 9. Country variance of the issue “no impact as others don’t do the same”: 13% (Sweden) to 47% (Slovakia). Variance of the issue “big polluters”: from 19% (Malta) to 35% (Czech Republic). Variance of the issue “my behavior has an impact”: 7% (Northern Ireland) to 32% (Germany). Variance of the issue “it brings disadvantages”: 5% (Germany) to 31% (Italy). Country variance of the issue “don’t know what to do”: 3% (Luxemburg) to 20% (Northern Ireland).

Graph 10¹⁸



	EU	EU-15	EU-10	Germany
Pay a little more tax	6%	6%	5%	2%
Not have a car	8%	8%	8%	10%
Consider environmental aspects when making large expenditures	22%	25%	16%	30%
Use public transport	28%	31%	22%	26%
Reduce waste	31%	32%	30%	40%
Buy ecologically friendly products	35%	33%	40%	31%
Reduce energy consumption	37%	40%	31%	50%
Sort waste	73%	73%	74%	76%

At this point, comparing the mean values of these statistics shows that the average European willingness to contribute to environmental protection is in the area of low-cost-opportunities. The results confirm the low-cost theory, saying that people only

¹⁸ Survey question: "In order to protect the environment, which 3 would you be ready to do first?" The variable is a multi-choice-item, meaning that the percentage does not equal the number of respondents but the number of naming (max. 3 items per respondent).

behave environmentally-friendly as long as it does not cost much, whereby costs include monetary and social costs (Diekmann and Preisendörfer 1992). The low-cost theory presumes that individual action for the environment is predominantly affected by economic calculations instead of moral belief structures or values setting. Assuming an existing environmentally friendly attitude, corresponding action becomes more probable the less costly the individual effort is supposed to be and vice versa. Short term rational choices of modes of environmental action are therefore influenced by economic evaluations.

Obviously the results presented in graphs 8, 9 and 10 are not directly linked to climate change due to a general scarcity of international representative opinion polls linked to the subject. However, there is reason to believe that willingness to act in the name of climate protection is based on the same influencing factors as other environmental issues (i.e. water or air pollution) on the individual level, because saving energy or not having a car contributes to both to local environmental protection as well as to 'global' climate protection.

Therefore, climate change can be summarized under the overall issue of environmental consciousness on the one hand, and on the other hand, it has been argued that the issue of climate change is much more complex in comparison to other environmental issues. This again does not contradict the thesis of having identical influencing factors for both general environmentally conscious behavior and climate protection behavior. Rather, it can be assumed that climate consciousness and the appropriate behavior of the general public is expected to be much more difficult to provoke than for those which are more easily understood, affect individuals more directly, or are highly apparent visually.

5. Summary and conclusions

Climate change is a multi-level problem that must be addressed not only at the international level, which is made obvious by the insufficient objectives and results of the international climate regime thus far. This paper presented a threefold perspective of the problem of global warming, with regard to how the lay public perceives it and translates it into potential individual action. Trying to describe climate change as an *objective* global problem already showed that a simple classification of

either natural or anthropogenic cannot be made. Also Beck's assumption that environmental problems increasingly become self-endangerments through human influence does not entirely apply to climate change as it is not purely self-induced and therefore cannot be solved solely via self-reflective action. Instead, climate change must be characterized as complex human-nature interplay, making it a challenge for the lay public to understand and act upon individually.

Complexity of climate change was the centre of analysis in section two: spatiotemporal complexity was made responsible for knowledge gaps on the one hand. On the other hand, the suggestion of a global problem where a 'glocal' and regionally diversified causal logic is behind is crucial: the naming of *global* climate change can be misleading when suggesting equality rather than pointing at growing socio-economic divergence (especially with regard to the north-south-debate). Complexity and a particular political framing of the problem therefore provide space for constructionist potential. On the individual *socio-cognitive* level it may support the wish for easily understandable solutions for a lay public, or the wish to give up responsibility (i.e. to politicians and other citizens), which again might lead to supporting already existing political solution strategies.

Summarizing the outcome of the polls, the following picture can be illustrated: generally, there are only minor differences in the answering behavior between Europe as a whole, old and new member states, and Germany. The Europeans in general (old and new member states) as well as the German respondents in particular have high problem awareness towards global warming, but only little belief in the efficacy of their individual contribution to the problem when looking at general willingness to act in favor of the environment.

As the German Environmental Awareness Poll illustrated further, nearly half of the respondents do not believe in mitigation and more than half do not believe in adaptation strategies. This skeptical view was complimented by the statement that there was not much progress in climate protection. After having filtered those who believed in anthropogenic climate change, four groups could be distinguished: the biggest group has been named 'the fatalists', with no belief in mitigation or adaptation

opportunities. (The second group was called 'pro mitigation', they believe in avoidance of global warming but not in adaptation measures. The third group, the 'optimists' believe in both mitigation and adaptation whereas the smallest group, 'pro adaptation,' only believes in adaptation measures but not in avoidance of anthropogenic climate change.)

As a large part of the European respondents does not feel well informed about climate change, it is not clear yet to what extent people coherently understand global environmental issues like climate change (considering the complexity of the issue). In any case, it is clear that Europeans feel concerned. Corresponding to the weak believe in personal environmental efficacy, it can be assumed that problem solving is regarded either as a task of politicians or of other official institutions, or that it supports only minor individual activity (sorting waste) or even passivity.

On the socio-political level, the minor public protest and the high constructionist potential of climate change leaves room for the actors in climate policy. The reduction of GHG (mitigation) or so-called adaptation strategies can (and will) be implemented variously: suggestions range from technical revolution (carbon sequestration and storage) to nuclear power plants (that are nearly GHG emission free but imply other risks) to a solar global economy (Scheer 1999). The choice of the measure depends on political interests just as balances of power. It also depends however, on the voting behavior of the citizens. The symbolism of the Kyoto protocol represents a global consensus about climate protection which is not scrutinized by the majority of the general public. Existing agreements may contribute to the perception that they represent sufficient problem solving strategies on the international level – although the German results showed that contemporary climate protection is not evaluated as being successful.

In any case, a non-critical review of international climate policy overlooks the need for a critical mass needed to legitimize these strategies. This is even more apparent when looking at the real emission rates and the necessity to act. Summing up, the policy claim of "raising public awareness", i.e. by the UNFCCC (United Nations 1992), has obviously been successful. But although problem awareness is high,

willingness to act must be questioned due to a lack of knowledge and information and due to a lack of individual responsibility. Finally, individual action towards climate change remains low related to low cost areas and – analogous to environmental behavior in general - people do not believe that it has an impact as long as others do not do the same. The threefold perspective made obvious that the 'global' environmental problem of anthropogenic climate change releases constructionist potential which supports lobbyists as well as dominant political solution strategies. An unenlightened general public regarding complex environmental problems might support the wish for simple solutions.

6. Literature

- Barnett, Jon** (2001). "Adapting to Climate Change in Pacific Island Countries: The Problem of Uncertainty." *World Development* **29** (6): 977-993.
- Beck, Ulrich** (1992). *Risk Society. Towards a New Modernity*. London, Sage.
- Brouns, Bernd, Herrmann E. Ott, et al.** (2003). *Modellparade in Mailand: Klimapolitik zwischen politischem Pragmatismus und Phantasie. Die neunte Konferenz der Vertragsparteien zur Klimarahmenkonvention (COP9)*, Wuppertal Institut für Klima, Umwelt und Energie.
- Brunnengräber, Achim and Melanie Weber** (2004). "Klimawandel als Krise gesellschaftlicher Naturverhältnisse. Zur Mehrebenenstruktur in der Klimapolitik." *Widerspruch* **47** (24. Jg): 108-118.
- Bundesumweltministerium and Umweltbundesamt** (2004). *Umweltpolitik. Umweltbewusstsein in Deutschland 2004*. Berlin, BMU.
- Carvalho, Anabela and Jacquelin Burgess** (2005). "Cultural Circuits of Climate Change in U.K. Broadsheet Newspapers, 1985-2003." *Risk Analysis* **25** (6): 1457-1469.
- Davis, Mike** (2005). "Kein Heimatschutz für New Orleans." *Le Monde Diplomatique*: 14-15.
- Diekmann, Andreas and Peter Preisendörfer** (1992). "Persönliches Umweltverhalten. Diskrepanzen zwischen Anspruch und Wirklichkeit." *KZfSS* **44**: 226-251.
- Dunlap, Riley E.** (1998). "Lay Perceptions of Global Risk: Public Views of Global Warming in Cross-National Context." *International Sociology* **13** (4): 349-363.
- Edwards, Paul N.** (2002). *Modelle, Daten, Ungewissheit und die Politik in der weltweiten Klimawissenschaft. Klima. Das Experiment mit dem Planeten Erde*. W. Hauser. München, Deutsches Museum: 139-149.
- European Commission** (2005). *The attitudes of European citizens towards environment, Special Eurobarometer 217: Wave 62.1*.
- German Institute for Economic Research** (2004). "Treibhausgas-Emissionen nehmen weltweit zu - Keine Umkehr in Sicht." *Wochenbericht des DIW* **37**.
- Germanwatch** (2002). "Gefährlichen Klimawandel verhindern. Grundsatzpapier des Climate Action Network (CAN) auf dem 8. Klimagipfel in Neu Delhi, 2002." *KlimaKompakt Spezial* **10** (18.12.02).

- Graßl, Hartmut, Julian Kokott, et al.** (2003). Über Kioto hinaus denken – Klimaschutzstrategien für das 21. Jahrhundert. Berlin, WBGU.
- International Energy Agency** (2004). "World Energy Outlook 2004." (<http://www.iea.org/textbase/npsum/WEO2004SUM.pdf> (Zugriff: 01.07.05)).
- IPCC** (1990). First Assessment Report (3 Volumes). Cambridge, Canberra, Covelo, Cambridge University Press, Australian Government Publishing Service, Island Press.
- IPCC** (1996). Climate Change 1995 - Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses. Contribution of Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, Cambridge University Press.
- IPCC** (2001). Climate Change 2001: Synthesis Report. Contribution of Working Group I, II and III to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, Cambridge University Press.
- IPCC** (2005). Special Report on Carbon dioxide Capture and Storage. Montreal.
- Kovats, R. Sari, Diarmid Campbell-Lendrum, et al.** (2005). "Climate Change and Human Health: Estimating Avoidable Deaths and Disease." *Risk Analysis* **25** (6): 1409-1418.
- Luhmann, Niklas** (1991). Soziologie des Risikos. Berlin, New York, de Gruyter.
- McCright, Aaron M. and Riley E. Dunlap** (2003). "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* **50** (3): 348-373.
- Missbach, Andreas** (1999). Das Klima zwischen Nord und Süd. Eine regulationstheoretische Untersuchung des Nord-Süd-Konflikts in der Klimapolitik der Vereinten Nationen. Münster, Westfälisches Dampfboot.
- Ott, Hermann E., Harald Winkler, et al.** (2004). South-North Dialogue on Equity in the Greenhouse. A proposal for an adequate and equitable global climate agreement. Eschborn, GTZ.
- Poumadère, Marc, Claire Mays, et al.** (2005). "The 2003 Heat Wave in France: Dangerous Climate Change Here and Now." *Risk Analysis* **25** (6): 1483-1494.
- Saad, Lydia** (2006). "Americans still not highly concerned about global warming." The Gallup Institute **April 07**.
- Scheer, Hermann** (1999). Solare Weltwirtschaft. Strategie für die ökologische Moderne. München, Antje Kunstmann.

- Stehr, Nico and Hans v. Storch** (1995). "The social construct of climate and climate change." *Climate Research* **5** (2): 99-105.
- Torvanger, Asbjørn, Michelle Twena, et al.** (2004). *Climate policy beyond 2012: A survey of long-term targets and future frameworks*. Report 2004:02. Oslo, CICERO.
- UNFCCC** (2005). *Key GHG Data. Greenhouse Gas Emissions Data for 1990 – 2003 submitted to the United Nations Framework Convention on Climate Change*. Bonn, UNFCCC.
- United Nations** (1992). *United Nations Framework Convention on Climate Change*. New York, United Nations.
- Weingart, Peter, Anita Engels, et al.** (2002). *Von der Hypothese zur Katastrophe: Der anthropogene Klimawandel im Diskurs zwischen Wissenschaft, Politik und Massenmedien*. Opladen, Leske und Budrich.
- Ziesing, Hans-Joachim** (2003). "Nur schwacher Rückgang der CO₂-Emissionen im Jahre 2002." *Wochenbericht des DIW* **8/2003**.
- Zürn, Michael and Ingo Take** (1996). "Weltrisikogesellschaft und öffentliche Wahrnehmung globaler Gefährdungen." *Aus Politik und Zeitgeschichte* **24-25**.

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