Climate negotiations: identifying key drivers of cooperation with surveys

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Global commons, such as the Earth's climate, have intrinsic characteristics that hinder cooperation. Notably, the absence of property rights is commonly held to be a prime cause of over-exploitation, leading to poor environmental management and potentially unrecoverable resource degradation. The delayed negative effect of present emissions of greenhouse gases and their transboundary nature, aggravate the complexity of the problem. Given these temporal and spatial issues, the present lack of a supranational institution for regulating global carbon emissions sets the stage for free-riding, i.e. individual countries have an incentive to delay curbing emissions and rely on the mitigation efforts of others. Therefore, effort is needed to shed light on what incentives, whether financial or otherwise, promote cooperative behaviour.

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A wait-and-see policy may mean waiting until it is too late

-Vermer Suomi (1979, page viii)

What are the key obstacles to negotiating a global agreement on ambitious climate change mitigation? Should these prove to be insurmountable, what is plan B?

Despite a long history of negotiation, culminating in the upcoming 20th iteration of the Conference of the Parties (COP) in Lima, these questions still beg an answer. This is in large part due to the '*wicked problem*' nature of climate change. The Earth's climate has intrinsic characteristics that hinder cooperation. Notably, the absence of property rights is commonly held to be a prime cause of over-exploitation, leading to poor environmental management and potentially unrecoverable resource degradation. The delayed negative effect of present emissions of greenhouse gases and their transboundary nature, aggravate the complexity of the problem. Given these temporal and spatial issues, the present lack of a supranational institution for regulating global carbon emissions sets the stage for free-riding, i.e. individual countries have an incentive to delay curbing emissions and rely on the mitigation efforts of others. Therefore, effort is needed to shed light on what incentives, whether financial or otherwise, promote cooperative behaviour.

Here I present results from a systematic exploration of the causes of the slow progress in UN negotiations to reach effective CO2 mitigation, which was conducted through an extensive survey targeted at climate diplomats taking part in the 2013 Conference of the parties in Warsaw. The survey will be described and analysed in Section 3, which is preceded by two sections that review the literature that has explored climate change perceptions on climate change with questionnaires aimed at either the general public or climate negotiators. A brief discussion draws conclusive remarks.

1. General public's perceptions on climate change

An important amount of literature on climate change studies the perceptions and knowledge of the general public on this issue, with a focus on developed countries.

United States (US)

A number of authors have studied climate change perceptions in the US. Brulle et al (2012), for instance, construct a quarterly measure of public concern over climate change between 2002 and 2010 using 74 separate surveys (84,086 respondents to 14 different questions from 6 different polling organizations in 74 public opinion polls), and find that public concern about climate change is strongly affected by political actors' views while factors such as media coverage, dissemination of scientific information and weather extremes have a moderate to negligible effect on public

concern. Regarding risk perceptions, Leiserowitz (2006) finds through a postal survey of 674 individuals in 2002 and 2003 that Americans perceive climate change as a moderate risk associated to danger for geographically distant people, places and non-human nature, and that individuals support policy action at the national and international levels, but oppose tax policies. On the determinants of risk perception, Brody et al (2008) use a telephone survey of 512 individuals, together with spatial data, and find that socioeconomic and attitudinal characteristics are stronger predictors for climate change risk perceptions than individual's physical vulnerability to climate change. On the issue of personal characteristics associated to climate change perceptions, Nisbet et al (2013) perform a two-wave online survey experiment with 594 participants and find that close-minded individuals are more likely to perceive lower benefits from climate change mitigation if exposed to competing messages about the issue, whereas open-minded individuals are more likely to perceive greater benefits from mitigation when exposed to similar messages. Relatedly, Reynolds et al (2010) look at climate change understanding through an on-site survey of 248 well-educated individuals and find that compared to 2002, individuals in 2009 show a higher level of understanding of climate change causes and effects, and are more likely to differentiate between environmentally-friendly actions and actions that specifically address climate change.

Determinants for behavioural change and policy support

A subset of this literature looks at the determinants for behavioral change and policy support in the US. On the determinants for behavioral change, Semenza et al (2008) undertake cross-sectional telephone surveys involving 1202 respondents in Portland OR and Houston TX and find that higher concern about climate change, higher level of education, being younger and living in Portland as opposed to Houston is associated to greater pro-climate behavior. Concerning public support for policies, Shwom et al (2010) carry out a postal survey with 316 respondents and find that interest in environmental protection increases support for mitigation policies while concern for the cost of mitigation actions decreases support, and that individuals' values and beliefs are stronger predictors of policy support than self-reported reasons. In addition, McCright et al (2013) find in a survey of 1024 participants that the misunderstanding of scientific agreement on global warming negatively affects public support for climate policy and that political orientation has a strong effect on individuals' beliefs regarding global warming, perceptions of scientific agreement, and support for mitigation policies.

United Kingdom (UK)

Some of the studies have focused on general public's perceptions on climate change in the United Kingdom, including a postal survey (551 participants) of public engagement with climate change and carbon capability by Whitmarsh et al (2011) which finds that individuals perceive little connection between personal behavior and climate change and few people are taking steps to lead a low-carbon lifestyle. Lorenzoni et al (2007) also look at the UK public through a mixed-method study (including interviews, a postal survey, surveys on-site and focus groups, with a total of 843 participants) and find that the barriers to engagement with climate change include a lack of

knowledge on the causes, impacts and solutions to climate change which can be easily translated to action, limited government and private sector action, inaction by others (free-riding) and a lack of enabling mechanisms and/or institutions. Morton et al (2011) find through an online survey of 88 individuals and an on-site survey of 120 students that uncertainty over the future effects of climate change affects individual attitudes to behave environmentally depending on the framing of the message.

UK compared to other countries

Further research compares the UK with other countries in terms of climate change attitudes and perceptions. A study with participants from Italy (206) and the UK (135) using a survey and discussion groups finds that individuals in both countries are aware and concerned about climate change but largely consider it an intractable and distant problem, which involves effects in a far off future and that individuals' acceptance of climate science may be determined by personal experiences and beliefs (Lorenzoni and Hulme, 2009). Reser et al (2012) study climate attitudes in Australia and the UK through an online survey and computer mediated interviews (4918 participants in total) and find that the levels of belief, acceptance and concern over climate change are high in both countries but Australians view climate change as a more proximate threat. Finally, Nerlich et al (2012) analyze articles in the (London) Times and New York Times from 2000 to 2009 and find that while media in the US focus on constructing climate change as a problem, media in the UK focus on finding solutions to the problem of climate change.

Other developed countries

A few studies which focus on developed countries other than the UK or US. For instance, on the determinants for pro-climate behavior and policy support, Tobler et al (2012) find through a postal survey (916 respondents) that willingness to act or support climate policy measures in Switzerland is affected by perception of the cost and the climate benefits associated to those policies. In Australia, Bulkeley (2000) surveys 242 participants and finds that confusion over climate change science does not prevent individuals from linking the problem to causes within their daily lives. Regarding equity principles perceptions in Sweden, Carlsson et al (2011) carry out a choice experiment postal survey (411 participants) which shows no evidence of in-group bias in preferences for effort-sharing rules related to climate change mitigation actions and a preference for an 'equal emissions rule' over rules such as a 'historical emissions rule'.

Groups of countries

A number of studies look at groups of countries. Bechtel and Scheve (2013) for instance, use an experimental conjoint analysis embedded in an online survey with 8500 participants in total from the UK, France, Germany and the US, and find that public support is higher for global climate change agreements which involve low and fairly distributed costs, high participation, and the use of small sanctions for countries that fail to meet their emission reduction targets. In an overwiew of studies on public opinion and attitudes on climate change in Europe and the US, Lorenzoni and Pidgeon (2006) find widespread awareness and concern over, but limited understanding of climate

change and a precedence of other personal and/or social issues over climate change in terms of the importance assigned by individuals. Results from meta-studies looking at several countries include Wibeck (2013) who reviews 92 studies on public understanding and public communication of climate change in developed countries (most from the UK and US) and finds that barriers to public engagement include scientific illiteracy, socio-cultural factors and a lack of sense of agency. In a qualitative analysis of 68 small-scale studies on climate change perceptions in 1993 to 2011, Wolf and Moser (2011) find that individuals' understanding of climate change is limited, their perceptions strongly contextualized and the cognitive dissonance that climate change causes in individuals is mitigated through mechanisms of denial, distancing and an active disconnect between recognizing causes and assigning responsibility for action.

China

Increasingly, the literature has concentrated on general public perceptions in China as one of the key players in the climate change challenge and how they compare to those of other countries. Carlsson et al (2012a) perform a computer-based sequential discrete choice experiment in China (1264 participants) and the US (999 participants) and find that respondents favor burden-sharing rules to reduce CO2 emissions that are the least costly for their own countries and that willingness to pay for mitigation is much higher in China than in the US. Using the same data together with results from a computer-based contingent valuation survey in Sweden (1230 participants) Carlsson et al (2012b) find that across China, Sweden and the US individuals believe in human-induced climate change, however, Americans believe less in climate change and human responsibility, and are more likely to believe climate change is unstoppable; Sweden has the highest WTP for reducing CO2 emissions, while China has the lowest (4 to 4.5 times lower than that of Sweden).

2. Climate change negotiators' perspectives

An important segment of the climate change policy literature has concentrated efforts on surveying United Nations climate change negotiations participants (both government and non-government representatives), in order to gain insight about the different factors affecting the character and outcomes of the negotiations.

Leadership

The topic of leadership has been studied from a number of angles. Using an on-site survey of 233 Conference of the Parties (COP) 14 government and non-government participants, Karlsson et al (2011) find that there is a fragmented leadership scenario, in which the European Union (EU) along with China are recognized as leaders by the majority of COP participants. On the determinants for leadership support and legitimacy, Karlsson et al (2012) survey on-site 1254 participants to COPs 14 to 16, both government and non-government, and find that perceptions on leadership vary

among different actors, but overall a potential leader's "concern for the common good" is the strongest predictor of leadership support. In addition, they find that leadership perceptions in the period have shifted away from the EU to focus on China and the US. Relatedly, an on-site survey of 743 finds that COP 14 and COP 15 delegates and observers regarded European leadership as less influential than that of China and the US (Parker et al 2012).

Leadership of the EU

A subset of this literature has an exclusive focus on the role of the EU as a self-proclaimed leader in the negotiations. The earliest research uses interviews with individuals involved in climate change negotiations (67) during 1997 and 1998 and finds that the EU is perceived as a leader but that its leadership suffers from a lack of legitimacy derived from alleged hypocrisy (Gupta and van der Grijp, 2000). More recently, at COP 14, Bertil and Elgstrom (2010) survey and/or interview 15 individuals involved with the COP and find that the EU is perceived as a coherent and credible leader in the negotiations by EU and non-EU representatives. Finally, a study of the development of EU leadership between 1995 and 2008 which uses an Index of EU leadership relating COP minutes/results with cooperation achieved, shows that EU leadership facilitated cooperation in the period under study (Ulrike and Seidel, 2011).

Negotiation strategies and bargaining success

A set of the literature that uses surveys with climate change negotiators at UNFCCC meetings between 2009 and 2010 studies the determinants of negotiation strategies and bargaining success. Bailer (2012) interviews 62 climate negotiators from 58 countries at UNFCCC meetings in 2009-2010 (between AWG-KP 9/AWG-LCA 7 and AWG-KP 11/AWG-LCA) and finds that democracies are less likely to use hard negotiation strategies but can be influenced to do so by domestic interest groups. Weiler and Bailer (2014) use semi-quantitative on-site interviews to 54 negotiation along with written sources (submissions of delegations to the UNFCCC, and statements made participants, from 50 countries at five consecutive UNFCCC meetings summarized in the "Earth Negotiation Bulletin") to find that the negotiating positions of a country reflect not only governmental structural interests but also specific domestic considerations guided by ministerial, parliamentary and partisan interests. Using interview data from 60 delegates representing 56 country delegations, an EU delegate and an LDC adviser in 2009-2010 (AWG-KP 9/AWG-LCA 7 and AWG-KP 11/AWG-LCA) combined with hand-coded data of delegate statements in 2007-2009 (COP 13 to COP 15), Weiler (2012) finds that a State's external power and climate change vulnerability positively affect its bargaining success while its share of emissions negatively affects it.

The role of Non-Governmental Organizations (NGOs)

There are a number of studies which have looked at the role of non-government actors in the negotiations, in particular on the participation of NGOs in the COPs and the attendance of civil society members to COP side-events. Corell and Betsill (2001) look at the influence of NGOs in the negotiations for the Kyoto Protocol (and the Desertification Convention) in the years 1994 to 1998

using interviews with NGO representatives, experts and delegates to the UNFCCC negotiations along with primary and secondary texts and find that the influence of these actors was only moderate in the negotiations for the climate change Protocol. Bohmelt et al (2013) survey on-site 50 delegation representatives at COP 17 and find that governments tend to include civil society representatives in the official delegation when they perceive that other States are doing the same. Relatedly, studies on the function of side-events in the UNFCCC meetings, such as Herpe and Linnér (2010) which surveys 1723 side-event participants and organizers at COP 13 and COP 14 (including party representatives) and interviews UNFCCC Secretariat representatives, find that participants use these events as a venue for capacity-building, information sharing, networking and the introduction of new negotiation items. It is of interest that according to on-site surveys and several interviews and informal discussions with side event participants at COP 13 to 15 (COP 13: 56 events, COP 14: 61 events, COP 15: anecdotal evidence only) as well as written commentaries, most side event discussions are linked to relevant issues in the formal negotiations and present participants with a space perceived as more conducive to fruitful discussions (Schroeder and Lovell, 2012).

Equity preferences

Additionally, a section of the literature has used surveys and experiments with negotiation participants to study the equity preferences of different parties or groups of parties and the role that equity principles play in the climate change negotiations. For instance, Dannenberg et al (2010) perform an Internet experiment (two simple non-strategic games resembling ultimatum and dictator game) to measure inequality aversion of 155 individuals involved in international climate policy (70% from government) and find that inequality is of considerable importance to negotiation participants, who exhibit high levels of aversion to advantageous inequality and moderate levels of aversion to disadvantageous inequality. Lange et al (2007) find through an online survey of 230 people involved in climate policy (negotiators and observers) that GDP and the level of CO_2 emissions of a party determine the importance its representatives assign to equity issues and principles. Furthermore, on preferred principles, Hjerpe et al (2011) find through an on-site survey of 500 COP 15 delegates and observers that the 'voluntary contribution' is the least preferred principle among negotiators and observers, while the 'ability to pay' (basing a country's mitigation level on capacity to pay in terms of GDP per capita) and the 'polluter pays' (basing mitigation levels on historic emissions since 1990) principles are the most preferred in the negotiations.

Lessons from the reviewed literature

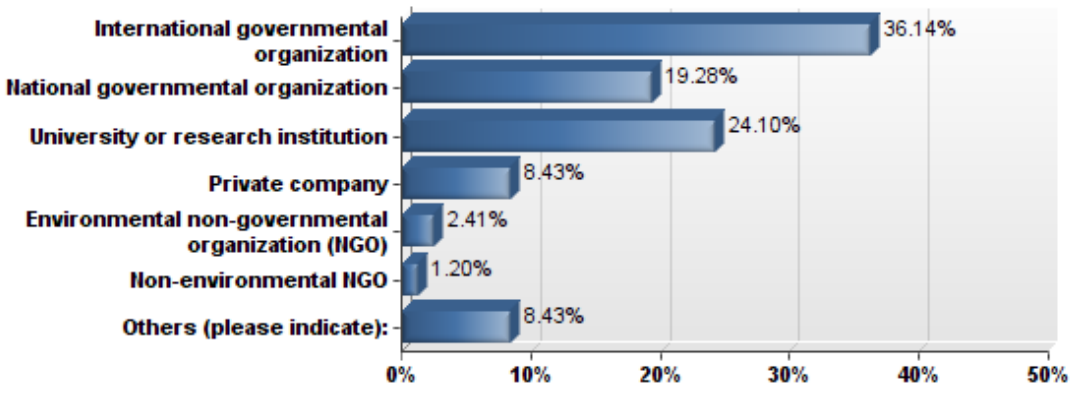
What are the implications of the surveyed literature on perceptions of climate change? While far from comprehensive, the review points to some prominent reasons behind the diplomatic impasse in climate policy. At the behavioural level, there are many reasons for inaction, such as the fact that the cognitive dissonance that climate change causes in individuals tends to activate mechanisms of denial, distancing and an active disconnect between recognizing causes and assigning responsibility for action. Perhaps relatedly, negotiators tend to focus on different equity

principles depending on their stance, often in a self-serving way associated with limited national commitments.

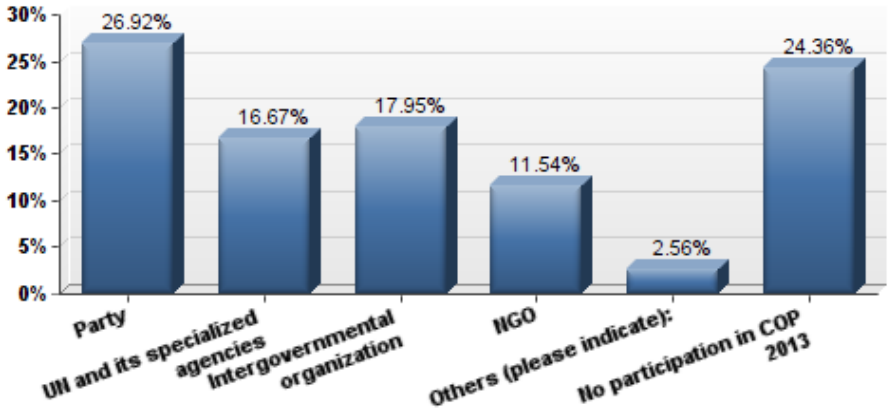
3. Survey analysis

In order to shed light on the causes of the slow progress in UN negotiations to reach effective CO2 mitigation, an extensive survey on the topic was given to climate diplomats. The survey was conducted at and after the 19th Conference of the Parties that took place in Warsaw in November 2013. The aim is to evaluate international efforts on climate change mitigation by uncovering achievements and flaws from past negotiations, such as the Kyoto Protocol, and the contribution of major players (such as the EU, China, US) to international climate cooperation. The survey also incorporates the presently topical issue of geoengineering and whether or not it should be considered as a climate change mitigation tool. About one hundred individuals completed the questionnaire, from more than thirty different countries. Half of the sample were parties negotiating at COP 2013 or members of a UN agency. Below, I detail some information about the sample, followed by responses from some key questions.

Please indicate the type of organization you currently work for:

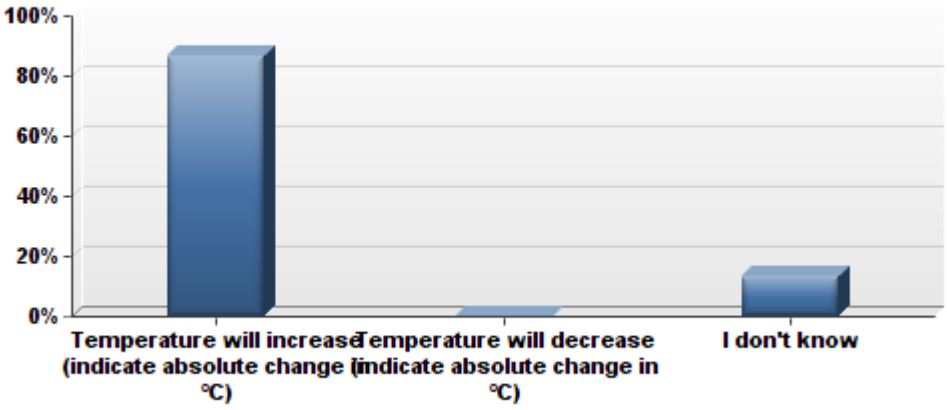


If you have participated in COP 2013 (Conference of the Parties in Warsaw), please indicate your role in it:



Part A: Consequences of climate change

"Please consider economic development with no new international climate agreement. Please indicate your personal estimate of the change in the average global surface temperature up to 2100 compared to pre-industrial levels."

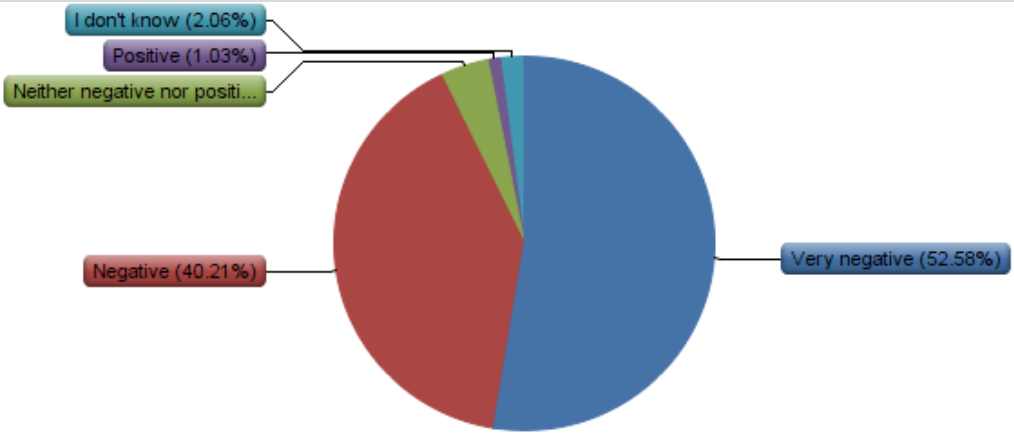


The vast majority of respondents (over 80%) clearly think that average global surface temperature will increase up to the year of 2100. This is a fairly predictable result as there is a scientific consensus that global temperature will increase as a result of climate change, but it clearly shows

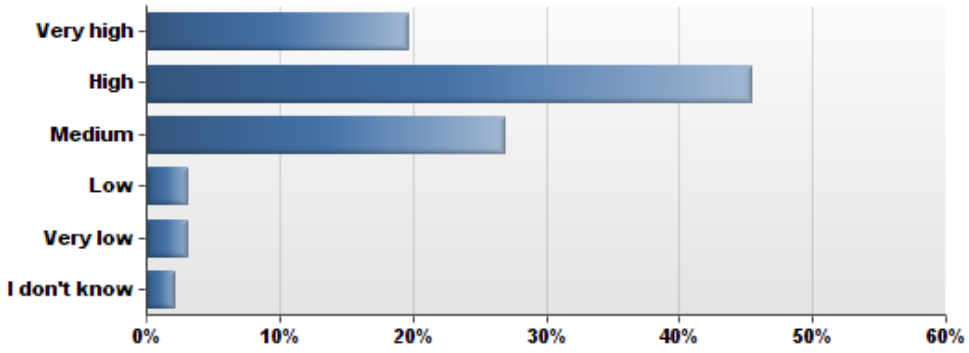
that there are no trend sceptics in the respondent sample. None of the participants replied that the temperature will decrease, and only a small fraction was uncertain.

The next two questions deal with COP attendants' views on future impacts. The emergent view is that negotiators strongly believe that the consequences of climate change on future living conditions will be severe and that they have a high degree of confidence in such predictions (65% of the participants have either high or very high degree of confidence in their predictions).

How would you assess the consequences of climate change on future global living conditions up to 2100?

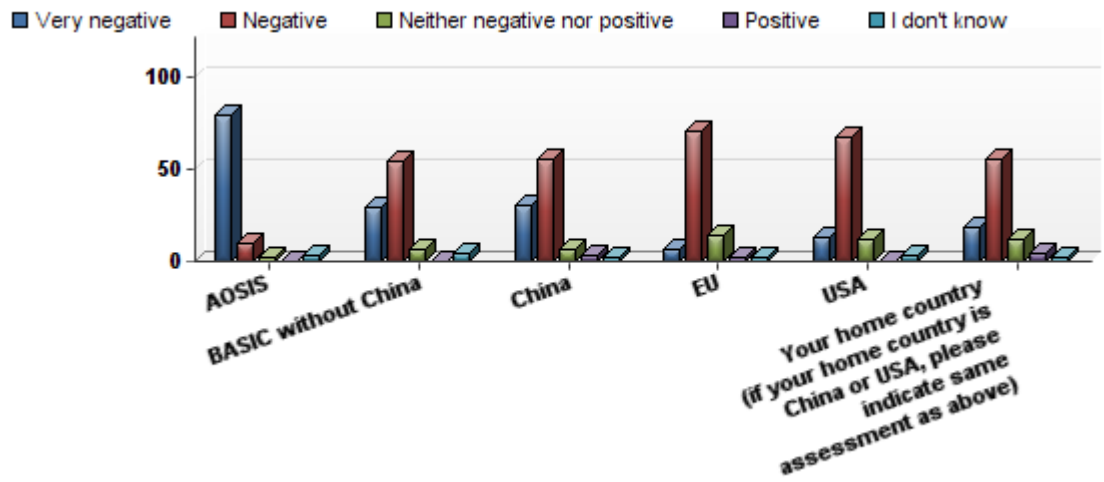


What level of confidence do you have in your prediction of the consequences of climate change on future global living conditions up to 2100?



It is also apparent from the below chart that the impacts are expected to be most negative in less developed countries, represented here by China, the Alliance of Small Island States (AOSIS) and the BASIC countries, i.e. Brazil, South Africa, India, and China.

How would you assess the consequences of climate change on future living conditions up to 2100 in the following countries or groups of countries?



More specifically, 95% of respondents predict that the AOSIS countries will be either negatively or very negatively affected by climate change, stressing the extreme danger that these islands face due to the increasing sea level.[2] This view confirms the paradoxical fact that the developing world will be more negatively affected by climate change, even if the developed world is mostly responsible for causing this phenomenon. To further examine the subjects' assessment of future impacts, the following question was asked:

What do you estimate is the probability (as a percentage) that at least one catastrophic change in the climate system (e.g., major changes in the Atlantic meridional overturning circulation, in the ice sheets, in the Amazon rainforest, or in the El Niño/Southern oscillation) will occur up to 2100?

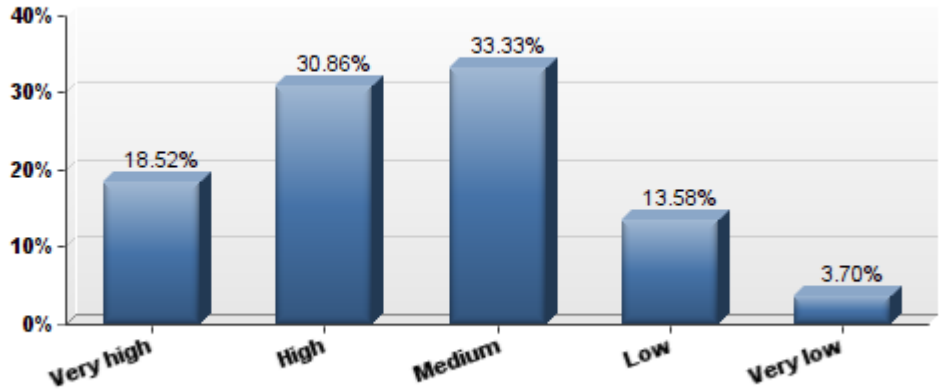
#	Answer		Response	%
1	Probability in % (from 0% to 100%)		75	79%
2	I don't know		20	21%
	Total		95	100%

In the above question, around 79% of respondents estimated a probability of at least one catastrophic change in the climate system occurring, generating an average value of this probability of 61.4%. It is essential to mention that 21% of the sample did not feel comfortable of producing an estimated value, validating the hypothetical and challenging nature of this question.

[2] This rate is also extremely high for China (89%) and the BASIC countries (88%), and somewhat lower for the EU (81%), the US (84%) and respondents' home countries (80%).

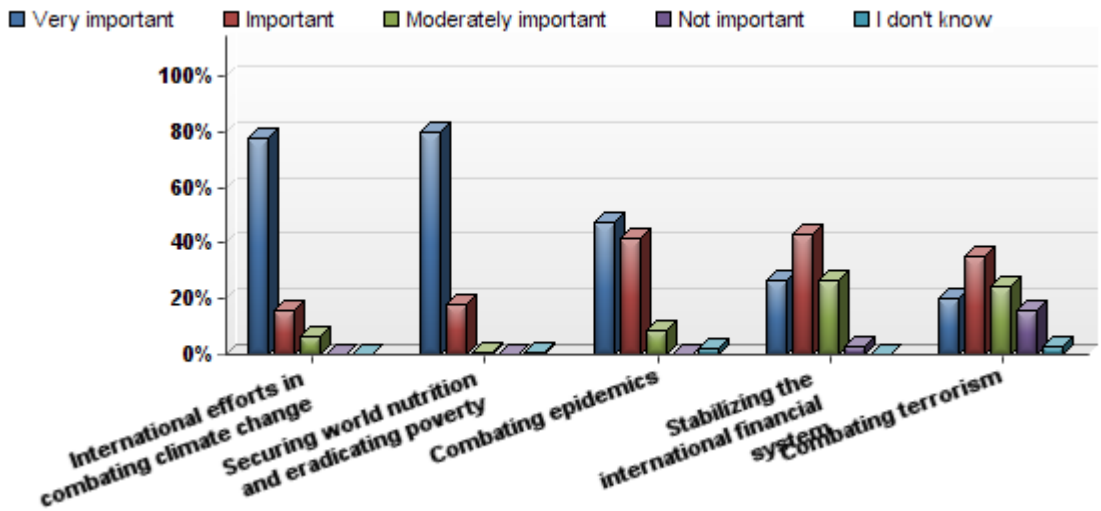
The degree of confidence relating to the above question is markedly lower than seen before.

What level of confidence do you have in your prediction of the occurrence of at least one catastrophic change in the climate system up to the year 2100?



Part B: Importance of international efforts in combating climate change

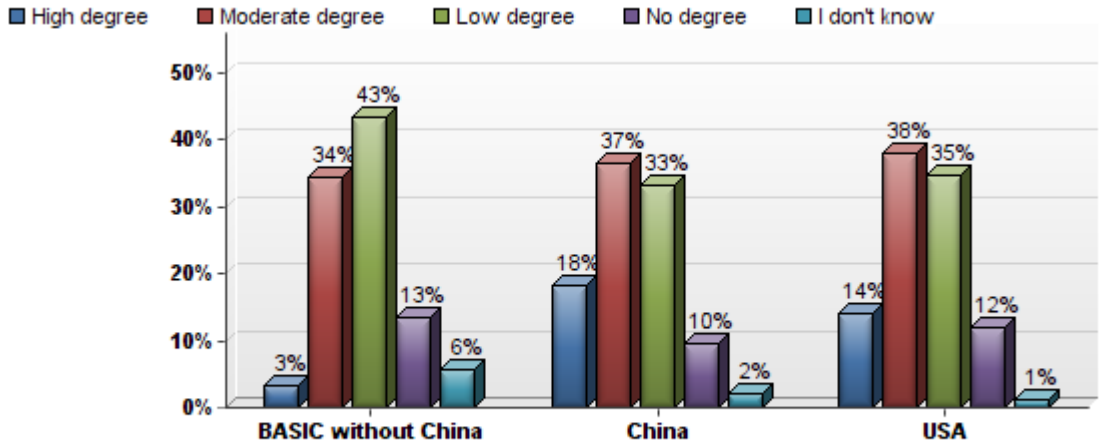
How important do you think the following global challenges are?

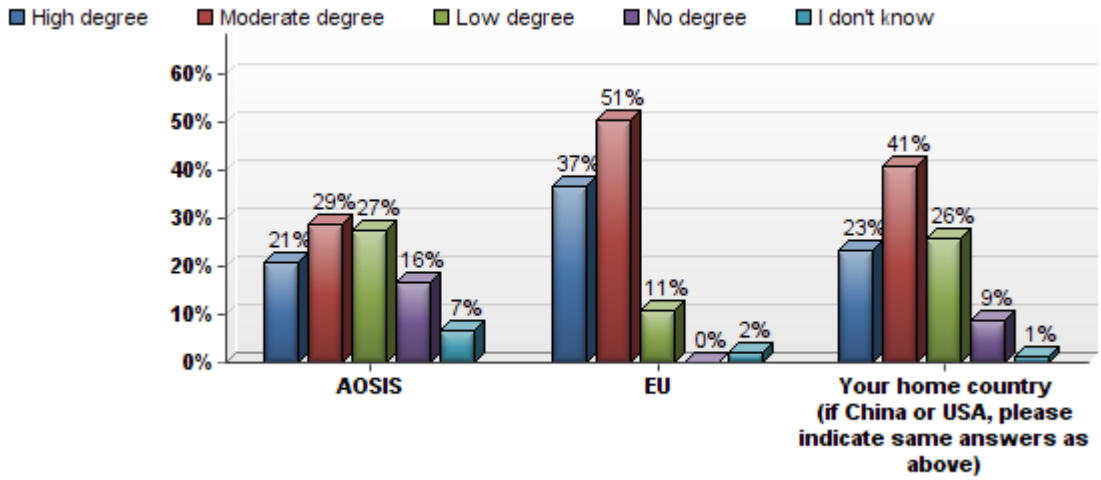


It is evident that all five global challenges are considered important for respondents, but a lot more weight is given to international efforts in combating climate change and to securing world nutrition and eradicating poverty. Specifically, 77% and 80% of respondents respectively find these

two challenges very important, while this rate is much lower for the other three world challenges given. Combating epidemics is still considered very important for approximately one out of two participants (47%), while this is not reflected on stabilizing the international financial system and combating terrorism (27% and 20% respectively). This result seems to stand on solid grounds, as the majority of COP participants must include thoughtful environmentalists that deeply care about climate change mitigation and the development of poorer nations.

To what degree do you think the following countries or groups of countries will reduce their green-house gas (GHG) emissions relative to "business as usual" even without any new international climate agreement up to 2050?



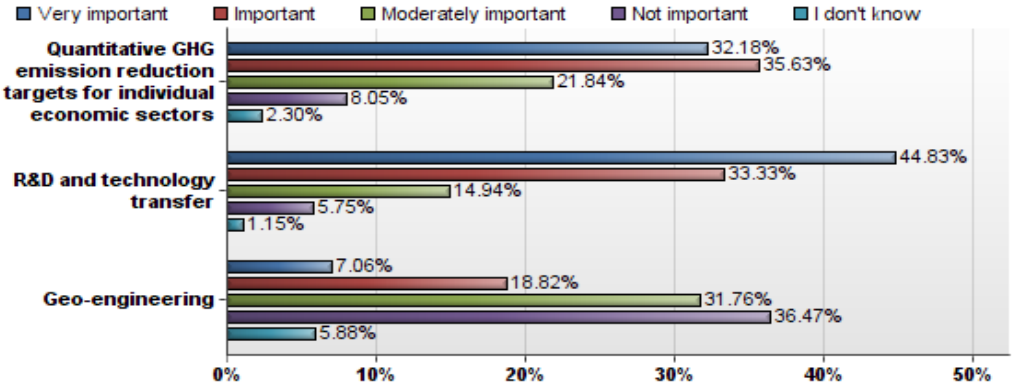


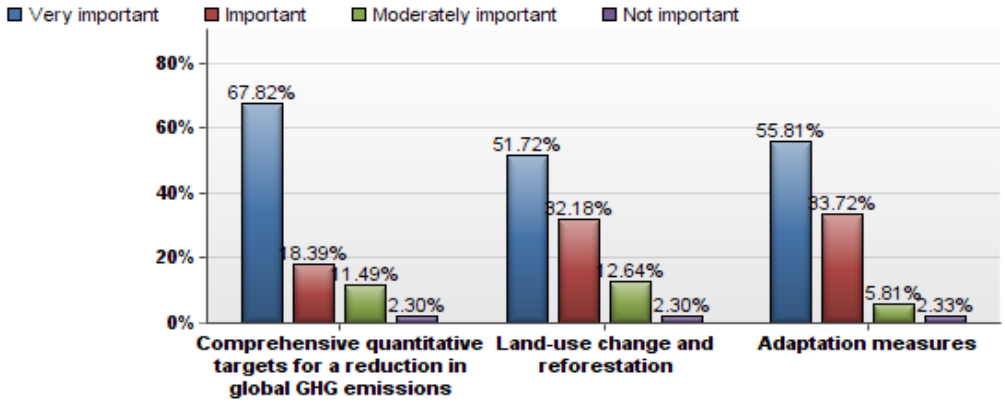
Furthermore, the responses on this question validate a general disbelief about the climate policy of various countries and their commitment towards a sustainable future. The developing world, in particular, has not shown a clear willingness to reduce greenhouse gases even in the absence of a

new international agreement and this is reflected on the responses for the BASIC countries including China. The vast majority argues for either a low or moderate degree of greenhouse gas emission reductions by the BASIC countries (77%) and China (70%), while very few respondents believe that the BASIC countries will achieve reductions to a high degree (3%). In addition, the inertia that characterizes USA in international climate change negotiations has been translated by the respondents as a low commitment for meaningful reductions. Only 14% of the sample predicts US greenhouse gas emission reductions to a high degree. On the other hand, most of the respondents seem to be persuaded by the EU's and their home countries' climate policy efforts and foresee emission reductions to a high or moderate degree (88% for the EU and 64% for home countries). The responses on the AOSIS countries are somewhat evenly distributed and this may mirror the variations between different AOSIS countries and their divergent commitment on greenhouse gas emission reductions.

Part C: Issues in current international climate negotiations

How important do you think it is to include the following issues in current international climate change negotiations?



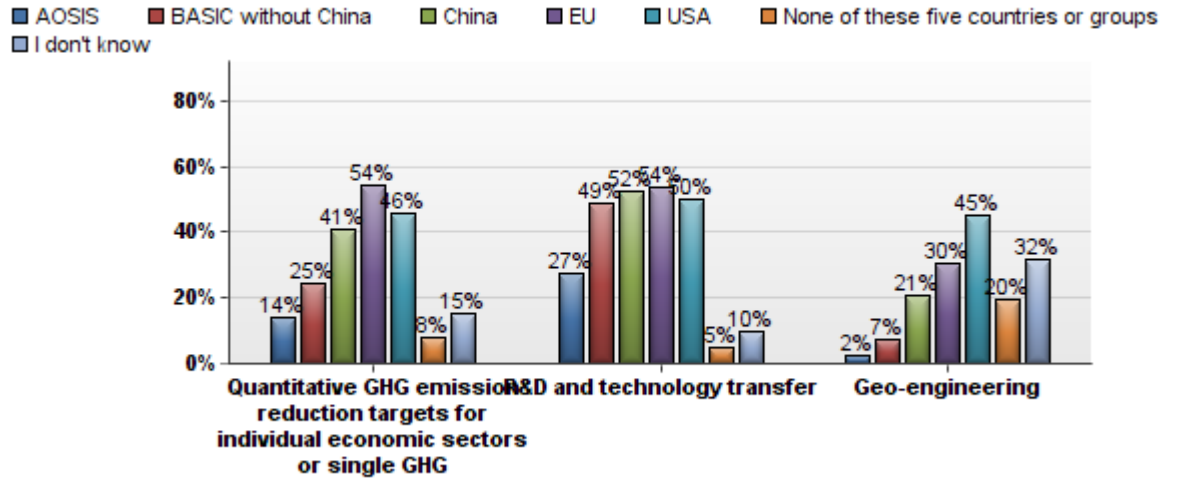


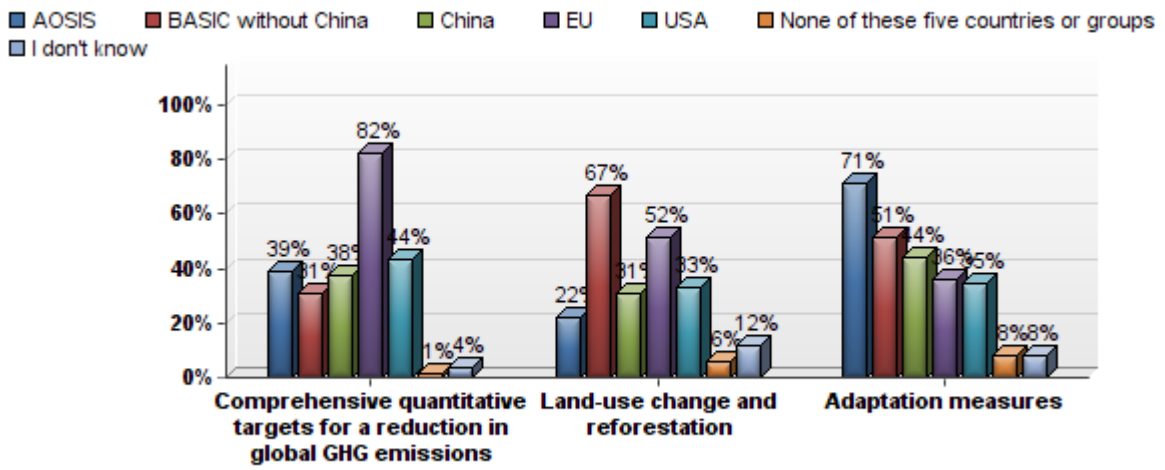
According to the responses, the most important issues that should be considered in international climate change negotiations are the following: comprehensive quantitative targets for a reduction

in global GHG emissions, land-use change and reforestation and adaptation measures. 87% of the respondents consider comprehensive quantitative targets to be either very important or important (with 68% characterizing it very important) and this rate remains very high for the other two aforementioned issues as well (84% for land-use change and 90% for adaptation measures). These results clearly show that quantitative targets should remain as an essential pillar of international climate change negotiations, while participants also highly prioritize the issues of deforestation and excessive agriculture (hence land-use change and reforestation) and the vulnerability of developing countries (hence adaptation measures). Moreover, R&D and technology transfer is conceived as very important or important by 78% of the sample (but fewer consider the issue very important compared to the previous three issues), while 68% of participants regard quantitative targets for individual economic sectors as very important or important. Thus, both of these issues need to be given greater attention in international climate change negotiations, since respondents value them as important aspects of climate change mitigation. Finally, geoengineering is recognised as unimportant or moderately important by 69% of respondents, indicating the majority's position for it not to be included in international climate change negotiations.

Next we turn to leadership in negotiations.

Which of the following countries or groups of countries do you think play a leading role in having the following issues included in current international climate negotiations?

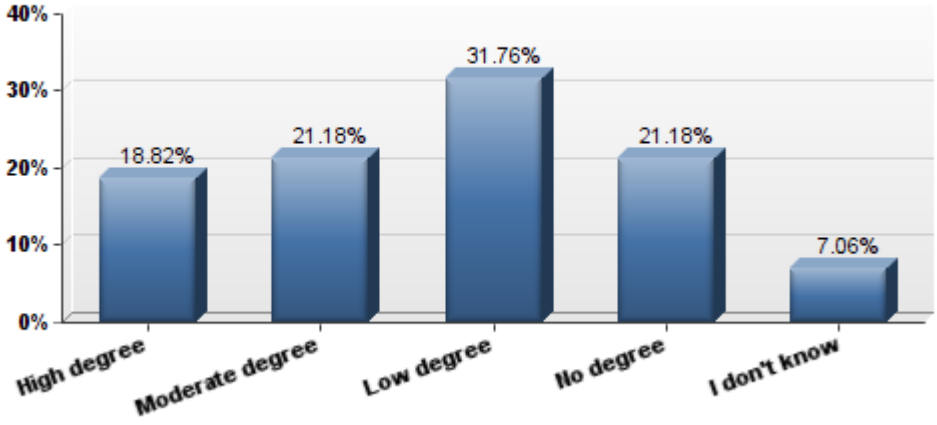




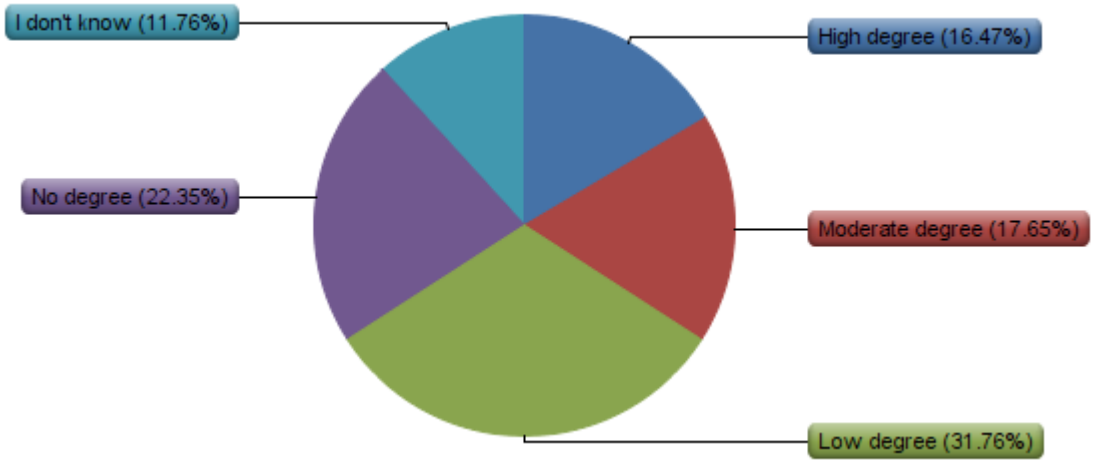
In this question, respondents seem to acknowledge the EU's efforts for an international agreement on climate change, with 82% of the sample supporting a EU leadership in establishing comprehensive quantitative targets. Since international climate cooperation has been primarily based on such intentions, participants recognize the crucial role that the EU has played in combating climate change. Moreover, the majority of the respondents argue that the leadership of the BASIC countries is required in order to incorporate land-use change and reforestation in international agreements, which logically follows from the fact that most of the world's forests belong in the developing world (and especially most of the Amazon rainforest that is located in Brazil). Similarly, adaptation measures necessitate the leadership of the AOSIS states because these countries will need to adapt to new climatic conditions to a greater extent (most importantly by rising sea levels). The responses on the other three issues do not provide a very clear picture, and this is mainly attributed to the fact that they have not been considered that much in climate change negotiations and participants may lack the knowledge to evaluate them (shown by the high percentages of "I don't know" answers). Nevertheless, it is evident that respondents conceive the EU to play a leading role in promoting quantitative targets for individual economic sectors (54%) and require a cooperation of the EU, China and the US on the issue of R&D and technology transfer (54%, 52% and 50% respectively).

We now turn to perceptions over geoengineering. Respondents do not seem to support the prospect of geoengineering as a mitigation measure. 53% of the sample believes that more investments should be directed to R&D for geoengineering to a low degree or no degree at all. This result may reflect the uncertainty revolving around the effectiveness of geoengineering technologies, which makes participants hesitant to encourage its use.

To what degree do you think that more investments should be directed to R&D for geo-engineering technologies such as solar radiation management, aimed at lowering average global surface temperature?

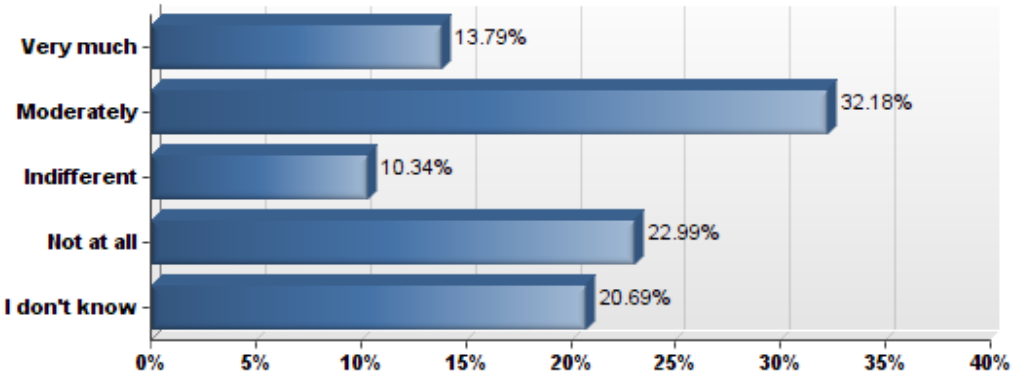


To what degree would you support an international agreement that restricts individual countries in their ability to independently conduct research on geo-engineering?



Similarly, the majority of the sample argues for either a low or no degree support for an international agreement that restricts individual countries in their ability to independently conduct research on geoengineering (54%).

In the event of an approaching 'climate emergency', i.e. should it become apparent at some point in the future that it is too late to avoid a catastrophic event (induced by climate change) by means of conventional mitigation techniques, would you favour large-scale deployment of geo-engineering?



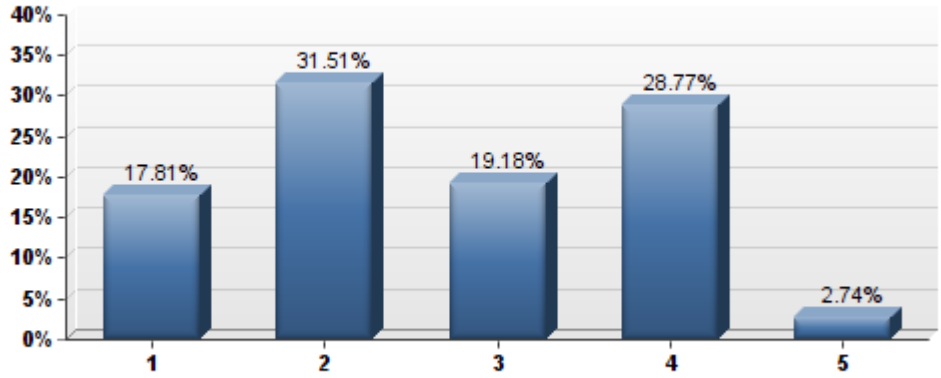
Moreover, in the event of a "climate emergency" most respondents favour either a moderate deployment of geoengineering or no deployment at all (55%). It is striking that even in this hypothetical situation where conventional mitigation techniques have been exhausted, participants are still cautious about the deployment of geoengineering, exacerbated also by the high rate of "I don't know" answers (21%). Thus, it is evident that COP participants are not proponents of the possible use of geoengineering technologies.

PART D: Views on the negotiations

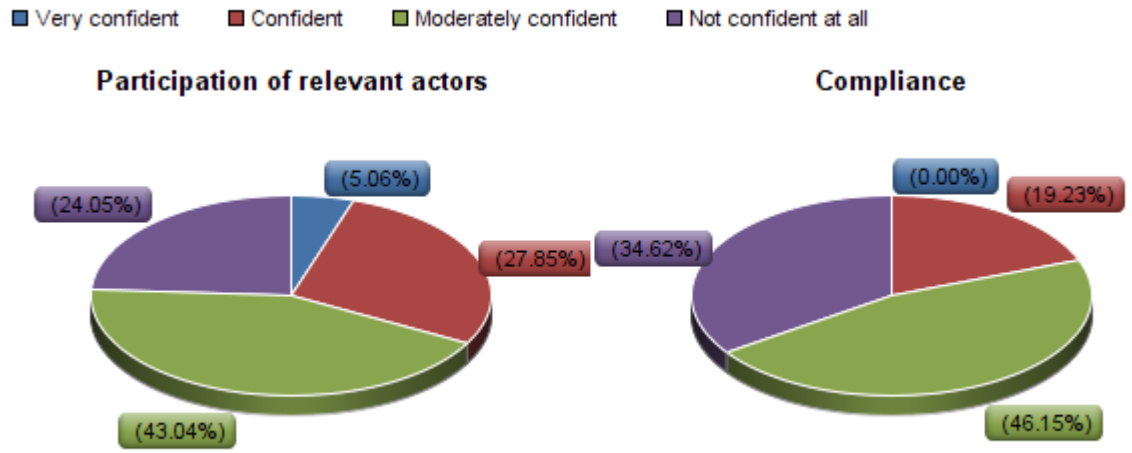
What about the experts' views on the negotiation process? Is the global top-down architecture envisioned by the UNFCCC the best option, or should we transition to a 'polycentric governance' approach initially focusing on cooperation at a smaller scale (either sectoral or among smaller clubs of nations)? Most respondents do not conceive the Kyoto Protocol as a relative success, with answers 1 and 2 (the two lowest scores) accounting for 50% of the sample. Nonetheless a significant number of climate negotiators (32% of participants) acknowledge its success by choosing the two highest scores (Fig.3). This is in stark contrast to the view of climate and social scientists, who tend to broadly agree on the failure of the Kyoto protocol to deliver tangible results.

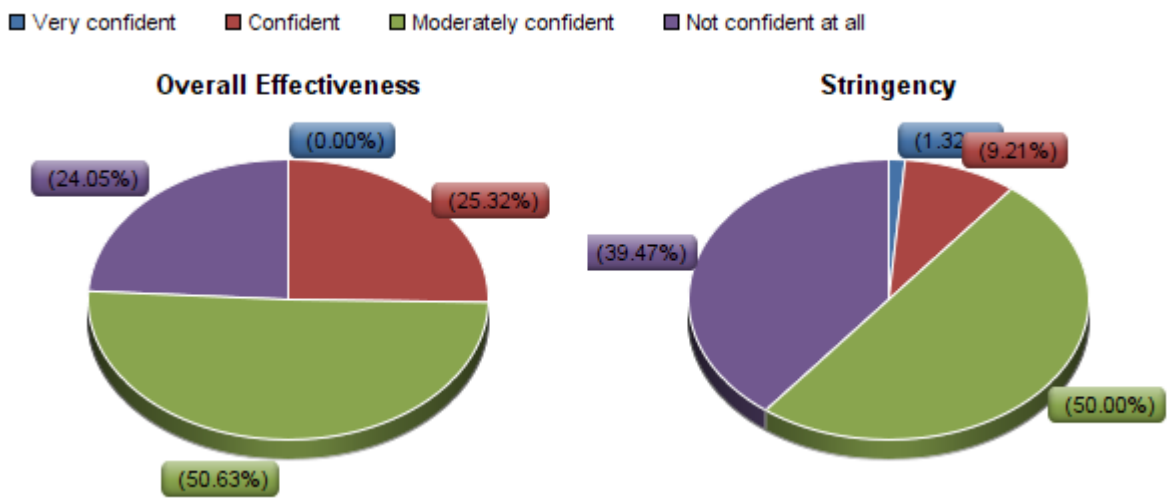
Do you think that overall the Kyoto Protocol has been a success or a failure?

(1=☹ indicating failure; 5= ☺ indicating success)



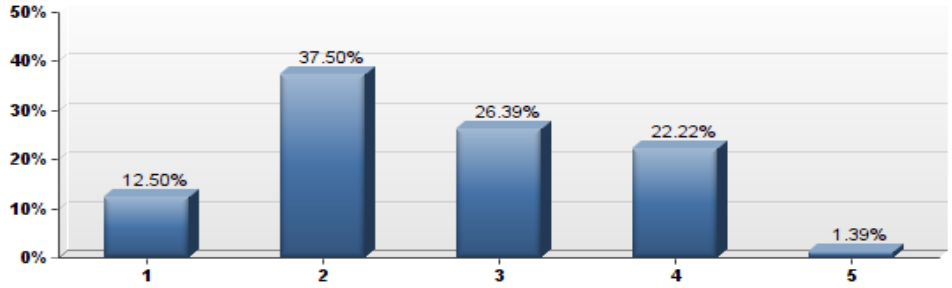
How confident are you about the future success of the Durban Platform for Enhanced Action with respect to the following aspects?





The Durban Platform for Enhanced Action may be characterized as a milestone of climate cooperation, setting the scene for a new international binding agreement, including all major emitters, to be set up in 2015 and to come to force in 2020 (it also proposed the linkage of carbon markets). Nevertheless, it is unknown if this Protocol is going to live up to its expectations. Respondents are mostly moderately confident about the future success of the Durban Platform, with higher levels of confidence regarding the participation of relevant actors and overall effectiveness and lower levels of confidence concerning its stringency and compliance (similar pattern with question 12). More specifically, the majority of participants are either confident or moderately confident about successful participation of relevant actors (71%) and overall effectiveness (76%). On the other hand, participants are less confident about the admittedly tougher aspects of stringency and compliance, with 1 out of 2 participant being moderately confident (46% and 50% rspectively). However, stringency and compliance responses also include relatively high rates of no confidence at all (39% and 35% respectively). It should be noted that out of the four aspects, stringency is perceived to be most detrimental to the Durban Platform's success, validating the notion that stringency requirements are the most difficult to achieve in international climate change protocols.

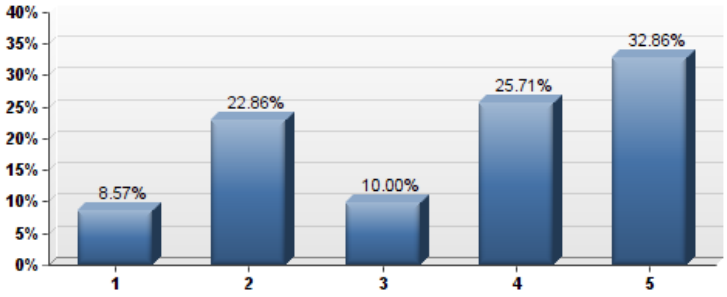
To what degree do you think the climate summits (COPs 1-19) have been useful on their own (apart from the official outcome)?5= High degree1= No degree



In addition, respondents have predominantly distributed their answers to question 20. Most respondents have chosen the answer with number 2, indicating a low degree usefulness of climate summits (38%). This deeply alarming result validates the need for more constructive climate summits , if we are to successfully mitigate the issue of climate change. In addition, there are substantial responses on both higher and lower degrees of usefulness and thus not many remarks can be extrapolated from the analysis of this question. It should be mentioned though that only 1% selected the highest degree answer (5), implying that climate summits could have definitely achieved more.

The fact that climate negotiations could have achieved more is also reflected in the picture below. The majority supports that climate negotiators could have been more constructive to a high degree. But again, a significant number of respondents (the two lowest scores, 31%) do not agree with that impression. Interestingly, relatively few respondents take the middle position (the middle score, 10%), indicating a certain kind of polarization.

To what degree do you think the climate negotiators (having taken part in COPs 1-19) could have achieved more?5= High degree1= No degree



Discussion

This paper analyses quantitative survey data from participants of the 2013 Conference of the Parties, in Warsaw. A companion project will at a later stage focus on smaller groups of individuals engaging in controlled laboratory experiments aimed at isolating the incentives for cooperation in settings that approximate those faced by negotiators. These economic experiments will be calibrated on and informed from the information gathered with the surveys.

The emergent picture from the literature and survey analysis is rather stark. In sum, the interviewees believe that temperatures will increase markedly by the end of the century, and almost all predict either negative or very negative consequences on future living conditions. The two most pressing issues identified by participants are 'securing world nutrition and eradicating poverty' and 'international efforts in combating climate change'. Most indicated 'comprehensive quantitative targets for a reduction in global GHG emissions' as a priority issue to be included in climate negotiations. About investing in R&D for geoengineering the sample is split. Interestingly, by cross-tabulating answers, it appears that proponents of geoengineering do not favour agreements that restrict countries in their ability to independently conduct research on this technique. Conversely, opponents of geoengineering tend to demand restrictions on individual research on this prospect in order to discourage its deployment. In terms of personal views, most subjects think that the current negotiation platform has been somewhat ineffective and more could have been achieved.

The question thus stands of whether we can capitalise on the positive elements of past negotiations and amend the problematic features in the run-up to what many see as the cornerstone COP 21, that will take place in Paris in 2015.

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Appendix: The survey

(also available at tinyurl.com/climatenegotiators)

About the questionnaire

This survey asks about your personal assessment of a number of issues in international climate policy. Your assessment may refer to your home country as well as to five countries or groups of countries that may play an important role in current international climate negotiations (in alphabetical order): Alliance of Small Island States (AOSIS), BASIC without China (Brazil, South Africa, India), China, the European Union (EU), and the United States (USA). If you took part in a related survey which was conducted by ZEW (Centre for European Economic Research) in mid-2012 and included negotiators from COP-16 and COP-17, please do not take this one.

What will happen to your answers?

The information is only used for scientific analysis only. No names (if disclosed by the respondent) or data on single persons or firms will be published or made accessible to third parties.

If you have any further questions, do not hesitate to contact us: a.tavoni@lse.ac.uk

Part A: Consequences of climate change

This part asks about your opinion of the consequences of climate change up to 2100. Please consider economic development with no new international climate agreement.

Please indicate your personal estimate of the change in the average global surface temperature up to 2100 compared to pre-industrial levels.

- ❍ Temperature will increase (indicate absolute change in °C): _____
- ❍ Temperature will decrease (indicate absolute change in °C): _____
- ❍ I don't know

How would you assess the consequences of climate change on future global living conditions up to 2100?

- ❍ Very negative
- ❍ Negative
- ❍ Neither negative nor positive
- ❍ Positive
- ❍ I don't know

What level of confidence do you have in your prediction of the consequences of climate change on future global living conditions up to 2100?

- ❍ Very high
- ❍ High
- ❍ Medium
- ❍ Low
- ❍ Very low
- ❍ I don't know

How would you assess the consequences of climate change on future living conditions up to 2100 in the following countries or groups of countries?

	Very negative	Negative	Neither negative nor positive	Positive	I don't know
AOSIS	❍	❍	❍	❍	❍
BASIC without China	❍	❍	❍	❍	❍
China	❍	❍	❍	❍	❍
EU	❍	❍	❍	❍	❍
USA	❍	❍	❍	❍	❍
Your home country (if your home country is China or USA, please indicate same assessment as above)	❍	❍	❍	❍	❍

What do you estimate is the probability (as a percentage) that at least one catastrophic change in the climate system (e.g., major changes in the Atlantic meridional overturning circulation, in the ice sheets, in the Amazon rainforest, or in the El Niño/Southern oscillation) will occur up to 2100?

- ❍ Probability (from 0% to 100%): _____%
- ❍ I don't know

What level of confidence do you have in your prediction of the occurrence of at least one catastrophic change in the climate system (e.g., major changes in the Atlantic meridional overturning circulation, in the ice sheets, in the Amazon rainforest, or in the El Niño/Southern oscillation) up to the year 2100?

- ❍ Very high
- ❍ High
- ❍ Medium
- ❍ Low
- ❍ Very low
- ❍ I don't know

Part B: Importance of international efforts in combating climate change

This part refers to your personal assessments of the importance of international efforts in combating climate change and other global challenges such as securing world nutrition and eradicating poverty, combating epidemics, stabilizing the international finance system, and combating terrorism.

How important do you think the following global challenges are?

	Very important	Important	Moderately important	Not important	I don't know
International efforts in combating climate change	❍	❍	❍	❍	❍
Securing world nutrition and eradicating poverty	❍	❍	❍	❍	❍
Combating epidemics	❍	❍	❍	❍	❍
Stabilizing the international financial system	❍	❍	❍	❍	❍
Combating terrorism	❍	❍	❍	❍	❍

To what degree do you think the following countries or groups of countries will reduce their greenhouse gas (GHG) emissions relative to “business as usual” even without any new international cli-mate agreement up to 2050?

	High degree	Moderate degree	Low degree	No degree	I don't know
AOSIS	❍	❍	❍	❍	❍
BASIC without China	❍	❍	❍	❍	❍
China	❍	❍	❍	❍	❍
EU	❍	❍	❍	❍	❍
USA	❍	❍	❍	❍	❍
Your home country (if China or USA, please indicate same answers as above)	❍	❍	❍	❍	❍

Part C: Issues in current international climate negotiations

This part considers your personal assessment of the following issues in current international climate negotiations: Comprehensive quantitative targets for a reduction in global GHG emissions, quantitative GHG emission reduction targets for individual economic sectors, R&D and technology transfer, geo-engineering, land-use change and reforestation, and adaptation measures.

How important do you think it is to include the following issues in current international climate change negotiations?

	Very important	Important	Moderately important	Not important	I don't know
Comprehensive quantitative targets for a reduction in global GHG emissions	❍	❍	❍	❍	❍
Quantitative GHG emission reduction targets for individual economic sectors	❍	❍	❍	❍	❍
R&D and technology transfer	❍	❍	❍	❍	❍
Geo-engineering	❍	❍	❍	❍	❍
Land-use change and reforestation	❍	❍	❍	❍	❍
Adaptation measures	❍	❍	❍	❍	❍

Which of the following countries or groups of countries do you think play a leading role in having the following issues included in current international climate negotiations? Multiple answers are possible.

	AOSIS	BASIC without China	China	EU	USA	None of these five countries or groups	I don't know
Comprehensive quantitative targets for a reduction in global GHG emissions	❍	❍	❍	❍	❍	❍	❍
Quantitative GHG emission reduction targets for individual economic sectors or single GHG	❍	❍	❍	❍	❍	❍	❍
R&D and technology transfer	❍	❍	❍	❍	❍	❍	❍
Geo-engineering	❍	❍	❍	❍	❍	❍	❍
Land-use change and reforestation	❍	❍	❍	❍	❍	❍	❍
Adaptation measures	❍	❍	❍	❍	❍	❍	❍

When considering packaging the issues from the previous two questions in several distinct sub-agreements (instead of having a comprehensive approach), how confident are you about the success of narrower sub-agreements with respect to the following aspects?

	Very confident	Confident	Moderately confident	Not confident at all	I don't know
Overall Effectiveness	❍	❍	❍	❍	❍
Stringency	❍	❍	❍	❍	❍
Participation of relevant actors	❍	❍	❍	❍	❍
Compliance	❍	❍	❍	❍	❍

To what degree do you think that more investments should be directed to R&D for geo-engineering technologies such as solar radiation management, aimed at lowering average global surface temperature?

- ❍ High degree
- ❍ Moderate degree
- ❍ Low degree
- ❍ No degree
- ❍ I don't know

To what degree would you support an international agreement that restricts individual countries in their ability to independently conduct research on geo-engineering?

- ❍ High degree
- ❍ Moderate degree
- ❍ Low degree
- ❍ No degree
- ❍ I don't know

In the event of an approaching 'climate emergency', i.e. should it become apparent at some point in the future that it is too late to avoid a catastrophic event (induced by climate change) by means of conventional mitigation techniques, would you favour large-scale deployment of geo-engineering?

- ❍ Very much
- ❍ Moderately
- ❍ Indifferent
- ❍ Not at all
- ❍ I don't know

Part D: Views on the negotiations

This part focuses on your personal views on the Kyoto Protocol, the Durban Platform, and the negotiations at large.

Do you think that overall the Kyoto Protocol has been a success or a failure?

- ❍ Great success
- ❍ Moderate success
- ❍ Neither success nor failure
- ❍ Moderate failure
- ❍ Great failure

What do you think is the Kyoto Protocol's greatest strength?

_____

What do you think is the Kyoto Protocol's greatest weakness?

_____

How confident are you about the future success of the Durban Platform for Enhanced Action with respect to the following aspects?

	Very confident	Confident	Moderately confident	Not confident at all	I don't know
Overall Effectiveness	❍	❍	❍	❍	❍
Stringency	❍	❍	❍	❍	❍
Participation of relevant actors	❍	❍	❍	❍	❍
Compliance	❍	❍	❍	❍	❍

To what degree do you think the climate summits (COPs 1-19) have been useful on their own (apart from the official outcome)?

5= High degree; 1= No degree

- ❍ 5
- ❍ 4
- ❍ 3
- ❍ 2
- ❍ 1

To what degree do you think the climate negotiators (having taken part in COPs 1-19) could have achieved more?

5= High degree; 1= No degree

- ❍ 5
- ❍ 4
- ❍ 3
- ❍ 2
- ❍ 1

When making decisions, do you generally trust your intuitions?

- ❍ Very much
- ❍ Somewhat
- ❍ Little
- ❍ Not at all
- ❍ I don't know

Part E: Personal questions

Finally, we would like to ask some questions about you. Your answers to these questions are extremely important to make sure that our empirical analysis is reliable. Please note that your answers to these questions will remain completely private. You will not be identified in any way. Your answers will remain strictly confidential and will be analysed anonymously, that is, your name and address will not be linked to the data. Your answers will only be examined in summary form together with the answers of other participants.

Please indicate your sex:

- ❍ Female
- ❍ Male

Please indicate your year of birth: _____

Please indicate your home country: _____

Please indicate your nationality: _____

Please indicate your professional position: _____

Please indicate the field in which you obtained your highest degree or training:

- ❍ Natural sciences
- ❍ Political Sciences
- ❍ Economics and business administration
- ❍ Law
- ❍ Engineering
- ❍ Other (please indicate): _____

Please indicate the type of organization you currently work for:

- ❍ International governmental organization
- ❍ National governmental organization
- ❍ University or research institution
- ❍ Private company
- ❍ Environmental non-governmental organization (NGO)
- ❍ Non-environmental NGO
- ❍ Others (please indicate): _____

If you have participated in COP 2013 (Conference of the Parties in Warsaw), please indicate your role in it:

- ❍ Party
- ❍ UN and its specialized agencies
- ❍ Intergovernmental organization
- ❍ NGO
- ❍ Others (please indicate): _____
- ❍ No participation in COP 2013

If you were member of a party during COP 2013, please indicate which country you represented:

_____

Comments and address

If you have any comments, please write them below:

_____

If you like to receive the results of this survey, and to be notified when they are released publicly, please write your name and email or postal address below:

_____