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MANIFESTATIONS OF DELIBERATIVE DEMOCRACY ONLINE: MEASURING QUALITY OF GLOBAL PUBLIC DISCUSSIONS ON CLIMATE CHANGE ON FACEBOOK

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VYTAUTO DIDŽIOJO UNIVERSITETAS

Inesa BIRBILAITĖ

SVARSTOMOSIOS DEMOKRATIJOS APRAIŠKOS INTERNETE: VIEŠŲ KLIMATO KAITOS DISKUSIJŲ SOCIALINIAME TINKLE *FACEBOOK* KOKYBĖS VERTINIMAS

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ABBREVIATIONS

BBC	British Broadcasting Corporation
CSD	Commission on Sustainable Development
CFCs	Chlorofluorocarbons
COP	Conference of Parties
COP15	15th Conference of Parties held in Copenhagen in 2009
CO2	Carbon dioxide
DQI	Discourse quality index
EC	European Commission
EEA	European Environmental Agency
EPA	Environmental Protection Agency
EU	European Union
FBA	Force of better argument
IPCC	International Panel on Climate Change
UN	United Nations
(UN)FCCC	(United Nations) Framework Convention on Climate Change
UNICEF	United Nations Children's' Fund
NGO	Non-governmental organizations
NRC	National Research Council
NSB	National Science Board
UK	United Kingdom
US	United States of America
WMO	World Meteorological Organization

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INTRODUCTION

Nowadays global societies are undergoing big changes challenging traditional forms of social and political life, fundamental values, and priorities. Most notably, traditional democracies suffer from novel kind of *identity crises*[1] mainly determined by inability to deal with new global risks (e.g. climate change, global economic crisis, online wildfires, failure of health system), which are the major threat to our future. Traditional social structures and institutions, such as science and politics, are required to acknowledge their limitations and find new and more efficient ways to function and deal with the problems of the *second modernity* (in Beck's terms it refers to reflection based on reassessment of industrial modernity). In line with these global challenges, which encourage search for alternative forms of political governance, new communication and information technologies provide a possible solution or formula to effectively deal with global risks. Web 2.0 based online communication environments[2] enable establishment of new-generation public sphere, which could become a basis for new forms of democracy driven by the power of public. In other words, citizens would be provided with unique possibilities and new powers to directly participate in political processes and foster basis for deliberative democracy. Hence, we would witness power re-consideration and re-distribution among scientists, politicians, media, and citizens (Beck, 1997; Dahlgren, 2005).

However, there is no consensus among social scientists if well-functioning public sphere (corresponding to Habermas' ideal, which we discuss in Chapter 2) securing effective deliberative processes is at all possible online mainly because of questionable quality of the online discussions[3]. Hence, the **scientific problem** of this dissertation can be formulated as a question: are public discussions[4] online on political issues demonstrating enough quality for

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[1] *Identity crisis* (as we call it) that global societies are undergoing is related to the transition from *industrial modernity* to *second modernity* (in Beck's terms). This transition questions basic values and traditions that we have. For instance, recognition of limitations of science causing global risks leads to doubts about traditional scientific inquiries. Moreover, awareness of failures of traditional politics while dealing with global uncertainties also encourages reconsideration of what we thought is non-questionable.

[2] In this dissertation we use the term *Web 2.0 based online communication environments* to refer to a broad range of Internet based discursive spaces, which include possibilities of user generated content, especially paying attention to an online *social networks* that are one group of these environments among others (e.g., comment and discussion sections on online news media).

[3] It does not matter how advanced and free of constrains discursive spaces online might be; it does not also matter if citizens are eager to participate and if they can easily access necessary information; but no results can be reached if the conversations online are not deliberative: arguments are not justified, participants do not respect each other and do not yield for better arguments or do not acknowledge common good, etc.

[4] *Comments, discussions* and *discourse* are leading terms of this dissertation. Although they are very closely related, the difference has to be highlighted. Namely, when we use the term of discourse, we refer to the general discourse of climate change, which includes but it is not limited to the discussions we analyze, as well as other public discussions, political and scientific debates, and media coverage among others. Meanwhile, we perceive discussion as a smaller part of general discourse, constituting of separate comments under one initial wall-post made by moderator of the Facebook page. Comments are the smallest item of our analysis and they refer to a single contribution of a single participant. Hence, by analyzing comments in this dissertation we also aim to say

well-functioning public sphere to emerge and to function as a foundation for deliberative democracy? Without empirical analysis it is impossible to say anything certain about the quality and value of online discussions; therefore, in this dissertation we undertook the challenge to analyze quality of preselected online discussions in order to verify if they have proper quality to be considered in processes of political decision making. In other words, the ***major purpose*** of this dissertation was to explore theoretical and methodological foundations for analysis of quality of online discussions in order to construct a proper research design following which the quality of the discussions of the preselected online social network could be measured and potentials of the Web 2.0 based online communication environments to foster well-functioning public sphere supporting democratic processes identified.

To fulfill this purpose, we formulated ***five objectives***: ***first,*** to review and elaborate on theoretical basics of deliberative democracy in order to justify the theoretical model for the analysis of empirical data; ***second,*** to discuss methodological approaches to the analysis and justify their suitability and applicability; ***third,*** to establish research design for the empirical analysis and justify it; ***fourth,*** to provide reasons for preselected case study and present comprehensive introduction to it; ***fifth,*** to measure discourse quality in preselected case, identifying week and strong sides of the discussions and providing with recommendations *if* and *how* these discussions could be considered by policy makers.

In addition to the fifth empirical objective, we also had seven empirical questions: ***RQ1.*** What is the quality of global public discussions on preselected Facebook page? ***RQ2.*** How quality of global public discussions on preselected Facebook page corresponds to the quality of traditional (vis-à-vis) discussions? ***RQ3.*** Which characteristics of online public sphere (or features of online communication culture[5]) influence quality of public discussions on preselected Facebook page? ***RQ4.*** How discussions' quality is determined by the general political, social, and cultural context related to climate change? ***RQ5.*** How frames of the topic under consideration determine discussions' quality? ***RQ6.*** How discussions' quality is influenced by the characteristics of participants? ***RQ7.*** How the quality of the discussions might be improved in order to be considered by policy makers?

Methodological framework: To resolve theoretical objectives we performed analysis of scholarly literature applying methods of *scholarly literature review, analysis, synthesis, comparison, and generalization*. This analysis assisted in developing and justifying our

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something about discussions and about the general discourse of climate change. In other words, although we analyze comments, in the final chapters of this work, we make generalizations and discuss quality of discussions as well as general discourse.

[5] Concept of *online communication culture* characterizes the way and spirit in which content of the public sphere is generated.

individual approach to online-based deliberative democracy and helped to design theoretical and methodological model for the empirical analysis of preselected case. In addition, we also performed *analysis of documents* related to politics of climate change (including international treaties and national agreements) in order to review global and local political trends and demonstrate political inconsistency among different parties. Finally, we studies *secondary data* including surveys of public opinion conducted under the inquiry of the European Commission (Eurobarometer) or independent public opinion surveys carried out by the Per Research Center among others. This analysis assisted in understanding the general context of our scientific problem, reaching from citizen's political literacy to Internet usage for political participation.

For the empirical part we chose a case study as a research strategy, which in our study was based on mixed (quantitative and qualitative) methods. The approach of mixed methodology was suggested by the instrument we used to collect and analyze our empirical data – the *Discourse quality index*[6] (DQI). The DQI was originally designed to process the data in quantitative manner; however, scholars noticed that it is most effective when applied in certain cases (in contrast to random samples), because broader contexts and in-depth explanations are needed for comprehensive analysis. Furthermore, many studies applying the DQI usually are performed following quantitative case study research strategies (e.g., experimental case study of linguistically divided Belgium by D. Caluwaerts or quasi-experimental case study of Columbian ex-combatants by J.E. Ugarriza – we will come back to these studies in later chapters). Besides, case study was a good choice in our research also for other reasons. First, as it is commonly known, case studies allow in-depth investigations of contemporary phenomenon within its real-life context (Yin, 2003). In our case, we wanted to analyze quality of public discussions of newly emerging Web 2.0 based online communication environments in relation to political, cultural, and social settings, which possibly influence the quality of the discussions in these environments. Secondly, we were aiming to analyze *how* high is the quality of discussions in online social networks, *how* and *why* it changes, and *how* (if at all) it can be improved. In these terms case study also seemed to be the best choice, as it is particularly good for examining *why* as well as *how* and *what* questions, which are enquiries about a contemporary set of events over which the investigator has little or no control (Yin, 2003; Saunders et al., 2007). Furthermore, case study strategies are most often employed in explanatory and exploratory research (Saunders et al., 2007). In our study, we wanted to explore and explain the quality of public discussions online. To overcome the conflict of qualitative and quantitative research traditions we decided

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[6] Discourse Quality Index is the main instrument that we used to measure quality of our discussions. This instrument was designed by a group of scientists supervised by Jürg Steiner and Peter Steinberger. We comprehensively present, elaborate, and justify selection of this instrument in Chapter 4.

that we will analyze the case and describe results in quantitative manner but we will present conclusions in qualitative way (as concluding hypotheses[7]).

To collect the data we applied methods of *content analysis* and *participants' survey*. The categories of content analysis were set following the DQI, which also assisted in analyzing and interpreting data. Hence, following the DQI we analyzed the quality of the discussions published during the 15th Conference of Parties[8] (COP15) held in Copenhagen in 2009 on *Facebook* page *COP15 UN Climate Change Conference, 2009*. We measured quality of each comment posted on the page. The final sample constituted of 156 wall-posts published by page moderator(s) and 2788 comments made by 1424 active participants. In addition to that, we also gathered supplementary data (e.g. missing socio-demographic characteristics, participants' positions on political, scientific, and environmental matters) from personal Facebook profiles as well as by performing participants' survey. Survey was send via Facebook to all participants who contributed to the discussions online at least once.

Introduction to the case study: We focused on one case of public discussions questioning issues of climate change on preselected Facebook page. Recently, topic of climate change landed on public and policy agendas as a major problem of nowadays. This was clearly demonstrated during the COP15. The complexity of the issue can be noticed in several levels. First of all, for a long time there was no scientific agreement about the causes and consequences of changing global climate; however, when the International Panel on Climate Change (IPCC)[9] consensus on anthropogenic climate change was set, expectations that it will unify governments and lead to concrete and effective actions to tackle climate change were not confirmed. Remaining scientific uncertainties continue to puzzle governments and, in turn, different paths are taken by nations: while some implement pro-active positions to tackle global risks immediately, others choose to wait-and-see. The COP15 brought all disagreements between the parties into the daylight causing chaos and confusion at the Bella Center[10]. As a result, thousands of people who hoped for the agreement were left with a non-binding deal. It was

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[7] As we have mentioned, in our research we combine qualitative and quantitative research traditions. While we collected and analyzed our data in quantitative way, we provide conclusions in qualitative way, meaning, that instead of conclusions, we formulate concluding hypotheses, which should be tested in future research studies. We decided that concluding hypotheses are the better way to finnish our work because they allow us to predict the meaning of our results in broader context, e.g., in other Web 2.0 based communication environments (e.g., Twitter, YouTube) or in discussions considering different but similar topics (e.g., other environmental crisis, online wildfires, failure of World's health system). Hence the process of our research was as follows: theory →tentative hypotheses → observation→ concluding hypotheses.

[8] *Conference of the Parties* (COP) is the governing body of the United Nation Framework Convention on Climate Change (UNFCCC). COP advances implementation of the Convention through the decisions it takes at its annual meetings. The UNFCCC is a treaty organization for a multilateral response to climate change that was set at the UN Conference on Environment and Development (Earth Summit) in Rio de Janeiro in 1992.

[9] *International Panel on Climate Change* (IPCC) is the major global scientific body responsible for assessment of the climate change and its potential environmental and socio-economic impacts

[10] Bella Center is an exhibition and conference center in Copenhagen (Denmark) where the COP15 was held.

demonstrated that traditional diplomatic ways of policy-making lead to global disappointment and frustration. However, this global event brought to light newly rising phenomenon of global politics, in particular, active citizenry online was emerging by closely following Copenhagen processes, participating, and contributing to online discussions. Some experts and scholars met this with huge hopes for the new types of well-functioning public sphere while others remained skeptical. Namely, while some argued that Web 2.0 based online communication environments serve in democratizing the ways in which political decisions can be reached by providing citizens with unique power to communicate and deliberate online (Kenix, 2008; Armstrong & Zúniga, 2006; Benkler, 2006; Xenos & Bennett, 2007; Dahlgren, 2005); others pointed to different obstacles preventing from formation of well-functioning public-sphere[11] including increasing individualization, audience fragmentation, and polarization among others (Sustein, 2001; Gentzkow & Shapiro, 2010; Putnam 2000; Bennett, 1998, 2012; Habermas, 2006). Here the ***significance and novelty of our study lies***. Most importantly, our research is an attempt to bring some clarity into this theoretical debate and support one of the sides with empirical evidence, especially having in mind that empirical studies are rare and inconsistent. Besides, while scholars measure quality of deliberation in legislative bodies (Lascher, 1996), in traditional public discourses (Roberts[12], 1997; Button & Mattson[13], 1999; Dryzek & Braithwaite[14], 2000; Risse, 2000; Baccaro[15], 2001; Ryfe, 2002; Chambers, 2003), in formal

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[11] According to Habermas (1989), there are four preconditions for well-functioning public sphere to occur. First, there should be a discursive space free of any kind of constrains. Second, citizens are required to be active and willing to participate. Third, information necessary for complete understanding of the issue should be available and easy accessible. Fourth, deliberation should follow major normative requirements of participation, respect, justification, and force of better argument.

[12] One of the first scholars whose attention was caught by question of deliberation in public discourse was Nancy Roberts (1997). She examines two cases - questioning school district's budget cuts and education policy reform - involved ordinary people into decision making processes by organizing citizens' discussion groups (in the first case included employees, teachers, students, district administrators, support staff and other citizens; in the second case involved educators and all interested parties in the state). In her study, Roberts highlighted the necessity of public deliberation and its significance in the processes of decision-making. Both cases indicated that deliberation helps to find better decision for the community. Besides, she added that "outcomes of a deliberative process are not always successful; the potential is there for gridlock as well as consensus" (Roberts, 1999: 131).

[13] Mark Button and Kevin Mattson (1999) focus on public policy issues and analyze seven cases of deliberation. Applying methods of observation and surveys they explore forums between publics and politicians organized by different organizations, focusing on issues of money and politics, civil justice, changes to energy policies, and health care reform. The conclusions scholars provide are in many ways similar to Robert's. Button and Mattson stress that "deliberation may produce conflict or common good <....>. Whatever the case might be deliberation can never be defined as a single process or universalizing dynamic" (Button and Mattson, 1999: 633).

[14] Dryzek and Braithwaite (2000) took different methodological approach to public deliberation. They conducted interviews with Australian residents in order to assess the values of people supporting different political ideologies. In general this study questioned the prospects for public deliberation – if deliberation is possible between people possessing confronting values and supporting different political ideologies? In the conclusions authors propose three possible cases, where according to values opposing discourses possess different deliberation outcomes occurs.

[15] Lucio Baccaro (2001) explores deliberation in decision making in trade unions. He compares and contrasts aggregative and deliberative decision making procedures drawing his empirical investigation on two cases – a comparison of two Southern Italian Factories – *Termoli* and *Modugno*. Both organizations were facing similar trade-off between job creation and overtime pay. Study shows that "Different decision-making process explain the difference in outcome between the two plants. In Termoli, employees simply voted on the two alternatives; in

political discussions (Risse, 2000; Steenberger & Steiner, 2003); and in media coverage (Pilon, 2009), studies of online discussions are rare. Probably, because of the prejudice that there cannot be quality discussions in online social networks, difficulties to find proper instruments to analyze discussions online, or any other reasons, such studies are rare and often questioning deliberation in artificial online settings where participants deliberate under certain rules set by the moderator of the forum (e.g., research of online political forums: Stromer-Galley, 2007; Wales, Cotterill & Smith, 2010) or scholar (e.g., online environments established for the scientific experiments Graham & Witgchge, 2003). Yet, despite the fact that Facebook today has over 750 million users and *Twitter* is gaining its power as well as *YouTube* does, in scientific explorations questioning deliberation those environments remain out of scientific scope. Certainly, analysis of naturally set online communication environments would provide scientists with new data possibly contradicting to previous results, mainly because participants in these discussions are free of any additional rules except the limitations of social network itself. Hence, this dissertation is one of the first attempts to study quality of public discussions on Facebook aiming to dispel the uncertainties about the possibility to establish well-functioning public sphere on Web 2.0 based online communication environments, which would be capable (or not) to serve as a foundation for strong deliberative democracies.

One of the major and most problematic questions scholars who measure quality of online discussions have to deal with – the appropriate tool. Recently, this gap was rather successfully filled in with the DQI developed by Steiner et al. (2004). Following Habermas' theory of *Communication Action*[16], a group of scholars designed an instrument, which was initially dedicated to study quality of formal parliamentary discussions; however, subsequent researches showed that it can be successfully applied in exploring other discussions, including face-to-face public discussions (Steenberger & Steiner, 2003), media coverage (e.g., Pilon, 2009[17]; Haeussler & Fraefel[18], 2009) and even online discourses (Robertson & McLaughlin's, 2011[19]; Wales,

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Modugno, the vote was proceeded by extensive debate and discussion <…> The difference <…> is that while the Modugno workers ultimately perceived the decision to change to have been their own – through yet carefully pondered – the Termoli workers had the impression of having been arm-twisted into something they would not voluntarily subscribe to" (Baccaro, 2001: 262-264).

[16] In his two books dedicated to discuss the Theory of Communication Action, Habermas perceives language as a major medium to reach understanding between actors about certain situations and future plans in order to coordinate their actions by way of agreement (Habermas, 1992, 1996).

[17] Denis Pilon (2007) was the first scholar to apply the DQI for media analysis. He analyzed 5 daily newspapers focusing on the topic of Ontario referendum debate. Article demonstrated negative assessments of media's deliberative performance in referendum context: "Ontario's broadsheet print media failed to create an effective deliberative space where citizens could gain a critical appreciation of the choices they faced. In fact, the results show that the media failed on all the key themes Habermas highlights as crucial to an effective deliberative process" (Pilon, 2009: 17).

[18] Thomas Haeussler and Marianne Fraefel (2009) used the DQI to analyze deliberation on TV, radio, and the Internet. They focused on two national referenda held in 2005 dealing with the issue of signing the bilateral agreement between Switzerland and the EU.

Cotterill & Smith, 2010 [20]). In this dissertation we go one step further and use this instrument to assess the quality of public discussions in Web 2.0 based online communication environments (in contrast to artificially set online forums), specifically, in Facebook.

Limitations and generalization: As we selected a case study as our research strategy, we could not generalize our finding for the whole population or all online users (albeit quantitative analyzes were performed). However, results of our case allowed to predict that similar results could be found in other cases with similar settings[21], for instance, similar risk related discussions (e.g., atomic energy, genetically modified organisms, different health related issues, among others) on Facebook, probably also on Twitter or other online social networks. However, these cases remain to be addressed in future studies. Therefore, we end our study with concluding hypotheses (not with final conclusions), which arise from our sample and for broader generalizations they should be verified.

Our study also can be subject to the selection bias because we analyzed the quality of the discussions, which were generated during the global event of the COP15 that is highly expected to determine greater interest in global climate change among citizens. However, it was our aim to investigate the period when citizens are most involved and concerned with the issue in contrast to the period where discussions are rather slow and therefore disengaging. Basically, we believe that if public participation during such events is taken seriously (by politicians and other experts) it could lead to good outcomes – the best decision to all the groups may be reached.

Another limitation could be related to the bias of researcher who coded and analyzed empirical data. Data were coded and analyzed by a single researcher; however, she was trained to apply the DQI by one of the inventors of the instrument (prof. Jürg Steiner). In addition, we report acceptable inter-rater reliability of the DQI. Hence, we consider that empirical data were coded and analyzed correctly and were suitable for the analysis.

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[19] The attempt to apply DQI in analyzing online discourses was performed by John W. Robertson and Elizabeth McLaughlin's in 2010. Their study focused on 12 blogs discussing the topic of economic crisis in 2008. The study is based upon in-depth, comparative analysis of the quality of debate. The results indicate that: "the debate in many of these sampled blogs had much to commend it in terms of civilized behavior, range of economic models, the use of reason and evidence and, as a consequence, suggest a level of political engagement of the kind anticipated by Boulianne" (Robertson and McLaughlin, 2010: 125).

[20] Corinne Wales, Sarah Cotterill and Graham Smith performed another important study in England. Focusing on DQI they provided a new instrument to measure deliberation online and used it to analyze the deliberative quality of online engagement, namely organizing a large-scale randomized controlled trial, part of which involved inviting two groups of just 1000 citizens to participate in two asynchronous online discussion forums on youth anti-social behavior and community cohesion. They found that "our experiment offers some positive news, particularly in relation to mutual respect, but also in some respects in realizing inclusiveness and a common good orientation" (Wales et al., 2010: 30).

[21] Generalization from case study is possible following the formula of Flyvbjerg (2011) "if it is valid for this case, it is valid for all (or many) cases" or "if it is not valid for this case, then it is not valid for any (or only few) cases" (17).

Structural outline of the dissertation: We start to tell our story with the introduction to the preselected case of climate change. In Chapter 1, we discuss major problems of climate change, which are relevant to our study. Namely, we focus on issues of scientific consensus and processes of democratization of science that are important determinants in changing surface of knowledge politics. Besides, we also consider public perception of climate change risks highlighting the importance of informed citizenry in dealing with global risks such as climate change, as well as in setting deliberative discussions between society and policy-makers. In Chapter 2, we proceed to the political context and focus on political solutions in dealing with side effects of industrial modernity. Namely, we track global political actions in fighting climate change and compare it to the national positions regarding environmental politics. We also acknowledge limitations of traditional democratic procedures to fight climate change and following discuss deliberative politics as a possible salvation. Chapter 3, meanwhile, is dedicated to discuss possibilities of Web 2.0 based online communication environments as basis for emerging well-functioning public sphere where deliberative procedures could be successfully exercised. We fall into intriguing scholarly discussions about the potential of the Internet as well-functioning public sphere. Without any purpose to find the best answer we aim to spotlight major aspects causing disagreements among the opposing camps, which we want to check in our empirical analysis. Hence, first three chapters are dedicated to set the theoretical framework of our study. As our research is interdisciplinary, and should be attributed to the studies of political communication, we felt a responsibility to discuss, elaborate, and justify the preselected theoretical approaches, concepts, and processes specific to the scientific field of politics (e.g., deliberative democracy, knowledge and uncertainty politics, decreasing democratic legitimacy, etc.) and communications (e.g., deliberation, risk communication, public sphere online, etc.).

In further chapters, we proceed from theoretical analysis to empirical part of our research. First of all, in Chapter 4 we present our research design, elaborate on major methodological approaches, and explain the course of the empirical analysis including data collection and interpretation. Also, following theoretical assumptions, tentative hypotheses are formulated and elaborated in Chapter 4. Next two chapters are dedicated to the empirical results and verification of tentative hypotheses. While in Chapter 5 we discuss descriptive data, in Chapter 6 we provide with more comprehensive analysis of the results in order to explain the variations of quality of the discussions. In addition, results are reported in comparison to other similar studies in order to draw more comprehensive conclusions. And, of course, the last chapter is dedicated to the conclusions and recommendations. There, we shortly present and

discuss main findings of our research, re-write hypotheses and provide with general practical recommendations, as suggested by our results.

CHAPTER 1

DEBATING CLIMATE CHANGE: SCIENTIFIC APPROACHES AND PUBLIC CONCERNS

In order to explore the quality of global discussions (in contrast to local), we had to choose a topic that is considered to be of great significance worldwide. Climate change happened to be one of the best choices as it is both global – greenhouse gases are emitted by every nation and are rapidly dispersed globally, – and of great urgency – climate scientists[22] constantly remind us that if necessary actions are not taken immediately "climate change could have catastrophic effects on the planet and its people in the relatively near future" (Kenix, 2008: 118). It is well-acknowledged that in order to avoid potentially grave consequences of climate change, the necessary decisions have to be reached globally and implemented locally as soon as possible. However, public discourse on global climate change is much more than just scientific warnings and suggestions. It also questions scientific uncertainties, political decisions, and private ambitions. Due to such multidimensional nature (scientific, political, and business orientated) climate change discourse is both complex and contradictory.

Climate change scientists where the first who brought the topic of climate change to the public agenda: they discovered this phenomenon and started warning people about it. Therefore, we begin this chapter by shortly introducing climate change as a scientific topic and discussing the major problems which climate change scientists are dealing with today. In particular, we focus on climate change causes, consequences, and solutions proposed by scientists. We also approach climate change issue from the perspectives of post-normal science aiming to highlight the major uncertainties and consensus building issues of the climate change research. Subsequently, we discuss the process of democratization of science as a possible solution for climate change science to develop and enhance its legitimacy. Finally, we consider public understanding and perception of the importance of the climate change as the essence of democratization of science.

1.1. Science of climate change

Nobel Prize winner Swedish chemist Swante Arrhenius was the first who raised the possibility of anthropogenic global warming in 1896. Since then, the science of climate change has

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[22] In this dissertation referring to *climate change scientists* we mean scientists from different scientific fields, disciplines, and of specialties (e.g., physicists, astrophysicists, chemists, mathematicians, climatologists among others), who contributed to invention and developments of climate change theories.

received a great interest and dramatically advanced. There is a myriad of scientific articles, monographs, books, and dissertations analyzing causes, consequences, and solutions of the climate change, including works by Callendar, Plass, Lorenz[23] and others. Today we have a strong scientific consensus that climate is changing and this change is related to humans' activities (Seacrest, Kuzelka & Leonard, 2000; Krosnick, Holbrook, & Visser, 2000; Wilson, 2002; Etkin & Ho, 2007). As a consequence, in the First Assessment Report (1990) of the International Panel on Climate Change (IPCC) experts highlighted that "emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases carbon dioxide, methane, chlorofluorocarbons (CFCs) and nitrous oxide" (IPCC, 1990: xi). These atmospheric gases absorb the heat that is radiated from the Earth and trap it inside the atmosphere. As a result, only a small part of this heat is released to the space and the surface of our Planet continues to warm (Wolfson & Schneider, 2002).

Consequences of the climate change are also outrageous. Scientists stress, that if emissions are not significantly reduced within the next few decades, there will be further climate warming and rise of sea level that will result in adverse impacts on human health, natural ecosystems, and the economy. "[G]lobal warming will vary substantially from one geographical region to another, and it will have different effects on night and day, winter and summer, land and sea" (Wolfson & Schneider, 2002: 31). Sooner or later everybody will face consequences of the climate change. Apart from significant changes in climate that includes but is not limited to increased frequency and severity of storms and hurricanes, severe draughts or floods, extreme heat events, rising sea, humanity will also face shortage of water and food and spread of unknown diseases. These adverse events are very likely to have grave political consequences, cause disequilibrium of nations' safety, and sow strife between different countries or continents (Cox, 2013). As a possible solution to ameliorate consequences of the climate change, scientists suggest to immediately cut down greenhouse gas emissions so that global temperature would decrease by 2˚C when compared to preindustrial level. Hence, from scientific point of view, it is clear that the problem is outrageous and requires urgent actions.

However, the IPCC consensus regarding climate change causes, consequences, and solutions is only one side of the story. Another side is – dissensus. There are a lot of disagreements among scholars and climate skeptics that are closely related to the anthropogenic nature of climate change, namely, climate skeptics either totally deny phenomenon of anthropogenic climate change or tend to moderate its extent.

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[23] Guy Stewart Callendar in 1938 was the first to claim that CO2 emitted by humanity traps radiation and keeps it in the atmosphere. Glirbert N. Plas was one of pioneers of the calculation of how solar and infrared radiation affects climate and climate change. Edward Lorenz defined chaotic nature of the climate system and the possibility of sudden climatic shifts.

1.1.1. Scientific consensus and uncertainties

Some scholars used to believe that taking care of our nature is an abstract principle, which is globally accepted and undeniable. In the words of Edmunds and Letey (quoted from Lester, 1997), "like motherhood and apple pie environmental issues are consensus based" (146). However, current case of climate change forces us to reject this thinking. Despite scientific consensus, climate change dubiousness is alive in public sphere as well as reluctance to take the responsibility (especially when economic good have to be donated for environmental health). Of course, doubts regarding scientific consensus of climate change are often related to the limitations of currently used climate change models and algorithms, which seemingly do not help to prevent all errors anymore (in climate change research as well as in other scientific fields). Besides, meager facts available and incomplete data limit scientists' abilities to answer all the questions precisely. These limitations and uncertainties are recognized and acknowledged by scientists themselves. Specifically, experts in their IPCC First Assessments Report (1990) wrote: "[t]here are many uncertainties <…> with regard to the timing, magnitude and regional patterns of climate change" (IPCC, 1990). Such limitations of climate change science are often used as arguments to postpone implementation of the climate change policies and delay the critical actions (Budescu, Broomell & Por, 2009; Etkin & Ho, 2007; Oreskes, 2004; Weber & Stern, 2011). Hence, in turn, the IPCC consensus has led to different policy responses around the World, which in many cases were determined by national politics. This is especially obvious when comparing situation in the US and EU member states. For instance, Germany's position on environmental issues was strong since 1987, when the Green Party got a boost in parliamentary elections. This most probably was related to the Chernobyl's catastrophe followed by a number of chemical accidents along the river Rhine (Grundmann, 2007). Meanwhile, in the US "the power of the IPCC experts <…> has little influence on US climate policy. Instead it was the political agenda that drove US climate change policy. <…> In other words, US scientists play an important role in the IPCC but not in US climate change politics" (Grundmann, 2007: 423-424).

The most frequent arguments of climate change skeptics are related to the causes of the phenomenon of climate change. Critics argue that climate change is cyclic and that it is not related to humans' activities in any way. They believe that change of climate is a normal process. Climate change scientists agree that natural cycles and disturbances in the Earth's climate system can partially account for climate change; however, general warming trends over the last century cannot be explained without invoking human-induced effects. Therefore, neither variations of solar activity, nor peaks and valleys of natural cyclic processes such as El Niño do

not explain extreme variations in temperatures of our planet anymore (King, 2004; Wilson, 2002; Usoskin, Schüssler, Solanki & Mursula, 2004; Lockwood, 2007).

Others also doubt if the consequences of the climate change are truly as disastrous as predicted, suggesting that the amount of warming is not significant and most likely benefits of climate change (e.g., milder climate in northern parts of the World) will outweigh the problems (Etkin & Ho, 2007). The third group of opponents argues that the solutions aimed to abort climate change are too expensive and can significantly hurt global economies (see Chapter 2 for elaboration).

Overall, climate change science has a number of limitations, which raises doubts about scientific consensus on climate change and preclude implementation of the proposed anti-climate change strategies. In such setting we question – are these limitations and uncertainties pronounced symptom of post-normal science? And how should they effectively be tackled and treated in order to effectively fight global climate change?

1.1.2. Diagnosis: post-normal science. Treatment: democratization of science.

Due to all the uncertainties that the science of climate change face, some scholars refer to the climate change research as to post-normal science (Hulme, 2009; Lorenzoni, Pidgeon & O'Connor, 2005; Saloranta, 2001). The concept of post-normal science defines the situation when scientists cannot be completely certain about processes and/or phenomenon that they study, i.e., "facts are uncertain, values in dispute, stakes high, and decisions urgent" (Funtowicz & Ravetz, 1992: 257). Researchers of post-normal science understand and acknowledge that traditional models of scientific investigations are limited and are not able to answer all the questions that societies are facing today (Bakir, 2010; Etkin & Ho, 2007; Boykoff, 2009; de Marchi & Ravetz, 1999). Moreover, scientists refuse to function as major decision-makers. Instead, they increasingly suggest that decisions should be made via conversation and dialogue between politicians, experts, businesses, and general public. In other words, researchers of post-normal science suggest that *democratization of science*[24] is a way out – such opening or pluralization of the science allows other thoughts, observations, and data to make their way into the scientific processes to the betterment of scientific knowledge (Funtowicz & Ravetz, 1993; Carolan, 2006).

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[24] *Democratization of science* is a process aiming to open up for society not only because of public interest but also because of science itself. The democratization of science is based on the belief that community can also contribute to science by bringing new ideas and perspectives. In turn, it is expected that science will become more widely accepted, rapidly adopted, and of greater value to more people. Democratic science is open, transparent, responsible and accountable, independent and based on deliberations (Cribb & Hartomo, 2010).

The essence of democratization of science lies in the belief that the best scientific decisions can be reached in consultancy with citizens. As certain scientific issues concern all of us (e.g., climate change, medical treatment, genetically modified food among others), they also should be discussed openly. Democratization of science first and most importantly refers to what is called *civic science*, which is a broad term encompassing three levels of relationship between scientists and society: (1) science representation based on learning, (2) public participation in science based on dialogue, and (3) democratization of science based on deliberation (Walker & Daniel, 2004).

Retrospectively, we can see that earlier relations between scientists and society were based merely on one-way communication also by some authors described as *deficit models*[25]. Specifically, the major aim of scientists in such settings were to inform, teach, and literate citizens, thus eliminating poor representation of science. Later on, experts realized that one-way communication based relations between scientists and society is not sufficient, because it does not ensure higher citizens' literacy and understanding. Therefore *contextual model*[26] and later on *participatory model*[27] of scientific communication were considered. Publics were encouraged to participate in scientific processes via consensus conferences, participatory technology assessment, citizen juries, public hearings and other more or less interactive activities. However, active citizens' role was very much limited in such participatory meetings and instead fostering dialogue between society and scientists they merely imitated it (Cox, 2013).

A number of shortages of traditional forms of public participation[28] (especially referring to public hearings) can be identifies. Firstly, the major aim of such public participations is to educate and persuade, which is not an appropriate approach for equal debate between citizens and experts. Secondly, traditional forms of public participations are usually too late: the decisions are already made and publics do not actually have any power to influence them. Importantly, Wynne and others (2006) argued that public consultation should be early when science or technology is in its formative stage, so that a diversity of stakeholders and concerned

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[25] *Deficit model* refers to tradition of science communication when experts (often *via* media) communicate to publics aiming mainly to improve public's scientific literacy, filling the gap of knowledge without any attempts for two-way communication (Lewenstein, 2003).

[26] *Contextual models* of science communication acknowledge that social, cultural, and psychological contexts are important in effectively increasing public scientific literacy and knowledge on scientific issues; therefore, instead of spreading information in one-way manner, two-way communication is necessary in order to know the public and their concerns (Lewenstein, 2003).

[27] *Participatory models* of science communication aim to engage public groups into scientific inquiries and policy making (related to scientific issues) through some form of empowerment and political engagement (Lewenstein, 2003).

[28] *Public participation* is a concept describing public's actions related to assistance in decision-making, support for policy implementation, etc. Ideas of public participation lie in the core of democratic ideals – publics must have a right to express their beliefs and attitudes about public issues, which concern them and their life (Stave, 2002; Cox, 2013). In Chapter 3 we discuss concept and forms of public participation in more details.

citizens can have a more meaningful say in matters of ownership, regulation, uses, applications, benefits, and risks. If the public is not provided with possibilities to participate in early stage of decision-making, critics argue, that such treatment of public refers to deficit-model (Wynne, 2006). Thirdly, public participation processes are often conducted in a *decide-announce-defend*[29] way, which limits actual input of public. And finally, public does not have any assurance that its suggestions will be properly discussed and impact outcomes of policy-making (Cox, 2013).

Today scientists face problems that cannot be solved without input by publics. Hence, in this stage, civic science reaches for democratization of science, where scientific problems could be solved in consultancy with civic society based on deliberation. Deliberation is a third and highest level outlining relationships between experts and society. Deliberation can be achieved only if other two levels were successfully reached: (1) if citizens already have necessary information (public scientific literacy is high) and (2) if they choose to participate in the decision making processes together with experts and authorities (Walker & Daniels, 2004). In other words, while in the era of normal science scholarly knowledge was perceived as a common good (it was not questionable) there was no necessity to involve society very closely into the processes of scientific inquiry. However, in the era of post-normal science where uncertainties remain and global risks arise society must have the say and be involved into the decision making about the common future. In this era low level of public's scientific literacy or unwillingness to participate might lead to political or business manipulations over public opinion, e.g., citizens who do not have knowledge about scientific consensus on climate change can be easily misleaded by climate change critics who often represent personal or corporational interests (see Figure 1).

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[29] *Decide–announce–defend* is a practice of scientific or risk communication when experts make decisions alone without consulting with people, and public meetings are used solely to announce and defend decisions thus limiting the role of public. Recently, scholars acknowledged that such communication practices do not lead to long-lasting and widely supported policies (Sander, 2011; Walesh, 1999; McComas, 2001).

Normal science

Science aims for **common good** and **progress**, no uncertainties or risks are seen as a product of scientific inquiry. **People trust** in science although they **do not know much** about it. Scientific communication is based on deficit model and aims to **teach publics** but do not foster two-way communication.

Science is always right , **not questionable** and aims for **common good**. Citizens are welcomed to **participate** and contribute to scientific inquiries. Besides, scientific communication is aiming to **engage society** in order to maintain public trust and support.

Deficit models

Deliberative models

Citizens **do not have enough will and knowledge** to be part of scientific inquiry. Hence, they can be easily **manipulated by politicians, business.** Politicians take their stand and make decisions without consulting society. Scientific communication with society aims **to teach public but not to engage it.**

Uncertainties are acknowledged and managed together. Public trust in science reconstructed by **democratization** of science. Citizens are **literate** and involved in **deliberative processes** and have their say in shaping science politics.

WE ARE HERE

WE SHOUL BE HERE

Post-normal science

Figure 1: *Citizens' involvement in scientific processes*

Although the aim to democratize science is very challenging, mainly because of public's readiness to commit and willingness to act, but it can provide a solution for a number of problems. First, and most importantly, it probably would help to deal with scientific uncertainties (in common discussions decisions about how to deal with these uncertainties could be set) and global risks (if and how these risks could be minimized or managed). Besides, democratization of science is also a possible solution to keep legitimacy of science and scientists, which at the moment are experiencing declines in relation to science commercialization, privatization, and marketization.

1.1.3. *Mode 2* knowledge production and side effects of commercialization of science

Traditionally, scientific knowledge was generated within a disciplinary, primarily cognitive, context and perceived as a *common good* as it aimed for social progress and wellbeing. This was also known as *Mode 1* knowledge. Today, scientific knowledge and scientific inquiry (including planning scientific project, performing it, and implementing the results of it) can be hardly defined within one discipline. Instead, scientific knowledge is generated in rather broad and interdisciplinary social, economic, political, and cultural contexts (Gibbons, et at., 1994). Therefore, it is sometimes hard to find the dividing line between science and industry, between

public interest and private ambitions, and between *common good* and *private good*. In other words, scientific research is increasingly nestled down in private patronage (Bauer, 2008) and scientific knowledge is becoming a commodity, which is produced and sold as any other good.

The primary purposes of science commercialization are based on good intentions, such as increased research funding, enhanced application of scientific investigations, and expansion of social networks beyond the scientific community. However, scholars and society raise questions regarding the quality of commercialized science and doubt true intentions of such research. Furthermore, a number of scholars also argue that commercialized science is highly vulnerable to scientific biases. Namely, basic principles of marketing, which goes hand in hand with commercialization, does not protect society from biased or misleading information related to one or another product. Moreover, Krimsky in his book *Science in the Private Interest* (2004) argued that influx of private money into the universities leads to conflicts of interest and possibly distracts academia from pursuing its true social purposes.

Citizens also recognize negative aspects of science commercialization. For instance, more than a half of EU citizens (58%) in 2010 claimed that due to increasing commercialization and privatization of science, they did not longer expect scientists to tell the truth and only 16 percent of respondents disagreed with this statement[30] (Eurobarometer, 2010). Such surveys contribute to the presumptions that commercialization, privatization, and marketization of science question legitimacy and reduce confidence in science.

On the other hand, if we consider general picture and shifting trends in political and social life, we have to accept that science is still very highly appreciated by society when compared to other institutions. For instance, a review by Pew Research Center[31] (2009) highlighted that scientists were very highly rated when compared with other professions, as only military members and teachers were recognized as contributing more to the well-being of society than scientists (Pew Review, 2009). In addition to this review, Gauchat (2012) has recently summarized that public trust in science has not declined since the 1970s.

1.2. Public's readiness to fight climate change: an informed citizenry

Processes of democratization of science do not provide with a simple solution how to overcome the major limitations of post-normal science such as scientific uncertainties or decreasing

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[30] The research we refer to was requested by the Research Directorate-General and coordinated by the Directorate-General for Communication (Research and Speechwriting Unit). Fieldwork was performed in the EU Member States between January 2010 and February 2010 and included respondents aged 15 years and over.
[31] *Pew Research Center* is a nonpartisan organization that conducts public opinion polling, demographic research, media content analysis and other empirical social science research. More information about Pew Research Center at http://www.pewresearch.org/

legitimacy; instead, it challenges society and its capabilities to act as a part of scientific inquiry (Bäckstrand, 2003). Hence, democratization of science requires society and individual citizens to demonstrate proper level of scientific literacy and willingness to participate (see Figure 1). High scientific literacy is a major characteristic, which informed citizenry is expected to demonstrate. In other words, high level of public's scientific literacy implies informed citizenry – society which is "literate enough about the nature of the debate and the underlying science to have <…> [their] views counted in the political process" (Wolfson & Schneider, 2002: 3). The concept of *scientific literacy*[32] as we use it here refers not merely to the minimal knowledge about science that publics should have in order to adapt and effectively act in society (early definition of scientific literacy, see Maienschein et al., 1999; Lewenstein, 2003). Instead, it is now widely-accepted that scientific literacy encompasses four major groups of knowledge: understanding of basic principles of science and scientific inquiry; acknowledging position of scientists on one or another issue; understanding of major concepts and processes of the certain scientific phenomenon; and identifying personal input in order to solve these issues (Miller, 1998; Wolfson & Schneider, 2002; Ungar, 2000; Burns, O'Connor & Stocklmayer, 2003). If we refer to literate citizenry regarding climate change issue, we would expect that, first, literate citizen understands the *basic principles of science and scientific inquiry*[33] and "appreciate that climate science is grounded in basic theories that are as close as we can get to scientific "truth" while recognizing that the projections of climate models are less certain but nevertheless carry a subjective but still expert-determined probability of being reasonably accurate" (Wolfson & Schneider, 2002: 49). Second, informed citizen knows that there is a *scientific consensus* regarding climate change and that stories about bipolar scientific positions on the issue are incorrect and therefore misleading. Third, informed citizen is expected to *understand the major processes and concepts* used when discussing climate change (e.g., climate change, global

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[32] In this dissertation, the concept of *scientific literacy* is a central concept defining the level of public knowledge regarding climate change. In other parts of this thesis, we also use other close terms, such as *public understanding of science* and *public awareness of science*. In order to avoid misunderstandings these two concepts require definitions. Hence, the term *public understanding of science* in this thesis is a narrower concept than scientific literacy as it implies required knowledge about scientific content (scientific concepts), scientific enquiry (scientific processes), and scientific impact on society (social factors) (for more see Burns, O'Connor & Stocklmayer, 2003; Millar, 1996). Meanwhile, concept of *public awareness of science* is a set of positive attitudes toward science (and technology) that are evidenced by a series of skills and behavioral intentions (Gilbert, Stocklmayer & Garnett, 1999).

[33] According to American *National Science Education Standards* (by National Research Council (NRC), 1996) scientific inquiry is "a multifaceted activity that involves making observations; posing questions; examining books and other sources of information to see what is already known; planning investigations; reviewing what is already known in light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating results. Inquiry requires identification of assumptions, use of critical and logical thinking, and consideration of alternative explanations" (23). Hence, scientific inquiry is an entirety of scientific activities, which characterizes research projects carried by scientists. Today scientific inquiry is not area purely managed by scientists; democratization of science requires that publics would have their say in the processes of scientific inquiry.

warming, ozone depletion, green-house gasses). Finally, s/he is aware of *personal input* to climate change and takes individual responsibility to fight it (Wolfson & Schneider, 2002; Ungar, 2000).

Although scientists agree that scientific literacy is essential for democratization of science, they also doubt if it is realistic to expect the society to be literate enough to participate in the decision making processes together with scientists, politicians, and other experts (Fishkin & Laslett, 2008; Abelson et al., 2003; Milner, 2002). Many scientists are optimistic, while most are not. It is thought that the best way to evaluate the basic level of scientific literacy of public is to review recent opinion polls – this is what we discuss next.

1.2.1. Changing trends of scientific literacy

Early studies from 1990s reported that only approximately 12 percent of Americans and 5 percent of Europeans were well informed and scientifically literate, while 25 percent of Americans and 22 percent of Europeans demonstrated moderate level of scientific literacy (Miller & Pardo, 2003). The trends of poor scientific literacy were also reported a decade later. For example, Ungar (2000) found that public performed poorly on basic requirements of literate citizenry, since only "between five and 15 percent of the public qualify as scientific literate" (302). The most recent data suggest that level of public scientific literacy is slowly improving. However, results of various scientific literacy surveys of recent days are somehow disappointing and promising at the same time. Hence, in following paragraphs we review some more recent data from opinion polls evaluating four major components of scientific literacy of citizens, namely, knowledge of scientific inquiry, appreciation of scientific consensus on climate change, understanding of climate change (causes, consequences, and solutions), and knowledge about personal input to climate change.

Public's knowledge on scientific inquiry: A recent survey performed by American National Science Board (NSB) found that in 2010 approximately 42 percent of Americans actually understood scientific inquiry and basics of scientific experiments (as a form of scientific inquiry) (NSB, 2012). The study concludes that public's knowledge about scientific inquiry is increasing, but nevertheless remains low. The same study also noted that "levels of factual knowledge of science in the US are comparable to those in EU member states and appear to be higher than those in Japan, China, or Russia" (NSB, 2012: 74) implying variability of scientific knowledge across countries. Indeed, the proportion of people holding academic degrees is one of the greatest in the US and EU member states; therefore, one might expect that the level of public knowledge on scientific inquiry will be respectively higher when compared to other parts

of the World where people often have to struggle to receive elementary education. Indeed, researches confirm that knowledge of science is positively related to formal education (NSB, 2012). So, one might wonder about scientific literacy in developing countries such as Africa, Asia, or South America, where according to the UNESCO information around 8 percent of adults still are illiterate and in some parts this percentage is as high as 50 percent (e.g., in Benin, Burkina Faso, Chad, and Ethiopia[34]). To the best of our knowledge, the level of scientific literacy regarding climate change has not been studies in these developing countries, but it is very much likely that scientific literacy in these states would hardly be as high as in Europe in 1990s. Overall, although we may observe that public's knowledge in scientific inquiry is slightly increasing in the Western world but it still remains very problematic in other parts of the World.

Acknowledging scientific consensus and dealing with public polarization: Despite of the overwhelming scientific evidence supporting that climate change is caused by human activities, systematic opinion polls reveal that among global public there is no agreement about the existence of anthropogenic climate change yet (Griggs & Kestin, 2011). Actually, scientists and nonscientists now differ sharply in acceptance of IPCC consensus: while scientists finally acknowledged that climate change has to be considered as a serious problem of our days, a big part of global public still deny that anthropogenic climate change exists. According to the survey performed by the Pew Research Center (2009), 84 percent of scientists agreed that the Earth is getting warmer because of humans' activity while only 49 percent of nonscientists in this US representative sample shared this view. One year later Leiserowitz with colleagues (2010) reported similar results from another study performed in the US. They found that 19 percent of Americans denied climate change in general and only 50 percent believed that climate change is happening and it is mostly caused by human activities. Meanwhile, European opinion polls report that public concerns with climate change issues are declining. For instance, according to British Broadcasting Corporation (BBC) opinions poll[35] the number of people in UK who think climate change is taking place declined from 83 percent in November 2009 to 75 percent in February 2010. These findings suggest that big proportion of citizens still do no acknowledge scientific consensus on climate change. Hence, in this sense public demonstrate moderate level of scientific literacy, which can partially account for under-recognition of climate change. It is very likely that growing gap between how scientists and publics understand climate change will result in major problems while dealing with climate change issues (e.g., difficulties to make necessary political decisions or to implement them).

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[34] UNESCO information, see online at: www.unesco.org
[35] A random sample of 1,001 adults aged 18+ was interviewed by telephone between 3rd and 4th of February 2010 across UK. Poll performed by Populus – a member of the British Polling Council. More information about the survey and about Populus can be found online at www.populus.co.uk

Distinguishing between the major concepts of climate change science: As discussed earlier, literate citizens are expected to understand the major processes and concepts of climate change. However, although more and more people in the Western world learn about climate change, they still fail to make proper connections between causes, consequences, and solutions of the phenomenon (Stamm, Clark & Eblacas, 2000; Pew Review, 2009; Lorenzoni & Pidgeon, 2006). Indeed, Americans are rather confused about the causes of climate change. In particular, in the study by Leiserowitz (2010) the majority of respondents incorrectly believed that the hole in the ozone layer, toxic wastes, aerosol spray cans, volcanic eruptions, nuclear power plants, the sun, and acid rain contribute to global warming (Leiserowitz, 2010). Certain fluster regarding consequences and solutions for climate change also exist. Although the majority of respondents correctly indicated that global warming will cause some places to get wetter, while others will get drier, more than a half incorrectly believed that global warming will cause temperatures to increase by roughly the same amount in all countries[36]. Similarly, most Americans knew that renewable energy, planting trees, reduction of tropical deforestation, switching from gasoline to electric cars, driving less and increasing use of public transportation, etc. are the major solutions to fight climate change; however, a large majority of Americans still incorrectly thought that reducing toxic waste or banning aerosol spray cans would reduce global warming[37]. The latter misunderstanding of climate change contributes to scientific propositions that people tend to confuse climate change with ozone hole, which seems to be imprinted in consciousness (Ungar, 2000). Here we proceed to the second aspect of understanding the major processes and concepts of climate change that is the ability to understand and distinguish between different concepts related to environmental science.

A number of previous studies reported that there are some misunderstandings among citizens related to certain climate change terminology. As mentioned previously, people tend to confuse global warming with issues of ozone depletion or air pollution (Bostrom, Morgan, Fishhoff & Read, 1994; Stamm et al., 2000). Besides, the terms *climate change* and *global warming* frequently are used interchangeably. However, while global warming defines rising temperature of the Earth that we are facing, the term climate change besides global warming also includes other aspects of environmental changes, such as increasing frequencies and volumes of storms and hurricanes, changes in precipitation, and others[38] (Schneider, Rosencranz

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[36] According to scientists some parts of the World are projected to see larger temperature increases than the global average, in particular, temperature in the poles is expected to increase more than compared to other places (NRC, 2010).

[37] Toxic waste and aerosol spray cans are related to ozone-layer reduction but it is not a direct cause of climate change.

[38] Some studies also state that although often used as synonyms these two terms have different effect on people's perception of environmental hazards. For instance, Whitmarsh (2009) reported that people knew more about global

& Niles, 2002). Furthermore, there is some confusion regarding the term of climate change in official documents. For example, while IPCC Working Group I (IPCC, 1990) use the term of climate change to refer to any change in climate over time whether due to natural variability or as a result of human activity; UNFCCC defines the term as a change of climate "which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (Houghton et al., 2001). In this dissertation we perceive the term of climate change as having negative anthropogenic causes *per se,* hence, when we use the term we refer to humans' activities, which have to be considered while fighting climate change. Moreover, although in some chapters and sections we use the term global warming instead of climate change (especially when quoting other scholars or studies), we do this acknowledging the differences between these two terms.

Recognizing personal responsibilities: Finally, literate citizen is expected to understand his/her personal input and responsibility to fight climate change. However, previous surveys reported that less than half of Europeans saw their personal responsibility in climate change. Specifically, only a fifth (21%) of citizens considered that they had a personal responsibility while 23 percent responded that there is collective responsibility for tackling climate change involving all actors, including individuals (Eurobarometer, 2011).

Hence, it seems that in order to foster literate citizenry much have to be done in future because citizens do lack knowledge on climate change, there is no publics' acknowledgement of scientific consensus, basic climate change terms are mixed and misinterpreted, and personal responsibility in fighting climate change is not recognized properly. Scholars discuss a number of physical, psychological, and social factors, which might determine such situation (Weber & Stern, 2011). First, climate change is difficult to understand for nonscientists because the process of climate change represents different perception of time (present *versus* future) and space (local *versus* global). To effectively fight with climate change, the society is expected to be future oriented, which means it has to be more concerned about future generations' ability to live in this Planet. However, scientists agree that it might be difficult to change public orientation from self- or wealth-oriented to future oriented. Secondly, people living in certain localities (e.g., in industrialized Western World) do not feel the consequences of climate change yet; therefore, it is hard to convince them that climate change is happening. Unlike heat waves or hurricanes that can directly affect local societies and their lives, climate change is a multifaceted phenomenon that is happening globally and slowly (Weber & Stern, 2011: 317).

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warming than about climate change. Besides, global warming was more often believed to have human causes while climate change was more frequently related with natural causes and a range of impacts (Whitmarsh, 2009).

Therefore, lack of immediate symptoms of climate change subsequently contributes to the under-estimation of its importance. Besides, "[s]cientific predictions that the average temperature may rise two to three degrees Celcius over the course of the next 50 years do not appear overly threatening to North Americans who often experience far larger swings in temperature over the course of a single day" (Ungar, 2000: 73). Such common approach suggests both temporal and spatial misperception of the impeding impact of climate change.

Secondly, scholars and lay public have different ways of understanding scientific phenomenon in general. Scientific understanding is based on systematic observations and measurements, calculations based on special models and theories, while non-scientists' ways of understanding climate change is very much based on personal experience, *simple mental models*, and worldviews (Weber & Stern, 2011; Sterman & Sweeney, 2006). Personal experience is a powerful tool to know your environment and to adapt to it. However, certain processes, such as climate change, are not directly expressed by the environment yet in many places and therefore cannot be directly experienced by society. As Ungar (2000) noticed, "climate change <…> is not readily tied to concrete events capable of operating as a beacon or sustaining a hot crisis. <…> While extreme weather events serve as the principle public "sign" of climate change, they do not make good candidates for attention-commanding beacons" (303). Simple mental models are also very limited. Although, they can help to comprehend complex phenomena, they also might cause major misunderstandings, because while trying understanding people often compare unknown phenomenon with familiar ones. Therefore, climate change today is often confused with ozone hole or with pollution, which are completely different phenomena in terms of causes and consequences (Weber & Stern, 2011). Finally, worldview and personal values can also influence public understanding of climate change: human associative processing system is evolutionarily older and operates quickly and automatically. It maps experienced uncertain and adverse aspects of the environment into affective responses (e.g., fear, dread, anxiety) and thus represents risk as a feeling (Lewenstein, 2003). It is hard to understand climate change only by learning from personal experience, using simple mental models, and applying individual worldview. Therefore, secondary sources of information (especially media) are essential in public understanding of climate change. Hence, the third aspect is a social factor, to which we come back in Chapter 3.

Overall, we might conclude that general public literacy on science is moderate and needs to be improved (in empirical part of this research we will investigate if current level of public literacy is enough for quality public discussions). In addition, it should be clarified that we are basically discussing scientific literacy of citizens from the Western and developed world, and developing countries are left aside as there is no much studies questioning scientific literacy

among there. However, considering social, political, economic, and cultural characteristics of these countries it might be assumed that scientific knowledge among publics in these regions is rather low. On the other hand, in developing countries, the lack of knowledge about scientific premises of climate change in public perception is possibly replaced by direct experiences related to changing conditions of local climate, because developing countries due to their geographic positions are the first ones to be hit by climate change. Hence, while publics of the Western world are still doubting and discussing, developing countries are forced to act.

1.2.2. Public perceptions of climate change risks: *crises of confidence*

For a long time scholars believed that better scientific literacy implies higher public concerns[39] about the scientific issues and therefore higher public participation. *Public concerns* about risk issues are indeed essential for democratization of science of climate change because they define the position that citizen will take in public debate – active or passive. In other words, if citizen is literate but not concerned, it is more likely that s/he will not participate in the debate nor take any other actions, because s/he simply does not care about the problem. However, some recent studies revealed that literate citizenry does not necessarily lead to the greater public concerns regarding the issue. Instead, citizens with higher science literacy and therefore technical reasoning capacity constituted a group in which polarization was the greatest (Gallup, 2011; Kahan et al., 2012). Hence, aside from scientific literacy, there should be other explanations determining the level of public concerns on climate change risks (see Figure 2). We find two explanations for that. First, personal factors such as values, experience, and type of personality or political orientation might determine if person is concerned with the issue or not. Secondly, external factors including media, environmental conditions, and economic situation also play significant role in determining if the issue will be perceived as important.

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[39] In this thesis we perceive level of public concern about climate change as a major measure for public perception of climate change risks.
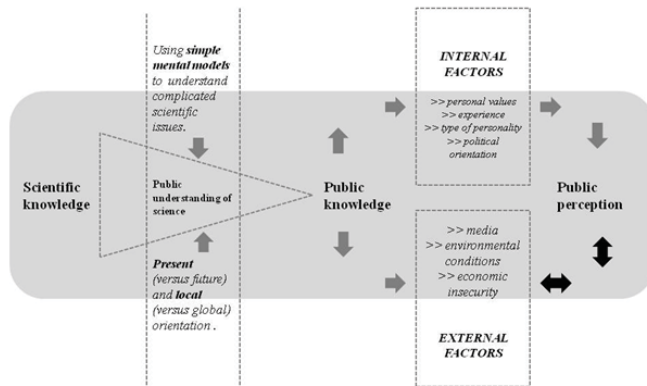
Figure 2: **From scientific knowledge to public perception of science**

When the information about certain risks reaches a citizen for the first time, the perception of this risk starts to develop in a citizen's mind. This process is called the *primal risk perception*. This primal risk perception of course is based on information (people need to know about risks in order to perceive them), and is also largely determined by other internal characteristics of a citizen, such as, personal values (theory of heuristics, see Tversky & Kahneman, 1974), personal experience (psychometric model, see Fischhoff et al., 1978), type of personality (cultural theory, see Douglas & Wildavsky, 1982), political orientation (politicization of climate change, Dunlap & McCright, 2008, 2011) among others. For instance, liberals are more likely to acknowledge scientific consensus on climate change than conservatives (McCright & Dunlap, 2011). Hence, primal public perception of climate change risks is determined not only by the information that publics have but also by other personal characteristics. However, this primal public perception of risks is not consistent value and it can vary, e.g., increase or decrease.

Lately a significant number of opinion polls, surveys, and scientific studies reported decreasing trends in public concerns about climate change. While, 66 percent of Americans expressed their concerns about climate change in 2008, this number decreased to 55 percent in 2010, and to 51 percent in 2011 (Leiserowitz, 2010; Gallup, 2011). Ratter, Philipp, and von Storch (2012) in their most recent study summarized up-to-date data from other countries including Canada, Australia, New Zealand, and Great Britain and concluded that "recent decline in attention and concern <…> about climate change is [not specific to the US publics only, but instead it is a] <..> part of a broader pattern of general decline [in public concern in climate change] in many countries" (5). Some scholars and media coined this phenomenon as a *crisis of confidence* (Scruggs & Benegal, 2012). A number of explanations exist regarding this crisis of confidence. While primal public perception of risks is related to personal characteristics,

variation of perception in society can be explained by a number of external conditions. For instance, some scholars traditionally accuse biased media coverage, some points to changing environmental conditions, and Scruggs and Benegal (2012) in their most recent paper argues that economic insecurity is the major cause of decline of public concerns in climate change.

Biased media coverage: Media's effect on public understanding of climate change[40] is unquestionable. According to the theories of agenda setting, *framing and priming* (we will elaborate on this more in Chapter 3), media has a great impact on what and how people think (McCombs & Shaw, 1972; Entman, 1993; Goffman, 1974; Scruggs & Benegal, 2012; we come back to this later in Chapter 3). Since media is often blamed for being biased, publishing misleading or incomplete information, especially reporting science, it is possible that it is also guilty for declining public concerns about climate change. Public opinion research also suggests, "that people with the least grounded opinions are the most susceptible to fluctuating media information" (Zaller (1992) quoted from Scruggs & Benegal, 2012: 508). However, recent opinion polls also report that polarization about climate change is most evident among individuals with the highest level of education who are expected to be the most strongly opinionated. Hence, media coverage may not be the major explanation for recent declines in public concerns about climate change.

Extreme weather conditions: Previous research indicated that severe weather events encourage publics' concerns about the climate change (Griggs & Kestin, 2011; Donner & McDaniels, 2013). This can be easily explained by the impact of simple mental models, which are used by citizens to better understand complicated phenomenon. In other words, people use familiar attributes, such as severe weather events (storms, hurricanes, heat waves, floods, etc.) to explain unfamiliar hazards, such as climate change (Weber & Stern, 2011; Scruggs & Benegal, 2012). However, if we follow this approach, it can be assumed that as there is a decline in public concerns about the climate change during the past decade, there should be a decline in extreme weather events during the same period of time. Yet, this is not the case, since natural disasters, such as Hurricane Katrina in 2005 in the US, Hurricane Sandy in 2012 in the US, Floods in Pakistan in 2010, severe droughts in India in 2009 just to name a few, increased in frequency and severity in the past decade[41] (IPCC, 2007). Hence, although extreme weather events might be related to increased public concerns on climate change in a short run, it does not seem that

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[40] The term of *public understanding* of climate change is close to another term we use – *public understanding of science*. We elaborated that public understanding of science implies required knowledge about scientific content, scientific enquiry, and scientific impact on society. Similarly, term of public understanding of science not only involves knowledge of physical processes of climate change (scientific content and scientific inquiry), but also encompasses wider issues concerning the relation between society and nature (impact on society) (Buckeley, 2000).
[41] In the increase in frequency of tropical storms and major hurricanes is obvious. While in the period between 1850 and 1990 there was around 10 tropical storms (including about 5 hurricanes) in average per year, in the period between 1998-2007 this number increased to 15 tropical storms (including about 8 hurricanes) (IPCC, 2007).

this is the main reason of steady and permanent decrease in public's concerns about climate change.

　　　Economic insecurity and Great Recession: For many countries as well as for citizens the costs to fight climate change are too high, especially in the context of global economics moving downhill. Hence, many countries as well as citizen choose to ignore or postpone the actions related to climate change. Scruggs and Benegal (2012) argue that recent economic recession is the best and the most likely explanation for decreased public concerns about climate change. There are previous researches arguing that in economically difficult period people tend to focus their attention to impeding economical issues that are directly related to their well-being at the present moment and choose to ignore more global and future-directed problems (Grossman & Krueger, 1995; Boyce, 2002; Liu, 2009; Guber, 2003). Scruggs and Benegal (2012) justified this proposition and noted that, "it seems probable that climate change opinion will rebound as the economy, and more specifically the job situation, improves" (508).

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Overall climate change is a very complicated and controversial topic that challenges traditional scientific methods and theories, encourages new forms of scientific inquiry available to public, and requires high scientific literacy and consideration of citizens. Flurry to fight climate change has just begun, at least in a theoretical level – scientific consensus has been reached, necessity of democratization of climate change science has been acknowledged, and major problems related to public participation have been identified. Hence, now it is time for political and public actions. Besides, public actions are most expected and welcomed, as via processes of democratization of science public obtain new powers – to participate in scientific inquiry, to set scientific agenda, and to influence final decisions made by scientists and other experts. In the following chapters we will come back to empowerment of citizens a number of times as a recent re-distribution of power among scientists, politicians, media, and society is a major factor to question public's role in global decisions. Presuming that quality of discussions can be highly dependable on knowledge and concerns participants have, it was very important to understand how literate citizenry can be established.

CHAPTER 2

DEALING WITH THE SIDE EFFECTS OF THE INDUSTRIAL MODERNITY: POLITICAL SOLUTIONS

Modern science, new technologies, quick global economic growth, and development are hallmarks of industrial modernity. Aside from progress, these industrial achievements also cause major side effects, such as climate change that require urgent global actions. The period when it was recognized that science causes side effects (aside from progress) that have to be considered by scientists, politicians, and society, is known under the name of *reflexive modernization* (in Beck's terms)*. This period signifies shift from the *first* or *industrial modernity* to the *second modernity* of *sustainable development* (Beck, Giddens & Lash, 1994). The political priorities in the second modernity are highlighted by the shift from economical growth and progress to the struggle with the global risks and uncertainties. While local political and public initiatives remain important in this struggle, the overall success of fighting these side effects depends on how effectively actions between countries are coordinated and managed globally. Hence, political globalization is expected to provide with critical solutions necessary to effectively solve climate change issues through (1) intergovernmental agreements aimed towards global and local targets, (2) monitoring and coordinating trends of environmental change, and (3) fostering local pro-environmental actions (Martel, 2010). However, the effectiveness of political fight against climate change remains questionable as long as major actors choose to take wait-and-see position and prioritize economic growth over ecological health. Such approach of political organizations also hampers global discussions on climate change, as agreements cannot be reached while countries position conflicting values and are not ready to renounce them.

Many theorists suggest that, in order to foster global political decisions on climate change, closer interactions between society and politicians are needed that can be carried out via different public participative or deliberative activities (e.g., Lee et al., 2012; Dryzek, 2002). Public participation as a mechanism aiming to involve the lay public or representatives in decision-making procedures can be exercised via legitimate forms (such as voting or signing petitions) and resistance based forms (e.g., protests, demonstrations, etc.) (Beierle & Cayford, 2002). In contrast to traditional forms of public participation, deliberative practices refer to harmonization of relation between society and politics that are based not on resistance or duty, but on willingness to act together for the common good. In other words, praxis of strategic bargaining has to be supplemented with deliberative elements. There will always be strategic

bargaining based on power, but also there is a need for deliberation based on the force of the better argument (for more elaboration on political power see Chapter 3).

2.1. Politics of uncertainty: to act urgently or to wait-and-see?

While *politics of knowledge*[42] refers to political decisions based on precise scientific calculations; politics of uncertainty implies that scientific knowledge is limited, and therefore failures and accidents are possible even when considering the most comprehensive up-to-date data and consulting elite scholars (Power, 2004; Thompson, 2008). Some scientists even argue that post-normal science instead of narrowing political uncertainties is only able to better characterize or widen them (Leggett, 2011).

Awareness that science produces not merely knowledge but also uncertainties implies that politics cannot blindly follow scientific expertise and that additional cautiousness is needed when interpreting scientific facts in order to avoid disasters. In such a setting, two major political scenarios concerned with dealing with climate change can be observed in modern politics: *proactive scenario* and *passive scenario*. Advocates of the proactive scenario argue that climate change is an urgent and critical issue requiring immediate actions because any delay might have outrageous consequences. Passive position, meanwhile, is based on beliefs that costly actions aiming to reduce greenhouse gas emissions should be deferred because of enormous uncertainties about the risks of climate change, and mitigation policies can be implemented only when (and if) climate change is undeniable. These two different approaches of countries' position towards the same issue result to the global *political polarization*. In such context of polarized politics, the global political consensus regarding climate change is hard (if possible at all) to set.

2.1.1. Political polarization

It is acknowledged that EU plays a leading role in global climate change political arena (Gupta & Grubb, 2000; Schreurs & Tiberghien, 2007). EU member countries set an example how to follow green-house gas emission targets, and achieve good results. In 1998 EU-15 signed the Kyoto Protocol (UNFCCC, 1997) and took a commitment to reduce overall emissions by EU member countries in 2012 by 8 percent below the emission levels of 1990s. New EU member states that joined the EU after 1998 also joined the agreement and took the responsibility to

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[42] According to Stehrn (2005), politics of knowledge recognize that the social role of knowledge is important "to generate rules and enforce sanctions pertaining to relevant actors and organizations, to affix certain attributes (such as property restrictions) to knowledge, and likely the most controversial strategy to restrict the application of new knowledge and technical artifacts" (6).

adhere with Kyoto protocol for their emissions. Emissions' monitoring data indicate that EU-15 countries and new member states were over-achieving Kyoto protocol targets in 2010 since overall green-house gas emissions from all 27 EU member states were 15 percent below the level of 1990s (EEA, 2011). Besides, recently EU has also made unilateral commitment to reduce overall greenhouse gas emissions by 20 percent when compared to 1990 levels by 2020 (EC, 2010). Furthermore, this commitment also included the reduction of greenhouse emission by 30 percent, but only if other major economies agree to undertake their fair share of a global emissions reduction effort.

To date, a total of 191 states, including EU-27, have signed and ratified the Kyoto Protocol and have taken proactive position in order to adhere with the Protocol. However, a number of other governments still take wait-and-see position. For instance, although the US under Clinton's Administration has signed the Protocol in 1998 but it was never ratified. Meanwhile, Canada withdrew from the Protocol in 2011. Afghanistan, Andorra, and South Sudan are among the UN nations that did not ratify the Protocol (latest information about the status of ratification of Kyoto Protocol can be retrieved from official UNFCCC webpage www.unfccc.int).

American policy-makers for a long time preferred wait-and-see position delaying proactive actions to reduce greenhouse emission. Furthermore, despite of being one of the World's largest emitters of greenhouse gases, the US repudiates the challenge of anthropogenic climate change (Boykoff, 2008; Antilla, 2005; Rabe, 2007). Instead, the US have chosen to increase investment into climate change investigations assuming that "scientific research will yield more certainty about climate change that would help make better policy decisions, and yield answers in a timeframe consistent with making effective policy decisions" (Leggett, 2011: 5). The stagnation in the US climate change politics was largely determined by the *Resolution 98* (Senate Committee on Foreign Relations, 1997), which was approved by the US Senate in 1997 and banned the US to sign any international agreements related to green-house gas emissions if there will be no emissions targets for developing countries. During the presidency of George W. Bush (2001-2009) climate change negotiations were highly ignored in national level, apart from several state based initiatives. As a result, for now, the US is the second largest (after China) emitter of CO2 and demonstrates one of the highest levels of emissions per capita (EPA, 2012; Parker, Blodget & Yacobucci, 2011; Dutt & Gonzalez, 2011; Sterman, 2008; Sterman & Sweeney, 2002, 2007). However, after Obama was inaugurated as a President of the US in January 2009, the country started to pursue more cooperative multilateral approach to climate negotiations (Cristoff, 2010).

Global political polarization might cause the major failures in global deliberations as well as block decision-making processes. The COP15, which we selected as a case for our empirical study, is an example of negative sequela of global polarization that demonstrates that even in the most critical moments crucial decisions could not be reached because political parties put their national interests over the global wellbeing.

2.1.2. COP15: much expected – little achieved

The COP15 conference was expected to be one of the most influential environmental event history has ever witnessed. It brought together over 10 thousand representatives from 190 countries, including 120 heads of state and government, to deliberate on climate change and to come-up with binding agreements obliging nations to control future green-house gas emissions to the level which would prevent the world from heating (Blühdorn, 2011).

The road towards the COP15 was very promising. A number of circumstances invited politicians and global society for the action. Specifically, in 2006 Al Gore's documentary *An Inconvenient Truth* was released and invited public attention to rethink climate change causes, consequences, and solutions (Nolan, 2010). In the same year, British Government released the *Stern Review* (Stern, 2007), which recognized climate change effects on global economics: "[r]eview estimate[d] that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more" (Stern, 2007: vi). In addition, *The Fourth Assessment Report* of IPCC was published in 2007 that highlighted that severe global warming is undeniable and mostly caused by anthropogenic greenhouse gasses (IPCC, 2007, 2007a, 2007b, 2007c). The pressure for new global climate deal was also reinforced by the expiration date of the Kyoto Protocol in 2012.

> "[i]t seemed that opposition to a fair, binding and effective deal was very limited, centered around a small, but very visible, group of climate change skeptics and political figures who had no belief in the UN process. Industry leaders, civil society organizations and leading experts from both the natural and the political and economic sciences were behind the politicians. The best evidence of high expectations was that the largest gathering ever of heads of state outside the UN Headquarters – 122 – had declared that they would take part in the COP. Prime ministers and presidents don't usually attend meetings that risk failing" (Meilstrup, 2010: 73).

However, neither public hopes for binding deal, neither thousands of representatives at the Bella Center, nor predictions of elite scholars did not lead the Copenhagen meeting towards the successful outcomes. As the meeting progressed, any kind of agreement seemed to be more and more remote (Meilstrup, 2010). In fact, towards the end the meeting turned into big

diplomatic chaos as there was no agreement between developed and developing countries (Renne, 2010). In particular, China, India and other quickly developing economies asserted their own policy priorities (Spak, 2010) and neither Europe nor other political leaders of the Western world, including the US, were able to put global environmental health over local economic wellbeing. Besides, the discussions on financial and economic matters were very much burdened by the collapse of the international financial system in 2008 and the economic recession (Christoff, 2010). Probably the most dramatic turn in the discussions was caused by the leak of the draft proposal of the *Copenhagen treaty* on the second day of the COP15, when British *The Guardian* published a draft of the Copenhagen treaty proposal by the Danish government that included unknown developed states and the document was dated back to November 27, 2009 (Christoff, 2010; Meilstrup, 2010).

Although the *Pre-Copenhagen momentum* was lost, at the end of the conference the majority of the governments did sign the *Copenhagen Accord*[43], a document that was much weaker than the original Copenhagen treaty proposal and did not set any binding targets for the emission (see COP, 2009). Hence, at the end of the COP15 the Kyoto Protocol (UNFCCC, 1998) was not replaced by a new binding document and the global political actions were not set. In turn, global community dubbed the COP15 *Hopenhagen* or *Flopenhagen*[44].

Poor outcomes of the COP15 suggest that scientific uncertainties promote political polarization and in turn slow down global initiatives to fight climate change. However, it is more than just scientific and political uncertainties. As it might be anticipated, another major caveat is related to the *global* nature of the issue. As we have already seen *global* political decisions are very hard to reach. Furthermore, the question remains whether reached global political decisions are easily and successfully implemented in national and local levels? Hence, challenges of the harmonization of local and global political, economic, and cultural dimensions will be addressed in the following sections.

2.2. Fighting climate change: challenging global political institutions

When dealing with the climate change as a political, cultural (scientific), and economic issue we must acknowledge the nexus of local and global dimensions. In other words, global agreements

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[43] Copenhagen Accord provides a framework for states to register new national mitigation targets and actions, moves towards a new regime for monitoring, reporting and verifying national actions, and contains new commitments to fund mitigation and adaptation actions in developing countries.

[44] The prefix *flop-* refers to failure or collapse of the COP15. COP15 started with high global hopes and was expected to significantly contribute to improvement of global environmental health. (Sage, 2010; Cristoff, 2010). However, despite of high-hopes the majority of citizens were disappointed with the outcomes of the COP15 summit and referred to the Copenhagen summit as to a severe failure, leading the World to a profound environmental political crisis (Blühdorn, 2011).

do not have any value if they are not implemented locally; and *vice versa*, random and uncoordinated local actions do not lead to significant global changes if other parties do not commit. Hence, in the following sections we discuss how successful are governments in fighting climate change locally and globally and which challenges they have to overcome on their way to *sustainable politics*[45].

We perceive political and scientific globalization as a positive process allowing global discussions needed to solve global problems. However, globalization also has negative effects on climate change. Namely, economic globalization is perceived as an important cause of increasing green-house gas emissions (O'Brien & Leichenko, 2000). Therefore, the relation between local and global actions has to be discussed even more carefully assessing both assistance in tackling climate change (political and scientific globalization) and possible environmental damages (economic globalization).

2.2.1. Economic wealth and environmental health: questioning global sustainable development

Industrial modernity that developed in the nineteen century in Europe and later spread across the World was based on the assumption that individual or states' wellbeing is dependent on economic growth and progress (Beck, Giddens & Lash, 1994). Initially, there was a clear and effective system of how to achieve a common good: to pursue an academic degree, find a job, marry, raise children, buy a house, etc. It was thought that adherence to this algorithm would most likely lead to happy, peaceful, and wealthy life.

However, as we may witness today, economic growth was "glorified without simultaneously seeing and recording the growth of hazards connected to it" (Beck, 1997: 113). Specifically, values and priorities postulated by the industrial modernity is the major cause of what today we call anthropogenic climate change. Constant growth of industries and economies invoked significant changes in our climatic system and encouraged discussions about changing perception of nature. In the first modernity environment was considered as a natural resource that is available without any limitations and can be used limitless for industrial progress. However, such approach does not withhold nowadays. Thus, in the second modernity we face ecological crisis that forces us to accept the fact that natural resources are limited. It also

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[45] The term of *sustainable development* was popularized in a report published by the World Commission on Environment and Development in 1987, under the headline *Our Common Future* also known as the *Brundtland report* (UN, 2010). In this documents term was defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987). Sustainable development aims to harmonize three pillars of economic development, social equity, and environmental protection.

encourages the shift from *one-way relationship between nature and humans* (natural recourses for social wellbeing) towards a *two-way relationship*, meaning that we have to take care of nature in order to take advantage of it. Hence, nature is no longer perceived as an outsider that can be adapted to one's purposes, but it is increasingly considered as a part and parcel of society (Latour, 2004; Beck, Bonss & Lau, 2003; Holzer & Sorensen, 2003).

There are three main possibilities how to deal with climate change from economic perspective. First, we might ignore scientific discoveries that declare future risks (some countries choose to employ this position). Second, we might stop economic growth. However, as expected, no-one wants it. Third, there should be harmonization of economic progress with ecological health. The first two options are overt radical and are not wise to pursue at all. The third option, on the other hand, is the most acceptable while most challenging and implies that combining ecological life-style and economic growth leads to more sustainable and livable future. Politics of sustainable development seeks to reduce poverty and improve the welfare and security of the World's poorest while protecting natural resources and ecosystems (Matthew & Hammill, 2009).

The *UN Brundtland Report* (UN, 1987) was the first to announce the importance of integration of economic development, natural resources management and protection, and social equity and inclusion. According to the *Report*, sustainable development implies "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987: 47). Following the Report, the *UN Conference on Environment and Development* in 1992 established *Agenda 21* (also known under the names of *Rio, Rio meeting* or *Earth Summit* because it was held in Rio de Janeiro) – a strategic plan of actions for sustainable development for UN member states and organizations to be implemented in local, national, and international practices. It was expected that this documents would help to reduce consumption in developed countries, and would maintain goals of developing countries by applying sustainable development methods. Rich countries were also expected to support developing World through finance and technology. Furthermore, the *Commission on Sustainable Development* (CSD) was established in 1993 as the UN high level political body assigned to monitor and promote the implementation of the Rio outcomes. In 2012 at the *Rio+20* (UN CSD conference to mark the 20th anniversary of the 1992 UN Conference in Rio de Janeiro) the Commission was replaced by newly established high-level political forum for sustainable development. Since the very beginning concept of sustainable development was not closely related to the concepts of public participation, deliberation and consensus building. For instance, already in Agenda 21 it was stated:

"One of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making. Furthermore, in the more specific context of environment and development, the need for new forms of participation has emerged. This includes the need of individuals, groups and organizations to participate in environmental impact assessment procedures and to know about and participate in decisions, particularly those which potentially affect the communities in which they live and work. Individuals, groups and organizations should have access to information relevant to environment and development held by national authorities, including information on products and activities that have or are likely to have a significant impact on the environment, and information on environmental protection measures" (UN, 1992: 23.2).

Sustainable development is now a goal that is accepted by the UN and by many international organizations, including EU. However, despite the ambitious aims, implementations of global sustainable development policies are not very successful: developed countries do not significantly decrease their consumption trends, and funding arrangements and transfers of technology from developed to developing nations are slower than expected (UN, 2012). Probably this is highly determined by the fact that society and individual citizens have to play central role in such politics; however, the practices of deliberative democracy can be very challenging to establish and maintain.

Hence, probably critics were right arguing that the concept of sustainable development is too vague and conformist and implementation of such a program is too utopian. However, Hedrén and Linnér (2009) highlight that despite of being utopian concept, sustainable development has a potential to become a transformative power for global politics and policy-making. They question: "where would we go without utopian thinking on sustainable development?" (Hedrén & Linnér, 2009: 211). Hence, although sometimes perceived as utopian, sustainable development seems to be the best choice we do have for now, as the other two possibilities (ignoring climate change or stopping economical growth) are very radical. Besides, principles of sustainable development gain even more significance and power in global political arena.

2.2.2. Political globalization and climate change

Political and cultural (or scientific) globalization suggests solutions to fight global issues, such as climate change. However, it is also very important to recognize that harmonization of local and a global sphere is necessary for best results in both science and politics. For instance, the nature of science is to search for a common good and does not imply any geographical closure. However, the greatest scientific discoveries are often achieved in a local setting and have a capacity to be applied globally (e.g., invention of telephone, steam engine, or light bulb).

Globalization, meanwhile, helps to rethink the first part of scientific inquiry before the discovery is done. Global scientific networks, scholarly collaboration, and international scientific projects provide scientists with the essential knowledge and infrastructure needed for global discoveries, which were limited some decades ago. This armamentarium is crucial for fighting against climate change because scientists can share and compare the newest data related to changing climate. Ideally, globalization of science is expected to improve recognition of major causes, help to identify consequences, and find the most effective solutions of climate changes. However, local researches are also of undeniable value, because only from local researches global data come. Systematic and continued analyses of local research are needed to make conclusions at a global level.

A very good example of global scientific body (successfully combining local and global scientific practices) is the IPCC that was established in 1988 by the UN and the *World Meteorological Organization* (WMO). The IPCC is the major global scientific body responsible for assessment of the climate change and its potential environmental and socio-economic impacts[46]. This organization continuously releases scientific consensuses on climate change[47]. The IPCC does not conduct any independent research, instead it *globalizes* local scientific perspectives on climate change, by periodical reviews and assessments of the most recent climate change scientific investigations and technical and socio-economic data produced worldwide.

The IPCC is also an intergovernmental body involving representatives from 195 countries. The IPCC declares that its work is policy-relevant, policy-neutral, and never policy-prescriptive (Miller, 2001). The involvement of parties is limited to participation in the review processes and plenary Sessions where main decisions about the IPCC program are reached and reports are reviewed, adopted and approved. *The First Assessment Report* of the IPCC (IPCC, 1990, 1990a, 1990b, 1990c) encouraged political negotiations and the first essential move was the foundation of *The United Nations Framework Convention on Climate Change* (UNFCCC or FCCC). The UNFCCC aims to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 2005). All countries that ratified the treaty are parties of the UNFCCC and participate in decision-making processes at annual meetings known as *Conferences of the Parties* (COPs). Meetings are mainly focused to assessing the progress in dealing with climate change and negotiating the Kyoto Protocol, which sets binding obligations for developed

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[46] For more information about IPCC please see their official website at www.ipcc.ch
[47] Scientific consensus on global climate change is based namely on IPCC assessments. For now four of them are already published (1990, 1995, 2001, and 2007) and one is forthcoming in 2014.

countries to reduce their green-house gas emissions (Winkler, 2005). This promising global agreement, unfortunately, did not lead to direct, quick, and effective local implementations (Grundman, 2007). Hence, although global agreements regarding climate change have been achieved and codified in international treaties and conventions but implementation has fallen far short of what is envisioned (Malone, 2009; Liu, Vedlitz & Alston, 2008).

The acceptance and implementation of international agreements (including the IPCC assessment reports 1990, 1995, 2001, 2005 and Kyoto Protocol) depend upon individual nation-state abilities and, more importantly, willingness to implement the terms of the agreement. While some nation-states may in fact be too small and powerless to effectively meet global environmental challenges and implement policies at local levels (Malone, 2009), others prioritize economical growth over global environmental health and simply do not accept these agreements. Hence, the first obstacle causing the delay of implementation of climate change policies is the lack of local resources and the deficit of knowledge how climate change could be managed. Here we refer to developing countries, which are responsible for a very small part of global greenhouse gas emissions. Nevertheless, developing countries are the first to experience climate change together with all the consequence. Developing countries are most vulnerable because most of them do not have financial and social resources, necessary infrastructure and access to technologies needed to fight climate change. Therefore they are dependent on assistance of developed countries (Ravindranath & Sathaye, 2002). On the other hand, in some countries global environmental agreements are not implemented and even neglected mainly because of the conflict tension between politics of economic growth and decisions of environmental health. For instance, the *US Resolution 98* announces that "no agreement should be signed that would result in serious harm to the economy of the United States" (Senate Committee on Foreign Relations, 1997). Besides, the US President George W. Bush justified the decision not to ratify the Kyoto Protocol in 2001 by stating: "[w]e must always act to ensure continued economic growth in prosperity for our citizens and for citizen throughout the world" (President George W. Bush, President Bush's Speech on Global Climate Change, June 11, 2001).

Overall, it can be said that although a number of crucial decisions have been made in the global political arena, the implementations of these decisions are lacking. Global agreements and intergovernmental institutions cannot be effective as long as they are not properly empowered in national levels, and without proper local institutions and actors translating and justifying decisions for local communities. Furthermore, there is an essential dilemma regarding public's involvement into local and global decisions' making processes. While formally, public participation in processes of decision making is largely limited to voting, more recent processes

of declining trust in democratic institutions invites to rethink new form of public participation and deliberation.

2.2.3. Declining democratic legitimacy and increasing public participation

Despite of the high hopes related to global decisions on climate change, concrete actions at national and local levels are still too small. One of the reasons is a communicative gap between global institutions and local representatives also known as increasing *democratic deficit*. Democratic deficit can be explained in two steps. First, national representatives are involved into the global decision-making but they do not actually represent position of their local communities. Second, national representatives are not included into the global decision-making. In the first case, governmental delegates who participate at various summits and act as decision makers are often neither democratically authorized nor accountable to their citizens. Therefore, they do not feel responsibility to explain and justify decisions to their people, nor listen to citizens' positions. This provokes social anger and distrust in global deals. In the second case, experience demonstrates that poor countries, which are the most vulnerable and are the first to face climate change, are often misrepresented at global meetings and do not have equal say (Dombrowski, 2012). Naturally, this also encourages dissatisfaction and frustration about the global decisions. The most acceptable solutions might be establishment of democratic institution at a local or national level, in order to maintain continual relations between citizens and global decisions; and secure equal involvement of all the nations into the global decision making processes. However, as we witness increasing public interest into the climate change issues and public ambitions for more political power, we may assume that more have to be done, namely, political power has to be divided not only within global and local political institutions, but also within citizens.

An example of democratic public's empowerment is non-governmental organizations (NGOs) that participate in global political deliberations. Through the participation of these private actors, the voice of a wider affected public may be brought to bear on the global decision-making processes. NGOs have "the potential to function as a *transmission belt* between a global citizenry and the institutions of global governance'' (Steffek, Kissling & Nanz 2008: 3). Since its very beginning, the UN has been open to social movement organizations (Passy, 1999). However, the powers of NGOs were only limited to consultative status, which allows them to make oral presentations at commissions, conferences, and working groups, but does not give them the right to vote. Moreover, the UN also acknowledged the value of knowledge social movements might have; therefore, in some occasions the UN inquire NGOs for some

information or data. Environmental organizations and NGOs are also allowed to participate and observe the work of the FCCC including the COP meeting. However, they do not have any direct influence on final decisions. Involvement of NGOs decreases public dissatisfaction and reduces the gap between society and global politics. However, public aspirations are much higher today. In COP15 more than 40 thousand people were authorized to attend the event including representatives of NGOs. Although they did not have power to directly influence political decisions they demanded for the deal via protests and demonstrations. The pressure of NGOs could be felt in the air in both inside and outside of the Bella Center (Renne, 2010).

Pippa Norris (2011) suggests that democratic deficit today should be measured not by factual disjuncture between society and politics, but instead, in comparison of public's democratic aspirations and satisfactions. If these two (public aspirations and satisfactions) are harmonized, we refer to strong democracy. However, if the gap is widening, we refer to it as democratic deficit. In this sense democratic deficit can be hurtful, because citizens refuse to participate in legitimate democratic processes (e.g., voting) and chooses other ways to express their concerns, which may lead to violence and destabilization. Therefore, traditional democratic practices should be reconsidered in order to harmonize public aspirations and satisfactions and to avoid possible downsides. We suggest that the principles of deliberative democracy should be considered in order to harmonize public aspirations and satisfactions and to reduce democratic deficit.

2.3. Inviting deliberative turn in environmental debate

While reflexive modernization implies acceptance and recognition of global environmental problems, it does not actually provide solutions how these problems should be tackled. However, Beck noticed other social changes related to reflexive modernization, namely rising *sub-political movements* resisting mainstream politics. He argues:

> "[w]e look for politics in the wrong place, with the wrong terms, on the wrong floors of offices and on the wrong pages of the newspapers. Those decision-making areas which had been protected by politics in industrial capitalism – the private sector, business, science, towns, everyday life and so on – are caught in the storms of political conflicts in reflexive modernity <...> citizen initiative groups have taken power politically. They were the ones who put the issue of an endangered world on the agenda, against the resistance of the established parties. <...> This rebellion of real existing individuals against a 'system' that allegedly dominated them all the way into the capillaries of day-to-day existence is inexplicable and inconceivable" (Beck, 1997: 99).

Hence, sub-political movements or growing public participation initiatives signifies increasing power of citizens in decision-making processes (both global and local) and most

importantly in the stage of local policy implementations. However, sub-political movements, as Beck describes them, do not strive for legitimization of themselves by the way of democratic procedures (Holzer & Sorensen, 2003). Instead, they most often exist as a resisting power opposing mainstream policies. Moreover, members of these movements make their decisions individually and political significance of these groups is achieved only via aggregation of separate votes. Beck's concept of sub-politics can be easily discusses under the model of *participatory democracy*[48], where participation usually is either in the form of demonstrations, petitions, contributions, media debates, and other expressions of opinion, or as direct participation in decision-making processes – for example, referendums, student councils or user committees (Lidskog & Elander, 2007).

However, while sub-politics basically signifies various forms of public participation, it does not actually question public deliberation (or the quality of participation), which instead of radical resistance aims for equilibrium between society and politics. The normative principles of deliberation come from the nature of communication. Deliberative democracy assumes that social interactions between individuals that are based on reasoned and rational discussion lead to common decisions. The final decision is made collectively and publicly. This is distinct from the other forms of political participation (e.g., voting, public demonstrations, and strikes) where the final decision consists on the aggregation of choices that individuals make privately (Gonzalez-Bailon et al., 2010). In deliberative democracy, preferences are transformed in the communication process rather than aggregated (Habermas, 1984, 1987; Elstub, 2008).

Both, public participation and public deliberation are assumed to increase citizens' political self-confidence, their trust in the political system, and their understanding of the common good (Cini, 2011). However, in contrast to sub-political movements, deliberation is not based on resistance to mainstream politics; instead, deliberation is an attempt to find the best decision in the most constructive way. As we already elaborated in Chapter 1, deliberation describes the most mature type of relationship between society end experts. Similarly, the theories of democracy deliberation define the highest level of citizens' involvement into the decision-making processes and therefore require the highest level of political competence. Pro-deliberative scholars believe that relations between society and government give much better results if they are under the rules of deliberative democracy. First, it is expected that decisions made in deliberative way will be of better quality, because additional information from publics

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[48] *Participatory democracy* refers to democratic processes wherein all citizens have an equal power to determine the outcomes of decision (Santos, 2002). Various social movements are regarded as one of the most important aspects of political participation; however, they often are based on conflicts and antagonistic practices. Moreover, participatory democracy primarily focuses on the quantitative dimension of democracy "by emphasizing the political role of civic society" (Cini, 2011: 4).

and from direct collaboration with society[49] is used in the decision-making processes. Secondly, outcomes of common decision-making process should be viewed as more fair and legitimate, because citizens are well aware of all the arguments for and against. Thus, decision reached via deliberation is believed to be *just* because it is derived from fair procedures in which all have been able to participate equally (Elstub, 2008). This in turn should help to release the tension among unsatisfied segments of society. Furthermore, it is believed that deliberative processes have cognitive benefits for participants. The individual's rationality is expected to be expanded by the arguments that other participants provide, and the intellectual qualities of the discussants is expected to improve in the process of searching for a common good (Elster, 1998: 11). Finally and most importantly, deliberation stimulates individuals to rethink their options and reflect upon their preferences in the light of persuasion of other participants. Hence, it is expected that positions of participants are not fixed but are flexible and can be changed in the light of better arguments and/or towards common good orientation.

The concepts of deliberative democracy and deliberation were initially developed at a normative philosophical level and were based on Habermas' *theory of communication action*[50]. Initially, certain conditions were set which have to be met in order for a situation to be deemed deliberative (Sulkin & Simon, 2001). Namely, discourse was expected to be open for all citizens[51]; and participant were believed to express their opinion in a truthful way[52] and properly justify their claims seeking for common good and treating each other with a proper respect. Finally, willingness of all participants to yield to the force of the better argument was expected, which means that the preferences of the participants should not be fixed, but be open to change.

The major principles of deliberation are still more or less the same; however, today deliberation has become more complex and flexible term. First of all, it was used to define almost any discussion meeting the major conditions of deliberation and independently from the setting of the forum (official *versus* informal) or actors involved (experts *versus* citizens). These included deliberation in media or Internet, deliberation between stakeholders and politicians,

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[49] Pro-deliberative scholars argue that "better decision" is a relative thing. Namely, the decision is "better" if citizens and officials believe it to be better. Hence, if decision is grounded on basic conditions of deliberation, then it can be expected that all the participants believe that it is better than other possible decisions.
[50] In his two books dedicated to discuss the *theory of communication action*, Habermas perceives language as a major medium to reach understanding between actors about certain situations and future plans in order to coordinate their actions by way of agreement.
[51] Graham and Witschge (2003) when discussing participation refer to the category of *equality freedom*, which is understood as a dualistic category encompassing *structural equality* and *discursive equality*. Authors explain that "structural equality refers to the equality among participants outside the process of deliberation. <…> Discursive equality requires that all participants have equal status and equal voice" (Graham & Witschge, 2003:176).
[52] The criterion of *truthfulness* means that everybody is open about their true preferences and do not try to deceive and mislead others about their true intentions (Steiner et al., 2004).

etc.[53]. Second of all, there is a number of major disagreements between scholars regarding some basic principles of deliberation suggesting variations of perception of the term. Opponents and critics of deliberative democracy provoke most of these disagreements. In the following sections we will shortly discuss these disagreements while explaining perception of deliberation, which we will follow in this dissertation.

2.3.1. Public deliberation and question of scale

Critics of deliberative democracy argue that ideal deliberation that meets all normative conditions in actual conditions happens rarely (if at all). In most of the times ideal deliberation can only be recognized in artificial or experimental constructions usually set for research purposes (Searing, Solt, Conover & Crewe, 2007 quoted from Wojcieszak, 2010). The first justification for such argument is related to the question of scale.

Although, as a democratic term deliberative democracy is understood as a collective decision making involving all the participants who will be affected by the decision, some scholars doubt if it is a wise choice to include all citizens into all the stages of political process (Elster, 1998). It is elaborated that deliberation as an activity can never realistically involve more than a handful of people, because more participants would lead to more opinions making agreement harder or impossible to achieve and would likely lead to chaotic and arbitrary outcomes (Dryzek & Braithwaite, 2000; Dryzek 2004; Goodin, 2000; Sawards, 2000; Mansbridge 2010; Knight & Johnson, 1994; Christiano, 1996; Shapiro, 1999; Budge, 2000; Hibbing & Theiss-Morse, 2002; Elstub, 2006, 2008).

Second of all, critics doubt if all citizens do have equal possibilities to enter the discussions, and if they possess required motivation and knowledge to join discussions with policy makers. Hence, because of these and other limitations theorists consider that in praxis only a small number of participants would act on a regular basis in political deliberation. Steiner, (2012) suggested that citizens could effectively deliberate in small randomly chosen mini-publics and later function as "opinion leaders spreading the conclusions of their deliberations among their peers, who would follow these conclusions trusting that they would have been their own had they likewise deliberated" (Steiner, 2012: 33). However, in this dissertation we perceive deliberation as an activity that is possible in local and global settings. We agree that larger deliberative settings are probably more difficult (or sometime impossible) to manage. However, we also presume that the actual number of participants is not as important

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[53] While some scholars use term of deliberation to describe discussions and decision making processes only in formal political arena (Thompson, 2008; Cohen, 2007), others argue that the term can be applicable to define any other discussion which follow major normative conditions of deliberation, including deliberation in media, deliberation online, etc. (Mansbridge, 2010; Steiner, 2012).

as their readiness to deliberate. In other words, even in mini-publics there can be participants who do not accept other positions and are not ready to yield for better argument. Furthermore, we believe that people who join global forums already have at least minimum awareness about the issues and are motivated to deliberate.

2.3.2. Justifying personal positions: do all arguments count?

Good reasoning is critical for deliberation. Without it uncertainties remain why one solution has been chosen over the other. Hence, participants of the deliberative process are expected not only to offer arguments but also to justify them. Opponents of deliberative democracy model doubt if citizens actually realize the significance of justified argumentation and argue that citizens lack proper experience and knowledge necessary for quality deliberation to occur (Elster, 1998; Dryzek & Dunleavy, 2009; Graham & Witschge, 2003; Elstub, 2008; Festenstein, 2009). However, the basic premise of deliberative democracy is that all citizens must have an equal opportunity to deliberate; therefore, some scholars suggest that the perception of rational and logical justification should be expanded and include personal stories as a way for proper justification to explain the position of the participant. Scholars anticipate that personal stories may lead to more emotional process of deliberation, which might be unacceptable for a purely rational approach to deliberation (Steiner, 2012). However, it is also possible that deliberation via personal experience can foster respect and better reciprocity among participants (Caluwaerts, 2012). We believe that in the case of climate change personal stories should be considered as a proper substitution for justification, mainly because the scientific explanations of climate change can be difficult to understand for the majority of lay people who base their understanding on simple mental models (for more detailed discussion of simple mental models see Chapter 1).

Also, scholars debate if all arguments should be considered as a part of deliberation. Some suggest that all arguments, no matter how offensive or self-oriented they are, should be considered for deliberation. On the other hand, others believe that arguments that merit human rights or are overly selfish should not be considered at all. For instance, a participant from a poor developing country might argue that industrialized countries should pay more and help the rest of the World to fight climate change, because they are the major polluters. Certainly, such argument is not a case of references to a common good; instead, it sounds more like accusation. On the other hand, such argument is also true and, in correspondence with the recent political decisions, financial aid should be directed from developed towards developing countries. Hence, the question is if we should consider such argument as a part of deliberative process or should

we perceive it as having low deliberative value? More research is still needed to answer this question.

Both offensive language and self-orientation are more likely to occur during non-official discussions, which will be the focus of the present dissertation. We believe that requirements for proper justification of public deliberation (*versus* parliamentary) in informal settings (*versus* official meetings) have to be modified. Therefore, we considered all arguments if they were made with true intentions[54], irrespectively from the level of self-orientation or severity of foul language used. In this regard, our perception of the concept of deliberation is rather broad. Overall, in our model of deliberation we will (1) acknowledge personal stories as a proper substitute of justification but only if they are properly related to the argument and (2) we will consider both, self-oriented and offensive arguments, as a part of the discussion. We are convinced that these changes for classical deliberation model are essential for assessment of public deliberation on climate change.

2.3.3. Consensus

Some theorists believe in consensus as an orienting feature of deliberative democracy. Habermas (1996) stresses that consensus would eventually be achieved in ideal deliberatively democratic decision-making. He suggests that public reason would mean people taking on board a common interest and above their private or selfish interests, as preferences must be based on the reasons why a proposal will be good for all, which encourages people to identify with each other, and with collective as a whole. If deliberation continued long enough, all would come to agree on the same common interest.

However, most scholars are careful to postulate consensus as merely the regulative ideal of all rational debate, rather than something that is at all plausible in the real world. Instead they argue that consensus can be supplemented by *plural agreement*, where citizens continue to cooperate and compromise through deliberative democratic debate despite the existence of disagreements (Rehg & Bohman, 1996; Dryzek, 1990). Steiner (2012) also argues that: "the key for deliberation is that the opinions of losing minorities are treated with respect and duly considered. It is also important that majority decisions are considered as fallible and can be taken up again in a later stage if new information and new arguments come up" (11).

Taking into the account the general context of climate change, including scientific uncertainties, political and public polarization, and considering global size of publics involved into the issue, it would be very naïve to expect that consensus can be reached in global public

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[54] Critics also question true intentions of participants. Social choice theorists underscore the possibility of manipulations through strategic participation and agenda control, which is difficult to detect (Riker, 1982).

deliberative forums. Therefore, in the case of climate change, we perceive deliberation as an aim but not a necessity of deliberative discussions.

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To conclude, we consider practices of public deliberation as a fundamental solution for climate change politics. First of all, traditional democratic forms of policy making do not secure the best solutions and in some cases do not provide any solutions when dealing with global risk issues. Namely, scientific uncertainties, requirements to sacrifice economic growth for ecological health, and global political polarization, where countries are oriented to national wellbeing are the major obstacles to reach unified global solution how to deal with the climate change. Such adverse political environment that even worsened after the COP15 raised the fundamental question if global political agreement regarding climate change is even possible. To make matters worse, publics and NGOs increasingly demonstrate dissatisfaction about the global deliberations on climate change and willingness to participate in the decision-making processes.

Although critics stress a number of pitfalls for public deliberation to be effective, it seems that the deliberative turn is inevitable and is determined not only by political and cultural (scientific) circumstances, but also by major changes in communication and information technologies, which provide citizens with new participation possibilities. Nowadays, citizens are enabled to establish and maintain global forums and networks in order to discuss and deliberate on the global political issues.

CHAPTER 3

EFFECTIVE RISK COMMUNICATION ON CLIMATE CHANGE: IN TRANSITION FROM DEFICIT MODEL TO DELIBERATIVE FORMS OF COMMUNICATION

Cultural (scientific), social, and political changes discussed in previous chapters are strongly related and, in some cases, determined by the new communication and information technologies. The Internet, and new mobile and wireless devices break up the established standards of how we socialize, and drastically change the ways that we traditionally used to employ in search for information, and to produce and distribute news. As a consequence, traditional professional media gradually loses its authority to set public and political agendas and to construct public opinions. Meanwhile, the Internet offers a number of opportunities for new forms of public sphere[55] to bloom. Some believe that this dramatic expansion of online public sphere could foster the democratization of science, and mitigate democratic deficit by bringing policy-makers and society together for common discussions in cyberspace that, in turn, can possibly strengthen deliberative democracies.

Moreover, new possibilities for multi-directional communication in online sphere are very welcomed by risk communication specialists[56] who have recently recognized that one-way based deficit model[57] of communication is insufficient for effective implementation of deliberative processes. Recently, scholars highlighted that effective risk communication goes far beyond of simply informing, alerting or reassuring publics about potential hazards. Instead, it should aim to enhance knowledge and understanding, to build trust and credibility, to encourage dialogue, and to influence attitudes, decisions and behaviors (Covello & Sandman, 2001; Granger, Fischhoff, Bostrom & Atman, 2002). Hence, in order to effectively communicate climate change as a global risk issue, public needs to be closely involved in the discussions and the emerging online public sphere online helps to do that.

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[55] *Public sphere* is a concept referring to the discursive space filled in with a meaningful content (what is opposite to content-free discursive space), which emerge as separate comments in our sample or as discussions in a broader sense.
[56] *Risk communication* refers to the dissemination of the essential risk-related information that society needs in order to make independent judgments about risks. Morgan et al. (2001) pointed out, that fundamental goal of risk communication is to provide meaningful, relevant and accurate information about the risks for society. However, more recently, scholars have noticed that on-way communication is not effective enough and democratic dialogue about risk related issues is critical for modern societies (Palenchar & Heath, 2002).
[57] The deficit model on risk communication defines the way in which information is disseminated, in particularly emphasizing one-way transfer of scientific and other knowledge from experts to society (Lewenstein, 2003; Ziman, 1992).

In addition to that, new power was born and new power relations were implemented via online public sphere. While some refer to this new power as *the Fifth Estate* (Dutton, 2009; Newman, Dutton & Blank, 2012; Cooper, 2006), others remain more skeptical and fearful of possible negative effects associated with such a paradigm shift (including democratic destabilization among others). While scholars debate, the actual answer might be hiding in the quality of the public sphere online. If online public sphere is well functioning, it will probably produce a positive power leading to strong deliberative democracies. Likewise, if public sphere is weak and mal-functioning it is more likely to carry negative impacts on democratic practices.

The question is, how can we decide, if the public sphere is well- or mal-functioning. Habermas offers an answer. He argues that public sphere is well-functioning if the following conditions are met: (1) there is a proper discursive space where discussions can be carried out freely and without any constrains; (2) citizens are eager to participate in the political processes; (3) basic information about the issue can be easily accessed (for instance, with the help from mass media); and (4) it is based on deliberative activities – i.e., rational-critical debate, which secures democratic processes and best decisions (Habermas, 1989; Graham & Witschge, 2003).

Following Habermasian requirements for the well-functioning public sphere, in the next sections, we question traditional media and online communication environments[58] in order to assess the quality of traditional (meaning a public sphere in traditional media) and new public spheres and to identify possible outcomes of new-types of power and power relations.

3.1. Constructing public sphere in traditional media: case of climate change

For a long time, scholars perceived traditional media as a discursive space for public discussions and deliberations to occur. Acknowledging the influence that traditional media has for setting public and political agendas, shaping public opinions, and keeping an eye on governmental bodies, there is no doubt that it is a powerful and valuable discursive space (Papacharissi & Oliveira, 2008; Habermas, 2006). However, a number of factors limit the possibilities of traditional media for it to be called a well-functioning public sphere. First of all, citizens' possibilities to be involved into direct discussions and deliberations with experts, politicians, and scientists are mainly limited to the calls to radio talk shows, TV programs, or letters to newspaper editors. Second of all, recent observations suggest that traditional media fails to effectively use its potentials to inform and motivate society to take actions towards extremely important global issues, such as climate change. Commercialized, privatized, profit-seeking, and

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[58] We use the term of *online communication environments* to refer to a broad range of Internet based environments, including web-pages, online news portals, blogosphere, and other social networks, especially focusing on Web 2.0 based online environments enabling user generating content.

drama-driven media often puts private interests over a public good. Indeed, coverage of climate change in traditional media finely reflects how professional journalistic requirements describing newsworthiness are being changed by contemporary journalistic norms.

3.1.1. Climate change media coverage and contemporary journalistic norms

After multiple severe weather events and continuous warnings from scientific community, threatening ideas of climate change have finally entered into the media's agenda. The issue of climate change was first presented in media in 1932, when the *New York Times* warned that the Earth's climate is inevitably changing[59]. Around 1950s assumptions of humans' contribution to climate change was brought up to public agenda. However, until 1980s mass media coverage on climate change remained sparse and desultory. Actually, the issue never became a leading topic in media. Instead, it was occasionally recalled in relation to ongoing political events, severe weather incidents, or scientific discoveries (Boykoff & Roberts, 2007; Wilson, 2000; Boykoff, 2007; Smith & Joffe, 2009; Barua, 2010; Billett, 2010).

Although variations in media coverage of climate change might be explained by a number of external conditions – political, social, or environmental – it also might be assumed that sparse and chaotic media representations of climate change is determined by the journalistic norms and routine of contemporary media organizations. Although, the issue of climate change seems to correspond to all the criteria of newsworthiness[60] but it still lacks of proper media attention. While some scholars choose to explain it referring to the Downs' Issue Attention Cycle[61] (1972), we follow Boykoff and Boykoff (2007) and argue that most important criteria of

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[59] New York Times. (1932). Next Great Deluge Forecast by Science. *New York Times*. New York: 4.

[60] The major requirement for any news piece is the newsworthiness – "the ability of a news story to attract readers or viewers" (Cox, 2013: 151). The basic criteria of newsworthiness corresponded by the most of the US media include prominence, timeliness, proximity, impact, magnitude, conflict, oddity, and emotional impact (Yopp, McAdams & Thornburg, 2009). From the first sight it might seem that the issue of climate change perfectly corresponds to all of the above criteria. First, arguably it is prominent because it challenges global communities, threatens our future generations, and questions our traditional life-styles and values. Secondly, it is also timeless, as this is the issue of our days, and we have to fight it, thus procrastination is not the option as it may cause huge losses. Thirdly, although majority of countries do not experience the consequences of climate change directly, it is a global process that will sooner or later affect everyone. Climate change from its nature is as local as it is global, therefore, as an issue it surely corresponds to the criteria of proximity. Furthermore, requirements of impact and magnitude are also echoed by the issue. Scientists argue that the impact of climate change will be devastating and global. Climate change is also the issue corresponding to the criteria of conflict. As we have already demonstrated, there are conflicting sides in environmental politics (developing countries *versus* developed countries), as well as polarized societies questioning scientific discoveries and political powers. In some cases climate change might be also perceived as an odd topic. For instance, scientists argue that changing climate might cause seasonal changes – earlier springs, shorter and milder winters, etc. Finally, climate change also does have emotional impact and awakens our fear about our future, our health, and wellbeing of our Planet.

[61] Downs (1972) argued that public attention and media attention to process based (*versus* event based) issues, such as climate change, passes a number of stages. The first stage is known as a pre-problematic and it defines the period before the issue reaches media and public attention. In the case of climate change, this stage was rather long and included the period of scientific discoveries, scholarly discussions, and political considerations. When climate change entered media and public agenda, it proceeded from the pre-problematic stage to the second period when

newsworthiness in nowadays media follow contemporary journalistic norms that are set by a media organization. Two major groups of such journalistic norms can be distinguished: first-order journalistic norms (personalization, dramatization, and novelty) and second-order journalistic norms (authority-order and balance). While Boykoff and Boykoff (2007) argue that both groups are equally important to determine processes of news selection and framing, we elaborate that the firs-order journalistic norms are more essential in the process of news selection, while the second-order norms determine the choice of frames.

First-order journalistic norms of personalization, dramatization, and novelty are the key criterions in the processes of news selection. A story is considered suitable to be reported if it has intimate aspects, is dramatic, and new. However, stories based on long scientific investigations and dealing with global risks, such as climate change, rarely correspond to the listed requirements. Namely, they are much more global than individual; are mostly grounded on scientific facts and not drama-driven; and are normally based on long and ongoing processes *versus* events that have happened just now.

Personalization is a journalistic norm that declares that general and global stories are much more influential if they are told through personal perspective. Purely technical or too abstract information does not help people to make connections between their everyday actions and the impending long-term global changes. Therefore, personalization of news facilitates understanding of an issue and helps to make necessary connections (Wilson, 2000; Boykoff & Boykoff, 2007). Personal stories often help to mobilize citizens to take necessary actions, but sometimes it might mislead and evoke unnecessary panic. For instance, scientists have noticed that pandemic flue issue receives much more attention in media when compared to seasonal flue despite the fact that both flu cases are similarly dangerous[62] (Trans et. al., 2012). In addition, journalistic norm of personalization simplifies scientific issues by eliminating important caveats (for instance, focusing on personal experiences of climate change journalists omit important global issues) and citizens do not get full and accurate information (Wilson, 2002; Boykoff & Roberts, 2007; Mellor, 2009).

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society is alarmed by media and other power-holders about the outrageous consequences of climate change. "This period is accompanied by euphoric enthusiasm mustered to solve the problem in a reality" (McComas & Shanahan, 1999). Period before the COP15 might be the good example of the second stage – the issue was properly covered with enthusiastic hopes for global solutions to fight the climate change. However, following the Downs' model, publics usually realize that costs of making significant progress are huge and the stage of gradual decline in public and media attention to the issue follows until the issue enters the post-problem phase. In the post-problem stage, attention to the issue settles down and remains rather low.

[62] Trans et al. (2012) found that pandemic H1N1 influenza in children differed from seasonal influenza A strain in risk factors, clinical presentation, and length of hospital stay, but both strains were similar in intensive-care unite admission or mortality.

Although climate change is a global story, however, in order to make it publishable, journalists occasionally try to personalize it. For instance, people who are already suffering from severe weather events are interviewed and their stories are told. Even Al Gore (2006) told a story of *An Inconvenient Truth* from a very personal perspective, which evoked a feeling that this person is trustworthy, open, and sincere. Personalization of news might enhance public perception and improve understanding of an issue. However, an aspect of positive bias[63] has to be considered. In other words, it is likely that people sympathize with those people from the stories, but it is questionable if they perceive the issue as threat to themselves.

Dramatization is a very popular journalistic norm in nowadays media. Scholars argue that in many cases climate change does not get proper coverage because of the inability to sustain climate change as a dramatic topic (Wilson, 2002; Ungar, 1995, 2000; Boykoff & Roberts, 2007). Scientific measurements, complicated terminology, and plain facts are not well suited to the contemporary news media that is looking for sensations and drama. Hence, if there is no drama *per se* it has to be added in order to publish a story. As a consequence, there is no surprise that media coverage on climate change is highly dramatized, and involves tons of fear, misery and doom (Boykoff, 2008). On the other hand, scientists argue that sensationalism is acceptable if it brings an environmental message (for instance, about the ecological effects of climate change) to the attention of the public and polity (Ladle, Jepson & Whittaker, 2005). However, normally climate change stories that are told by adding excessive drama elements do not have positive effect because the accuracy of information often suffers. For instance, in 2004 a study published in the *Nature* modeled the potential effects of global warming on the distributional ranges of certain groups of land animals and plants. Results of the study suggested that given a number of key assumptions and under *moderate* climate change scenarios, between fifteen and thirty-seven per cent of a total of 1103 species considered in the study would be "committed to extinction by 2050" (Ladle, Jepson & Whittaker, 2005: 232). Afterwards, a number of publications in different media followed suggesting that million or more species will extinct, or a quarter of all life forms will vanish, or a third of all life forms will disappear from the Earth surface. This example demonstrates two essential things: first, media tends to dramatize stories, and second, the accuracy of scientific information suffers.

Novelty is the third major journalistic norm, which requires stories to be new and significant for the moment. Many scholars refer to nowadays media as event driven because

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[63] *Positive bias* is a term introduced by J. Costa-Font, E. Mossialos, and C. Rudisill (2009) in their paper *Optimism and the perception of new risks* where researchers concluded that same risks are evaluated by citizens differently: individual perceptions of a risk differ from the perceptions that individuals have about a risk's effect on society or the environment. Specifically, people tend to underestimate the volume of risks for themselves versus others or society in general.

journalists and media organizations favor the most recent events over long-lasting processes. Unfortunately, timescale of most environmental problems is not suitable for the cycle of news production; therefore, climate change as a long-lasting process does not get appropriate coverage. On the other hand, studies show that climate change media coverage is largely maintained by the dramatic political, environmental, or social events, such as oil spills, forest fires or hurricanes.

Studies report that journalists react to unusual weather changes. For instance, J. Shanahan and J. Good (2000) observed a link between temperature changes and media coverage. They found that "journalists are more likely to discuss climate during unusually warm periods" (285). The dynamics of media coverage is also very much related to political agenda. For instance, in the US, in 1990s climate change coverage was provoked by the First and the Second Conference of Parties (COP) and by the negotiation of the Kyoto Protocol; and in 1995-2000 it was led by the US Senate Resolution 98 against the US participation in the Kyoto Treaty, (Mazur, 2009; Boykoff, 2007). Increase of media coverage was also evident during the period when the IPCC assessment reports (IPCC) were released in 1990, 1995 and 2001. Although political, environmental, and social events encourage media's attention, but indeed, "[m]edia has at times kept the issue of climate change alive, but has also limited the extent to which real change in the organization of society and foreign assistance have been called for" (Boykoff & Roberts, 2007).

Hence, the first-order journalistic norms are not typical for climate change issues *per se*, but aspects of personalization and dramatization can be easily added to climate change stories. Meanwhile, novelty of stories on climate change is greatly related to political, environmental, social, and scientific events and is a major aspect sustaining climate change in media coverage.

3.1.2. Framing a story: balanced journalistic reporting versus a process of power and scale

The main premise of theory of framing is that a story can be viewed from a variety of perspectives. However, it is impossible to cover all of them; therefore, journalists have to make a choice and select frames, which s/he thinks fit the best in such a way constructing (possibly changing) meaning of public events (Dryzek, 1997; Sampei & Aoyagi-Usui, 2009; Uuisi-Rauva & Tienari, 2010; Stephens, Rand & Melnick, 2009; Kenix, 2008; Entman, 1993; Baudrillard, 1981). However, it is more than the choice made by a journalist. Selection of frames is closely related to contemporary journalistic norms, especially those of authority-order and balance.

Journalistic norm of authority-order requires that certain authorities – government officials, business leaders, and other experts – have to be consulted primarily because they are

most likely to have up-to-date information and are most qualified to explain and discuss a topic. Unfortunately, broadcasting time and newspaper space dedicated to the story is limited and stories are often limited to the position of authorities only. In this regard, framing is a process of power and scale, meaning that the more power (e.g., political, financial, or social power) actor has, the more likely that his/her position media will articulate. In the case of climate change, scientists are the primary source of information; however, there are a number of examples where carbon-based industries or politicians upstage scientists in media. Such a situation distorts the view and might have serious negative repercussions for public understanding of the subject. For instance, Boykoff and colleagues (2008) found that in UK tabloids (between 2000 and 2006) scientific framing dominated only in 11 percent of total stories, while political/economic framing was found in 27 percent, and cultural/social frames in 20 percent of all stories. Hence, it seems that scientists are not the most favorable sources for media stories. Indeed, complicated relationship between scientists and journalists in communicating scientific issues are not new for communication scholars, in contrary, there are plenty of studies analyzing popular science and problems related to misunderstandings, misleading, or inaccurate scientific information in media (Thorlindsson & Vilhjalmsson, 2003; Nisbet & Scheufele, 2009; Peters et al., 2008; Paul, 2004).

Despite the fact that media does not properly cover climate change as a scientific topic much more confusion in public perception of climate change is brought by another journalistic norm of balance. Balance requires that each story should be told by objectively revealing all parts of it: *for* and *against*. Seemingly, story of climate change is not an exception. Despite the consensus made by the IPCC scientists, many media studies report that climate change is framed as a conflicting and contentious rather than coherent issue (Boykoff, 2007; Kenix, 2007). Maibach with colleagues (2010) performed interviews with journalists and discovered that 90 percent of respondents were certain that despite of the scientific consensus coverage of climate change must reflect a "balance" of viewpoints (Maibach, Wilson & Witte, 2010). Hence, in media, scientific and reliable sources are quoted in lane with other sources that frequently represent authorities, which are directly or indirectly affiliated with fossil fuel industries. Such *"balanced"* reporting has led the media to downplay the severity of climate change problem and it created a feeling that scientific community is evenly divided and consensus is not reached yet (Stephens, Rand & Melnick, 2009; Zehr, 2000).

Overall, the topic of climate change is not in favor with contemporary journalistic norms, which in turn determine chaotic and sparse coverage and confusing framing of the issue. Moreover, it supports our statement that although traditional media provides society with a discursive space for public sphere; however, it fails to properly inform citizens and limits their possibilities to participate and deliberate.

3.1.3. Deliberative practices on climate change in traditional media

Despite several studies questioning deliberation in traditional media, empirical approaches to deliberation have neglected media (Fraefel & Haeussler, 2009). Although, from the existing studies it can be presumed that the level of deliberation in traditional media is rather low, no reliable conclusions can be drawn, as there is not enough empirical data.

Steiner (2012) acknowledged Gerhard's (1997) work *Diskursive versus liberale Öffentlichkeit. Eine empirische Auseinandersetzung mit Jürgen Habermas* to be the very first attempt to empirically analyze deliberation in media. Gerhard explored the discourse on abortions in two German newspapers focusing on two essential elements of deliberation, namely, respect and justifications. The study concluded that discourse quality in the analyzed newspapers was *far away* from the ideal speech situation of Habermas. Subsequent media studies also did not report any positive results. Namely, a decade later Denis Pilon (2009) questioned quality of deliberation in Canadian newspapers. This study also was the first attempt to apply the DQI in media studies. Results suggested that: "print media failed to create an effective deliberative space where citizens could gain a critical appreciation of the choices they faced. In fact, the results show that the media failed on all the key themes Habermas highlights as crucial to an effective deliberative process" (Pilon, 2009: 17). In addition to that, Thomas Haeussler analyzed English newspapers from a deliberative perspective[64]. The author measured two normative conditions of deliberation – justification and reciprocity. Overall, he concluded that with respect to rational justification newspapers are far away from high level of deliberation, while the level of reciprocity is greatly variable. In sum, although there is not enough research done to conclude about general trends of media deliberation, but from what it is known, media seems to be the most problematic link for the development of deliberative democracy (Steiner, 2012).

3.2. Deliberating climate change online: the rise of the Fifth Estate?

For a long time citizens did not have proper possibilities to be involved into politics. Traditional forms of public participation, including official public hearings, massive discussion based forums or discursive space in traditional media, did not actually correspond to the social needs to be involved, participate, and deliberate. Therefore, frustrated stakeholders, environmentalists, and ordinary citizens experimented and initiated new forms of public participation, such as

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[64] Six topics were chosen for the analysis, including nuclear disarmament, commonwealth immigration, Union picketing rights, Northern Ireland secretariat, fuel issue, anti-terror legislation (2005). He included five newspapers: *The Times, The Guardian, The Daily Telegraph, The Independent, The Sun*. To determine the level of deliberation, he used the DQI.

advisory committees[65], community-based collaborations[66], citizen juries, consensus building exercises, professional facilitation, etc. (Dietz & Stern, 2008; Cox, 2013). Most notably, online communication environments were considered to be alternative discursive spaces for citizens to participate and deliberate. The Internet made it possible to skip traditional media as the mediator between society and policy makers. Some scholars expressed huge hopes for the Internet as a new type of discursive space for public sphere (Kenix, 2008; Dutton, 2009; Armstrong & Zúniga, 2006; Reynolds & Ball, 2006; Benkler, 2006; Xenos & Bennett, 2007; Dahlgren, 2005). They argued that online communication environments help to improve communication practices (e.g., enabled multi-directional communicational modes) and serve in democratizing the ways in which news can be generated and disseminated (Cox, 2013). Few go even further suggesting that online communication environments (especially social media[67]) also provide citizens with unprecedented communicative power. Meanwhile, others remain skeptical and point to different obstacles, including increasing individualization, audience fragmentation and polarization (Sustein, 2001; Gentzkow & Shapiro, 2011; Putnam, 2000; Bennett, 1998, 2012; Habermas, 2006) that prevent from formation of well-functioning public-sphere. Nevertheless, one thing is clear – online communication environments provide citizens with a new type of power, which in turn can strengthen or weaken democracies.

3.2.1. Emerging public sphere online and the consequences of mass self-communication

Globally networked communicational relationship generates power that transforms online individuals to the *Fifth Estate* – a political force composed from virtually networked individuals (Castells, 2009; Dutton, 2009; Armstrong & Zúniga, 2006; Reynolds & Ball, 2006; Benkler, 2006). The power of the Fifth Estate is built on the growing use of the Internet, which enables networked individuals "to move across, undermine and go beyond the boundaries of existing institutions, thereby opening new ways of increasing the accountability of politicians, press, experts and other loci of power and influence" (Dutton, 2009: 29). Such power provides society with possibilities to control other power holders, to engage them into common discourses, and to participate equally in deliberations together with decision-makers. In addition to that, the power of the Fifth Estate is based on new and unique forms of personalized communication – allowing

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[65] Citizens' advisory committees refer to a group of citizens, which are selected by a government in order to get required information from different social agents regarding certain topic (Cox, 2013).
[66] Community-based collaboration is the form of elaboration among citizens representing various affected groups of local community (e.g., ordinary citizens, business, etc.). Participants gather to discuss a specific or short-term problem facing local community (Cox, 2013).
[67] Social media includes various web-based technologies, mobile applications, and other Web 2.0 platforms that enable ordinary citizens to create and share content(s) (Kaplan & Haenlein, 2010). In this dissertation we use terms of social media and social networks interchangeably.

citizens to customize their communication devices (e.g., computers, smart-phones, iPads, etc.) in a way that they receive and/or contain the exact information that individuals want to read and ignore what they do not want. Hence, in the Web 2.0 era, the Internet points out to the significance of individual agendas and mitigates the importance that media and political agendas used to have.
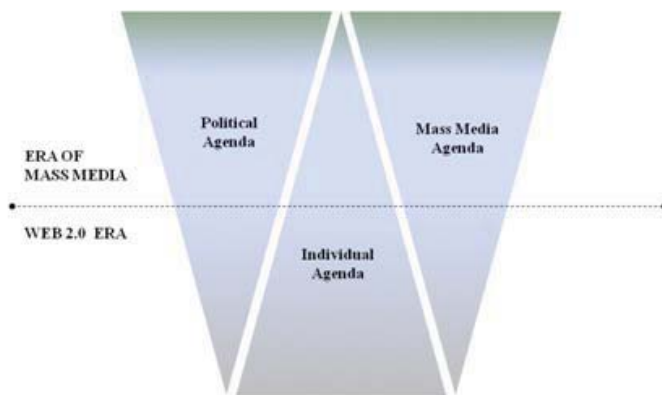
Figure 3: **Individualization of public sphere in Web 2.0 era (Birbilaitė, 2011: 117).**

Less optimistic scholars have much to say about negative aspects of this power. Sunstein (2001), for example, argues that diverse and balanced information that was guaranteed by professional mass media, in the era of the Internet will probably be changed by self-centered content produced by the Fifth Estate. Since online social networks maintain mass self-communication[68] and are individual-orientated, it can be expected that the content of the Fifth Estate will simply support users' preexisting assumptions (through emails, blog posts, re-tweets, social media posts or links, etc.) and ignore different positions. Individuals will cover and frame politics through their personal lifestyle, values, priorities, and norms – liberals watching and reading mostly or only liberals; moderates, moderates; conservatives, conservatives (Gentzkow & Shapiro, 2011; Putnam, 2000; Bennett, 1998; Giddens, 1991). Such personal information selection will produce more categorical and extreme opinions and will widen the gap between different poles that can consequentially limit possibilities to deliberate (Sustein, 2001; Baum & Groeling, 2008; Tewksbury & Rittenberg, 2009; Dutton, 2009; Garett, 2009; Tewksbury,

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[68] The concept of *mass self-communication* was introduced and defined by Castells (2009) who explain that online social networks are similar to mass communication tools because they are able to spread the information widely and reach global publics. On the other hand, the majority of messages in social networks are self-generated. Mass self-communication is enabled via blogs, wikis, interactive video games, tweets, texts, etc., where personal input (user-generated content) and global reach (access to this content) is possible. Moreover, self-centered approach is important not only in dissemination of information but also in the ways of reception of information. We refer to various forms of information personalization and customization offered by new communication and information technologies, including apps for smart-phones, etc.

Weaver & Maddex, 2001). Such self-centered online networks can foster social fragmentation and polarization[69], which, on one hand, lead to unrepresented and therefore incomplete discourses; on the other hand – to hardened opinions, diminishing tolerance, and increasing dissensus (Fishkin & Ackerman, 2004).

However, there is no comprehensive empirical evidence to confirm or reject the above assumptions about public's behavior online. Instead, results are rather confusing and contradictory. While scholars who investigate blogs conclude that bloggers exhibit homophily as they tend to link their content to other bloggers sharing the same political orientation (Glance & Adamic, 2005; Hargittai, Gallo & Kane, 2008) and vast majority of political blog readers (94%) choose only blogs from one side of the ideological spectrum (Lawrence, Sides & Farrell, 2009), studies analyzing other social medias report different results. For instance, a study performed by the Pew Research Center in 2012 found that only a small number of social network users who disagreed with political views of their friends demonstrated radical behavior and blocked, unfriended or hid these people on their sites[70]. In addition, an empirical study performed by Gentzkow and Shapiro (2011) also concluded that: "ideological segregation[71] on the Internet is low in absolute terms, higher than most offline media (excluding national newspapers), and significantly lower than segregation of face-to-face interactions in social networks. Internet news' consumers with homogeneous news diets are rare" (1800).

Hence, online communication environments offer new discursive spaces, unprecedented flows of information and invite ordinary citizens to participate and deliberate. There is no doubt that rather strong online public sphere is emerging and new types of power are produced and disseminated across society. But the fundamental question is: should this power be somehow legitimized or not? In other words, what is the value and quality of discussions online? Can and should policy-makers consider these discussions?

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[69] Fragmentation may occur because a large number of isolated and issue oriented publics are active and compete in different corners of the single online sphere and do not relate to each other (Habermas, 2006). On the other hand, the threat of polarization also exists, because users usually seek for and engage in information in ways that rearm their existing opinions, political views, and ideologies instead of reaching for broader and balanced information (Sunstein, 2001).
[70] Users of online social networks quite often disagree with friends' political positions and usually let their disagreements to pass without a single comment. In fact, 73% of respondents "only sometimes" agree or never agree with their friends' political postings; 66% of these who disagree usually ignore the posts, 28% - usually respond with comments or posts of their own.
[71] The concept of *ideological segregation* Gentzkow and Shapiro (2011) use it, is closely related to the concept of audience polarization. Polarized audiences personalize their information in a way that encourages their preexisting ideology to develop in no exposure or even in denial of other ideologies.

3.2.2. Deliberation online: previous studies

The very first studies questioning quality of deliberation online were limited to theoretical debates. Habermas (2006) himself entered the discussion with rather skeptical position pointing to public fragmentation and polarization as major obstacles for quality deliberation online. In his words "the rise of millions of fragmented chat rooms across the world tend <…> to lead to the fragmentation of large but politically focused mass audiences into a huge number of isolated issue publics" (Habermas, 2006: 423). However, recent empirical studies report rather mixed findings and as a result there is no clear answer about the value and quality of online discussions. Besides, while some studies closely follow Habermasian ideal of the speech act and question all the categories of quality discussions, others focus on selected categories and ignore the rest. Since it is difficult to draw general conclusions about the online deliberation, we choose to shortly discuss results on each category separately.

Category of participation requires equal possibilities to join and participate (structural equality) and equal rights to discuss and express self[72] (discursive equality) (Stromer-Galley, 2007; Graham & Witschge, 2003; Janssen & Kies, 2004). Recent studies, however, suggest that participation online is usually not equal and certain groups tend to dominate discussions. These groups differ accordingly to the forum and topic of the discussion. For example, R. Kies found that educated younger men highly dominate the discourse; on the other hand, results of Wales, Cotterill, and Smith (2010) pointed to women and older people with higher education. Also, evidence suggests that online users tend to be passive observers instead of actively engaging into discussions. In other words, while only a few are highly engaged, the majority remains silent. Besides, there is no empirical evidence confirming that online communication environments are polarized and therefore cannot be deliberative. Indeed, Kies highlighted that online debates do not lead to polarization of opinions.

Rather interesting results were reported regarding the category of respect. Since online interactions are mostly based on informal communication, one can expect that the level of respect there will be low (Wales et al., 2010: 13). However, empirical data do not support this presumption. For instance, Wales, Cotterill, and Smith (2010) wrote:

> "[t]he fears of those who believe that internet discussion forums by their nature will degenerate into flaming on controversial topics are not confirmed: posts generally remained within the rules of discussion established for the forum and the contributions that we defined as disrespectful were far from overly offensive" (Wales, Cotterill & Smith, 2010: 3).

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[72] No participant should dominate the conversation or silence others.

The level of respect was also reported to be high in a studies performed by Kies and Robertson and McLaughlin[73]. Some scholars also doubted if ordinary citizens have actual experience and knowledge of how to justify their arguments. However, in comparison to other studies measuring deliberation in traditional settings, the level of justification in deliberations online was found to be normal, although mainly based on personal experience (Kies, 2008; Wales, Cotterill & Smith, 2010).

Other studies examining the quality of deliberation online also reported rather optimistic insights. The focus is put on certain circumstances, which are important for quality discussions. For instance, Thorsen (2010) concluded that "virtual realities <…> might be even more important than the democratic procedures *per se* in realizing more enlarged thought and global democracy worldwide. Hence, global communication online might, under certain circumstances, work as an impediment against fundamentalist knowledge offline" (1). Similarly, Davies & Chandler (2011) highlighted that "effectiveness of online deliberation depends on how well the communicative environment is matched to the deliberative task" (10). However, scholars usually tend to question the quality of deliberation in artificial online settings where participants deliberate under certain rules proposed by moderators of the discussion or scholars e.g., online environments constructed for purposes of scientific experiments (e.g., Stromer-Galley, 2007; Wales, Cotterill & Smith, 2010) or online political forums established for certain public issues to be discussed (e.g., Graham & Witgchge, 2003). Meanwhile, the quality of deliberation in natural online settings (e.g., certain Facebook pages and profiles, and Twitter messages) remains unknown. It is unclear whether this is related to the prejudice that there cannot be quality discussions in online social networks; or difficulties to find proper instruments to analyze discussions online; or due to any other reasons. Certainly, analysis of naturally set online communication environments would provide scientists with new data possibly contradicting to previous results, mainly because participants in these discussions are free from any additional rules except limitations of social network itself. A number of expectations can be presumed, which we do not aim to discuss comprehensively, but to mention a few: due to the absence of additional rules discussions might be expected to be more open and less respectful, providing more diverse arguments and less justifications. Hence, in order to ascertain the quality of deliberation in naturally set online communication environments, one has to study them.

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[73] Robertson and McLaughlin (2011) applied the DQI to investigate 12 blogs in the UK. Their results were rather positive as the level of participation, respect, and justification was high. The results did not support assumptions that blogosphere is highly polarized and therefore cannot be deliberative.

3.2.3. Seeking for climate change discourses online

Without any doubt, there is no difficulty to find information about climate change online. One can count thousands of websites, blogs, online forums, or environmental groups of social media dedicated to climate change issues, which are maintained by journalists, climate scientists, politicians, or ordinary citizens. In fact, Technorati.com[74], a leading authority on blogs, lists over 10.000 green blogs and argues that environmental blogs tend to be among the most active in the entire blogosphere. Hence, instead of being puzzled about online channels of information on climate change, we now doubt which information channels should be considered as trustworthy.

While some online communication environments are dedicated primarily to inform society about climate change causes, consequences, and solutions (deficit communication approach), a vast majority aims to engage Internet users to the dialogue, and encourages them to participate and deliberate. For instance, official website of the US Environmental Protection Agency (EPA) is rather limited in terms of interaction and is mainly dedicated to information related to the work of the Agency. However, the EPA also uses other online tools to facilitate multi-directional communication, including Twitter, Facebook, blogs[75], Youtube, Flicks, and Wikis, among others. Hence, while traditional websites are mostly used to inform society, online social media tools help to establish multi-directional communication among society and power-holders.

Environmental discussions are, indeed, vital in the Web 2.0 based online communication environments, which allows building of environmental networks between citizens and organizations, and communicate directly within *friend*-based social media. Social media, such as Facebook or Twitter, protects the public discourse from the distortion of the mass media and, also, creates more personalized relations with the issue. Citizens can subscribe and follow organisations or issues that interest them "and get that information that fits their individual interest" (Bennett & Segerberg, 2009: 3). Moreover, due to dual nature of self mass-communication, social media provides with a possibility to immediately reach and engage global publics. Moreover, immediate communication is also possible.

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[74] Technorati.com is a leading authority on blogs. It is also the first blog search engine. As for today, it indexes more than a million blogs. More information available online at: www.technorati.com.
[75] EPA has several Twitter accounts (e.g., EPAgov, EPAadm, EPAespanol, Greenversations, EPAlive, etc.) where major news or links to these news are shared; EPA also has more than 30 pages on Facebook (e.g., U.S. Environmental Protection Agency, Agencia de Protección Ambiental de Estados Unidos, EPA Water Is Worth It, etc.) where users can follow EPA updates and share related information; the Agency also has a number of blogs (e.g., It's Our Environment, It All Starts with Science, etc.)

Probably the first time that power of social media in environmental discourses was recognized during the COP15 was when intergovernmental discussions became widely covered on social media, including Twitter (@Cop15), Facebook (facebook.com/cop15), Youtube, Google Earth, Flickr, etc. Citizens who could not participate at the event directly could easily follow it online as social media was floating from the huge number of messages related to climate debate. Moreover, NGOs, scientists, politicians, and journalists who attended the event as observers also used social media very broadly. Since dozens of events were taking place simultaneously at the Bella Center and elsewhere, participants had to choose where to be at the moment, in such a way limiting their participation to one or another meeting. However, information on social networks, usually shared by participants from other places, helped to get all the necessary picture of what was going on. For instance, an online journalist from the UK who covered the COP15 argued that social media made it possible to know almost everything what was going on at the COP15 instantly. She highlighted that journalist's choice to attend one meeting, surprisingly, did not limit the knowledge of this journalist or his/her readers, mainly because other media attending of different events inside or outside the Bella Center instantly shared information online. Similarly, a Facebook page *COP15 UN Climate Change Conference 2009* that was founded and managed by members of the Ministry of Foreign Affairs of Denmark was dedicated to spread the information and facilitation of discussions related to the COP15.

Hence, during the COP15 social media enabled global and multidirectional climate change communication online. Thousands of people followed climate debates and contributed to them by using different online tools, such as sharing information, commenting, and liking among others. However, albeit the numbers of online users was high, it does not necessarily lead to quality discussions and deliberations.

3.3. Re-mapping power relations

Although it is rather contradictory and incomprehensive, empirical data tend to support assumptions made by optimistic scholars. This implies that public sphere online can be well-functioning and the power generated there may help to deal with problems that recent democracies face, including democratic deficit, and politics of uncertainty, etc.

However, it is very important to understand that although in ideal circumstances (if the public sphere is well-functioning) the power generated will be positively influencing democratic processes (discursive power), in other circumstances it may also result in different outcomes on democracy (coercive power).

3.3.1. Re-conceptualization of power

Power theorists distinguish between two essential power sources – coercion[76] (resistance-based) and discourse[77] (deliberation-based). Perhaps the major difference between resistance-based and deliberation-based power was best described by 20th century American bank robber John Dillinger who said that: "Nothing is as persuasive as a good argument. Except, perhaps, for a good argument backed up by a loaded gun" (Reichertz, 2011: 153). This is undeniable true; however, should we choose to think as a criminal and resign that resistance-based power is always stronger? Or should we believe that some other kind of power do not require any violence and still are strong, for instance, as Fuchs (2009) puts it very clearly:

> "Relationships of love, intimacy, and affection are in modern society unfortunately often characterized by violence and coercion and are therefore frequently (in Castells' terms) power relationships. But isn't love a prototypical phenomenon, where many people experience feelings and actions that negate violence, domination, and coercion? Isn't the phenomenon of altruism in love the practical falsification of the claim that coercive power is the most fundamental process in society? My claim is that not coercive power, but that cooperation is the most fundamental process in society (Fuchs, 2008: 31-34), and that indeed it is possible to create social systems without coercive power (in Castells' terms) and with a symmetric distribution of power (in Giddens' terminology)" (Fuchs, 2009: 95).

However, many argue that normally both power sources exist in society and supplement each other and which of them is used depends on social context (Casttels, 2009). If compliance and acceptance dominate in the society, and the public participative or deliberative activities are based on legitimate forms (such as voting and signing petitions, for more see Chapter 2) then the power is asserted in the relationship by constructing meanings in the common discourse, thus the source of violence is not necessary. However, if the resistance occurs (or public participative activities are resistance based) and becomes significantly stronger than power holders, "power relationships are transformed <…> the powerful lose power and ultimately there is process of institutional change or structural change <…> or else power relationships become non-social relationships" when violence is used and power maintained against the will of majority (Castells, 2009: 11).

Discursive power is fundamental for deliberative democrats who believe that influence generated via deliberation in (informal) well-functioning public sphere constitute communicative power, which in turn is legitimized via elections or other official tools of

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[76] Weber-inspired power definition: power refers to the relational capacity that enables social actors to influence asymmetrically the decisions of other social actor(s) in ways that favor the empowered actor's will, interests, and values.

[77] Discourse here is perceived as a basis for meaning construction through which certain social actors are empowered and others depowered.

political participation defined in Constitutions (Habermas, 1996; Flynn, 2004; Gaus & Kukathas, 2004). However, if the public sphere is mal-functioning, communicative power will be also generated but it is expected to lead to coercion instead of legitimization of itself. Castells (2009) notices that mal-functioning online based public-sphere can be a base for coercive power to grow as a tension between domination and resistance, between multinational corporate media networks and the creative audience, between framing and counter-framing, between biased biased/scandal media politics and insurgent grassroots media politics. Indeed, in many cases social media is used to resist, protest, or express different opinions. Thus is true especially if we refer to Twitter or Facebook revolution and Arab Spring where many activists used social networking as a key tool in expressing their thoughts concerning unjust acts committed by the government (Hall, 2012; Khondler, 2011). However, perception of the communicative power of social networking as merely resistance based would be rather unfair and non-comprehensive. Therefore, we favor Giddens, who claimed that power is, indeed, linked to difference or transformation, but not necessarily via coercion, domination, or violence (Giddens, 1985: 7). Furthermore, deliberative democrats follow Foucault (1982) and argue that discursive power is not a privilege of a certain group, class or institution. Instead, it is a common good or common bad that is generated and distributed via communicative practices (Hindess, 2001).

Overall, following Castells (2009) we acknowledge that the essential power of contemporary society lies in discursive spaces of global social networks. Furthermore, we choose to think that power itself is neither destructive nor creative, but can be both mainly depending on the state of public sphere.

3.3.2. Newly emerging power relations

Recent changes in social, cultural, and political life show that the real political power, which could be strong enough to fight global risks, lies not in a single national or global institution or social group *per se*, but rather, it emerges from efficient interactions between these groups, which are mainly based on communicative actions and, according to Habermas, are fostered by well-functioning public sphere, which is possibly emerging online.

In the era of mass communication, political power was generated via the relations between major institutions. Citizens, meanwhile, were seen as empowering other institutions through their support, but at the same time were disabled to equally participate in political life together with policy-makers and other power-holders. The case of climate change clearly demonstrates that traditional relations generating (e.g., scientists – politicians – media) and implementing (e.g., voting) power are insufficient. In particular, cooperation between scientists

and politicians does not solve the issues of global risks, instead, democratization of science and deliberative practices are invited. Furthermore, relations between politicians and professional mass media, which were so important for a while, are incapable to foster well-functioning public sphere necessary for deliberative democracies. Similarly, power relations between scientists and media (which, indeed, were never very efficient) also do not foster processes of democratization of science. Overall, traditional power relations are insufficient to deal with current global changes.

Online communication environments help to reorganize these power relations, most importantly, by involving citizens as equal actors of political processes. Hence, the Internet sets news types of power relations between decision-makers and society, enabling deliberative practices of democracy as well as democratization of science.
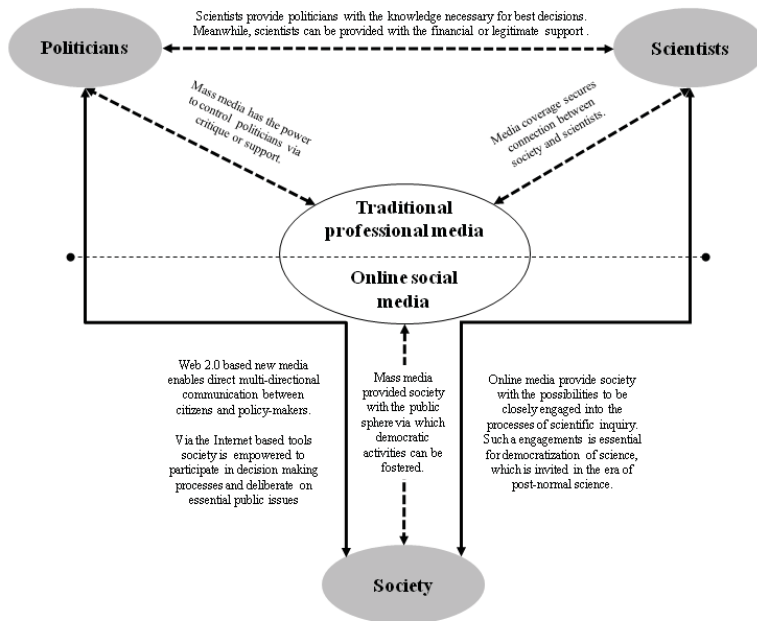
Figure 4: **Traditional and new power relations.**

There is a unique possibility for citizens to become a significant part of political life via online participation or deliberation. However, the success of deliberative democracy highly depends on the effectiveness of public sphere. Certain negative scenarios can and should be considered.

First, public sphere can only be well functioning until it is provided with free discursive space. While collapse of the Internet causing vanish of online discursive spaces is not likely, the chance of political control over the public sphere online is possible. For instance, in China, a series of laws and regulations control the public sphere online. There are certain censorship rules that require web-masters to review all postings to websites before they are published online (Luo, 2007). Also, in some cases, politically sensitive words are blocked in search engine findings and people do not get entire information (Wang & Bates, 2008). Hence, in cases like these, online communication environments do not foster democratic practices; instead, they sometimes assist in maintaining totalitarian regimes (e.g., by limiting public information).

Second of all, it is very important to activate citizens and to engage them into political life. However, free and equal participation online might have different and sometimes negative outcomes on democracies. If, for instance, online communication environments do actually produce polarized citizens' groups by stimulating radical thinking and sometimes leading to real violate actions, then communicative power is likely to be realized not through legitimization but through coercion.

Third, although Internet provides society with unique possibilities to get any kind of information; however, some threats exist. Specifically, certain kinds of information can be limited by a political system (e.g., China's example); personalization of online tools might also lead to limited information only supporting preexistent views of an individual; and good quality, reliable information can be difficult to distinguish in the enormous amounts of information available.

Finally, in order to be well functioning, public sphere should be based on deliberative discussions. However, as we already saw, it can be difficult for online environments to satisfy all Habermasian normative conditions of ideal speech act.

CHAPTER 4

RESEARCH DESIGN AND MEASUREMENT INSTRUMENT

The major empirical aim of this dissertation was to measure the quality of the discussions on climate change in the selected online social network and to identify a potential of Web 2.0 online communication environments (and online communication culture) to support democratic processes. To fulfill this aim, we had to set theoretical and methodological guidelines following which empirical experiment could have been performed. Therefore, in addition to empirical goal, we have set three theoretical objectives that guided our work. First, we aimed to design a theoretical model applicable for empirical data analysis. Second, we had to choose and justify an appropriate methodological background. And finally, we aimed to construct a research plan for empirical study to perform.

In previous three chapters theoretical background was discussed; whereas, in this chapter we explain how we expect theoretical foundations to operate together with the chosen methodological approaches in order to help us to perform the empirical analysis and interpret our findings. First of all, we justify our research strategy and introduce our case study. Secondly, we formulate and discuss research questions, goals, and hypotheses. Third, we introduce instrument of the Discourse Quality Index (DQI) and comprehensively explain how it was applied to analyze our empirical data. Finally, we shortly discuss data from the participants' survey.

4.1. Designing research strategy

Scholarly literature suggests that case study based research strategy is a good choice to explore contemporary phenomenon within real-life context (Yin, 2008): identifying connections between different factors and explaining them. We were aware that for comprehensive analysis of Web 2.0 based online discussions on climate change, we cannot merely rely on discussions themself, but in addition, we should question general context and look for explanations in political, cultural, or social discourses. Hence, we investigated climate change public discussions online closely following real-life settings and chose case study as a research strategy of our project.

We decided to question quality of deliberation in very specific Web 2.0 communication environment, which demonstrates high structural equality[78] (it is globally accessible by almost

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[78] Majority of the researches dealing with participation underscore two essential elements of the discourse, which have to be evaluated – equality and autonomy. Commonly, referring to the element of equality, scholars discuss

everyone who has Internet connection and some knowledge how to use it), high discursive equality[79] (content is generated and published by users themselves), and good level of autonomy[80] (with some exceptions, states do not regulate content on social online networks). Hence, this Web 2.0 based online communication environment gave us a chance to analyze global public discussions. To make sure that our case was truly dealing with global audiences, we also had to choose appropriate topic. While local or national topics, probably, mostly remain under consideration by national or local publics, global topics should anticipate engagement of global publics, involvement of different attitudes, and confronting positions, – which are important for quality deliberation. Hence, we chose global climate change as a topic of our case. At the end, discussions on Facebook page *UN Climate Change Conference 2009* were selected as our case and as a major source for empirical data.

Approximately two years after the event we retrieved all wall-posts and comments from the Facebook page, examined, assessed, and coded them following requirements of the DQI (which is based on content analysis research technique) and composed them into a computer-based data-set. The final sample constituted of 156 wall-posts published by page moderator(s) and 2788 comments made by participants.

| DATA COLLECTION | 1st STAGE: DQI based content analysis | 2nd STAGE: Participants' survey |

Figure 5: **Stages of empirical data collection.**

To gather additional data (e.g. missing socio-demographic characteristics, participants' positions on political, scientific, and environmental matters), we also performed participants' survey. The survey was send via Facebook to all participants who contributed to the discussions.

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structural equality and discursive equality. The requirement of structural equality insists that: "access to discursive forums must be open to anyone who is affected by the validity claims under consideration" (Graham & Witschge, 2003: 176). In online environments structural equality means: "access to a computer with the Internet connection, the ability to reach an online forum and make a contribution, and the necessary skills to do so" (Janssen & Kies, 2004: 23).

[79] The requirement of discursive equality considers status that participants have in the discourse and it suggests that "no participants should dominate the conversation or silence others" (Stromer-Galley, 2007: 6), "if only a small amount of participants make a large proportion of the contributions they then dominate this debate" (Janssen & Kies, 2004: 23-4).

[80] Autonomy questions freedom of the forum and freedom of the participants in the forum. The main questions that matter here are: who organizes the forum and what is the aim of that forum. Such information could, for instance, indicate that a particular government organized forum only allows discussions on a specific subject, that participants cannot introduce new topics to the agenda, and that the moderators remove all postings that are off-topic. Besides, freedom of the forum could be assessed by discussing political and legal issues of network itself as well as discussing broader related political, economic, and legal context.

After the data were collected, we analyzed it in two stages. First of all, we performed univariate analysis and compared our findings with two similar studies performed in Columbia and Belgium where the DQI instrument was applied to measure quality of the discussions in face-to-face settings. Univariate analysis enabled us to assess quality of our discussions; while comparison provided our data with supplementary meanings, hence, we were able to interpret our findings in a broader context.
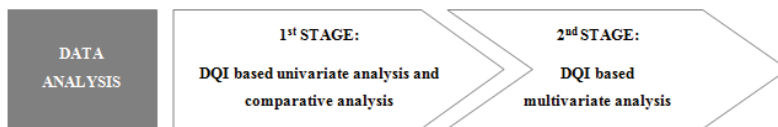
Figure 6: **Stages of empirical data analysis.**

Secondly, we performed DQI based multivariate analysis, where we aimed to investigate *how* and *why* quality of the discussions varied. We assessed quality variations in relation to external and internal (structural) factors.

4.2. Empirical questions and tentative hypotheses

We aimed to find answers to seven major empirical questions in this dissertation: *RQ1.* What is the quality of global public discussions on preselected Facebook page? *RQ2.* How quality of global public discussions on preselected Facebook page corresponds to the quality of traditional (vis-à-vis) discussions? *RQ3.* Which characteristics of online public sphere (or features of online communication culture) influence quality of public discussions on preselected Facebook page? *RQ4.* How discussions' quality is determined by the general political, social, and cultural context related to climate change? *RQ5.* How frames of the topic under consideration determine discussions' quality? *RQ6.* How discussions' quality is influenced by the characteristics of participants? *RQ7.* How the quality of the discussions might be improved in order to be considered by policy makers?

In addition to these questions and following literature, we also formulated tentative hypotheses, mapping our research and questioning importance of different (internal and external) factors in building quality discourses online. Namely we focused on two factors discussed in previous chapters – topic under consideration (Chapter 1) and discursive space (Chapter 3). Factor of topic was discussed in terms of consensus building (*versus* dissensus), framing, and public knowledge; while discussing factor of discursive space we focused on issues of scale (local *versus* global), and equal participation (*versus* polarization) (see Figure 7).

AIM OF THE DISSERTATION: to explore theoretical and methodological foundations for analysis of quality of online discussions in order to construct a proper research design following which the quality of the discussions of the preselected online social network could be measured and potentials of the Web 2.0 based online communication environments investigated.

THEORETICAL AND METHODOLOGICAL OBJECTIVES

FIRST: to review and elaborate on theoretical basics of deliberative democracy in order to justify the theoretical model for the analysis of empirical data.

SECOND: to discuss methodological approaches to the analysis and justify their suitability and applicability.

THIRD: to establish research design for the empirical analysis and justify it

FOURTH: to provide reasons for preselected case study and present comprehensive introduction to it

EMPIRICAL OBJECTIVE: To measure discourse quality in preselected case, identifying week and strong sides of the discussions and providing with recommendations *if* and *how* these discussions could be considered by policy makers.

RQ1. What is the quality of global public discussions on preselected Facebook page?

RQ2. How quality of global public discussions on preselected Facebook page corresponds to the quality of traditional (vis-à-vis) discussions?

RQ3. Which characteristics of online public sphere (or features of online communication culture) influence quality of public discussions on preselected Facebook page?

RQ4. How discussions' quality is determined by the general political, social, and cultural context related to climate change?

RQ5. How the quality of the discussions is determined by the frames of the topic?

RQ6. How discussions' quality is influenced by the characteristics of participants?

RQ7. How the quality of the discussions might be improved in order to be considered by policy makers?

H1: Global online discussions involving limitless number of participants are not less deliberative than small local face-to-face discussions with restricted number of citizens.

H2: Participants' polarization online is a strong characteristic of online communication culture preventing online discursive spaces from establishment of well-functioning public sphere.

H3: If in real life disagreements among major discourse actors (politicians, scientists, media, etc.) increases, the level of public discussions decreases.

H4: Scientific framing of climate change issues will demonstrate higher level of deliberation compared to the political framing.

H5: Participants from developed countries are more likely to have necessary knowledge and skills to facilitate quality deliberations online; therefore, they are more deliberative in comparison to participants from developing countries who have fewer opportunities to join the discussions, and less skills and knowledge about how to effectively deliberate.

Figure 7: **Research design: aims, theoretical, methodological, and empirical objectives, research questions and tentative hypothesis.**

The first group of hypotheses questioned discursive space as a possible determinant of the quality of public discussions. In Chapter 2 we already elaborated that although scale can be a major obstacle preventing discussions from quality deliberation, it is also possible, that the actual number of participants is not as important as their readiness and eagerness to participate and deliberate (see Chapter 2). Therefore we hypothesized that:

H1: Global online discussions involving limitless number of participants are not less deliberative than small local face-to-face discussions with restricted number of citizens.

Next, we considered audience's polarization and fragmentation as an important characteristic of online communication culture. As we already elaborated in Chapter 3, audiences online are polarized and, in turn, proliferation of hate groups or radical support groups are encouraged (see Chapter 3). Following theoretical assumptions we expect to verify if:

H2: Participants' polarization online is a strong characteristic of online communication culture preventing online discursive spaces from establishment of well-functioning public sphere.

Second of all, we questioned the importance of the topic in determining quality of our discussions. Following theoretical assumptions that dissensual topics are related to lower level of justification and lower level of respect we aimed to find out (see Chapter 1 and Chapter 2) if quality of deliberation is determined by variations in the level of consensus in general context. In particular, we expected that:

H3: If in real life disagreements among major discourse actors (politicians, scientists, media, etc.) increases, the level of public discussions decreases.

Furthermore, we considered that frames of the topic are possible determinant of discursive quality, assuming that some frames might be more deliberative than others. Hence, leaning on global trends of citizens' trust and opinions about science and politics (see Chapter 1 and Chapter 2), we guess that:

H4: Scientific framing of climate change issues will demonstrate higher level of deliberation compared to the political framing.

Lastly, we questioned public knowledge and awareness, as we tended to believe that this factor might be more important than the scale of the discourse. Leaning on previous assumptions we cannot expect our discussions to be good enough if participants do not have proper knowledge and understanding about climate change (see Chapter 1). In turn we expected that discussions' quality might be determined by the demographic characteristics of the participants. In particular, some groups might be more deliberative than others. Therefore, we stated that:

H5: Participants from developed countries are more likely to have necessary knowledge and skills to facilitate quality deliberations online therefore they are more deliberative in comparison

to participants from developing countries who have fewer opportunities to join the discussions, and less skills and knowledge about how to effectively deliberate.

Now that we have a picture of research design of this dissertation we may proceed to comprehensive description of the instruments that we used to collect and interpret our empirical data – the DQI and participants' survey.

4.3. Coding the data: introduction to the Discourse Quality Index (DQI)

DQI was the major instrument that we used to collect, code, and analyze data (please see Appendix I). Theoretical basis of the DQI lies in the Habermasian theory of *communication action*. In particular, it closely follows six normative discourse conditions discussed by Habermas: *participation, respect, justification, common good, force of better argument, and truthfulness*. Although some scholars criticize the DQI for being too focused on discourse itself but ignoring a broader context in which discourse takes place (O'Brien, 2009) or for distorting Habermasian ideals because it reduces them to observable phenomena and fails to measure discourse accurately and objectively (King, 2009), Habermas himself applauds the instrument and notices that the DQI captures essential features of proper deliberation (Habermas in Bächtiger et al. 2010). Jürg Steiner, one of the creators of the DQI, agrees that coding following the DQI is not objective and requires broader interpretations (in cultural, political, and social contexts), but he adds that:

> "No serious social science research ever claims to reach objective truth. All interpretations have a subjective element, but not all interpretations are on par. Not everything goes. The criterion for a scholarly fruitful interpretation is whether one succeeds to get some level of inter-subjectivity, resulting in a sufficient degree of inter-coder reliability. This is what we attain in our research with the DQI. It was always considered as a flexible measurement instrument that needs to be adapted to specific research projects" (Steiner, 2012: 13).

Prior to creation of the DQI, there have been attempts to measure deliberation in different ways. Earlier studies also considered different categories such as *inclusiveness, continuity, and reciprocity* (Janssen & Kies, 2004; Wales et al., 2010; Graham & Witschge, 2003). In our research we basically follow all the DQI categories, except truthfulness[81]. We dropped this category because it was impossible to assess it from the data we collected. In addition to original DQI categories, we also assess categories of *information type, consistency, and sourcing*. In the following sections we will discuss each DQI category and explain how it was measured in our study.

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[81] Following Habermas and Steiner, the category of truthfulness (*Wahrhaftigkeit*) means that "everybody is opens about their true preferences and do not try to deceive and mislead others about their true intentions" (Steiner et al., 2004: 20)

4.3.1. Participation

Previous studies demonstrated a number of ways to measure participation. Most common ways included assessing the nature of speech-act (interruptions *versus* regular speech-acts), identifying constraints (constrained *versus* not constrained speech-acts), and measuring the length of the contribution. In our case of Web 2.0 online communication, we were not able to measure the level of participation following common patterns, because, the flow of communication in technology based environments is not limited by time-frames and all participants can speak at the same time without interrupting each other. Therefore, we restricted our analysis only to evaluation of participation length – by counting a number of words per each comment. Besides, we presumed that Web 2.0 based online communication environments are free of outside constrains and interruptions *per se*.

The first difficulty we faced was related to the different measurement of participation length, which complicated our aim to compare our data with previous studies. Participation length in traditional face-to-face discussions most commonly is measured by assessing time of the individual speech-act in seconds. In our study, participation length was measured by counting the number of words per individual comment. Therefore, head to head comparison of participation length in traditional *versus* online discussions was complicated. However, psychological and sociological researches exploring humans' speaking, writing, and typing abilities suggest that text typing can take approximately three times longer than uttering the same text aloud (i.e., an average person can say about 150 words per 1 minute and type around 50 words during the same time period) (Williams, 1998). In line with these recommendations, we compared our data with analysis of ex-combatants (see Chapter 5).

4.3.2. Respect

Further, we measured the category of respect in order to verify if online discussions tend to demonstrate proper level of deliberation in terms of respect[82]. In updated version of the DQI category of respect is measured by three indicators[83]: (a) *foul language*, (b) *respectful language,* and (c) *listening.* Following this pattern, first of all, we evaluated if in a single comment foul language was used towards participants (at a personal level) or towards their arguments. Comments that contained foul language at a personal level were attributed to the first group and

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[82] The issue of respect is probably more important in online deliberation than in traditional face-to-face conversations because of anonymous and free of rules online communication environments. Online interactions are based on informal communication, which in many cases determines disrespect to other participants and thoughts they express (Wales et al., 2010). If the requirement of mutual respect in the discourse is realized, it suggests that all voices are respected and welcomed in the discourse.

[83] We use term indicator to define different elements, which together compose categories of the DQI.

were considered to be the least deliberative; comments with foul language towards other positions were included in the second group and were considered of average deliberativeness; and comments without foul language towards participants were attributed to the third group and were considered to be most deliberative.

Second of all, we distinguished between comments where respectful expressions towards other participants (at a personal level) and/or their arguments were used. Comments containing respectful language towards participants (at a personal level) or towards their comments were put under the group one (more deliberative comments), while those without explicit respectful language – under the group two (less deliberative comments).

Also, category of respect was measured by evaluating level of responsiveness (listening). We examined if comments replied to previous contributions or if they were merely incoherent casual thoughts. Only direct replies (indicating participant's name or quoting his/her contribution) were considered to be responsive (see Chapter 5 for detailed explanations). The first group included comments that ignored previous contributions (low quality). Meanwhile, comments that directly replied to others were considered to be responsive and were attributed to the second group (high quality). The third group encompassed comments that were first contributions in the discussion and could not be considered for the category of respect.

In addition to the traditional DQI measurements of the category of respect, we also evaluated respect towards participants who did not directly participate (i.e. politicians, experts, scientists, and others) in the discussions but were important actors of the discourse. We categorized these indicators as *foul language type II* and *respectful language type II*. We felt that when dealing with quality of online discussions these indicators might be significant, especially considering scholarly literature stressing that online discussions encourage public polarization, formation of hate groups, and might greatly determine low quality of the discussions (see Chapter 3). Hence, following the pattern of indicators of foul language I and respectful language I, which were discussed above, we distinguished between foul language towards outside participants at a personal level (group one), between foul language towards thoughts of outside participants (group two), and comments where foul language towards outside participants was not evident (group three). Likewise, comments containing respectful language towards outside participants at a personal level or towards their thoughts were attributed to group one; and those with no respectful language towards outside participants or their arguments – to group two.

4.3.3. Justification

Theoretical literature defining measurements of the category of justification is confusing. While some studies limit their explorations to testing validity claims (Pilon, 2008), others perceive justification (together with categories of reciprocity and reflexivity) as a component of broader processes of understanding (Graham & Witschge, 2003); or together with reason giving issues discuss sourcing question (Wales et al., 2010; Stromer-Galley, 2007). In general, previous explorations suggest that four main indicators should be discussed under the category of justification, namely, *reasoned validity claims*, *coherence and continuity*, *sourcing*, and *common good orientation*. In our study, we follow the DQI and measure reasoned validity claims and common good orientation. Besides, as additional categories later on we also consider consistency and sourcing. Reasoned validity claims[84] refer to the essential requirements of deliberative discussion. Participants are expected not only to be engaged with the discussions, but at the same time justify their engagement and choices they make.

For clarity it should be mentioned that while evaluating comments for level of justification, we followed some basic rules. First, if a comment contained more than one argument, the one that demonstrated higher level of deliberation was considered. Second, comments with no opinions provided were attributed to group one. Third, some comments had argument, but there were neither further explanations nor justifications; therefore, these comments were put under group two. Fourth, we also looked for arguments justified with illustrations (group three), arguments with unclear justifications (group four), and properly justified arguments (group five and six).

Next, we questioned the content of justification, distinguishing between comments referring to self-orientation, other's orientation, common good orientation, or orientation of abstract principles. It was quite problematic to differentiate between posts with a common good orientation from those underlying abstract principles. To make this distinction more clear, we suggested that posts referring to a number of different groups and discussing benefits and costs to them should be coded as common good posts and those without a reference to any group – coded as abstract principles posts.

4.3.4. Consensus building

According to Habermas, deliberation should arrive at a consensus. However, in reality, consensus is often not possible. Therefore, the real necessity of deliberation is an attempt to

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[84] "The claim is reasoned if it provides evidence that can be observably confirmed, empirically denied, or appeals to shared normative ground" (Stromer-Galley, 2007: 4).

search for that consensus, accept stronger arguments and follow the principle of common good (Steiner, 2004). Hence, in this dissertation we use the concept of *consensus building,* which highlights the process but not necessarily the result of deliberation[85]. Consensus building in our case was measured by the category of force of better argument. Following Steenbergen and colleagues (2003) we assessed each comment searching for a change in participants' position. Only posts made by participants who contributed to the same discussion more than once were considered, as only in these cases the change in position was possible to track. All comments were divided into six groups. The highest level of deliberation was demonstrated by comments attributed to groups one and two. If we saw any change in participant's position (justified or not) we considered that as high level of deliberative quality. Those comments where participant's position was not changed but other positions were acknowledged were considered less deliberative (group three). Least deliberative comments were those with no change in position and no acknowledgement of previous arguments (group four). Besides, comments with no position or unclear content were attributed to group five, and participant's first-time contributions were put under group six.

These four major categories of participation, respect, justification, and consensus building were primarily used to explore the quality of discussions. In addition, to supplement the evaluation of discussions' quality we measured three other categories: *information type, consistency*, and *sourcing*.

4.3.5. Additional measurements

First of all, we were interested in the information type used by the participants, since we thought that this information might be helpful in describing category of participation. We distinguished six major groups of information type: *opinions, information sharing, questions, emotions,* and *self-promotions.* Opinion-based comments were attributed to group one, while contributions sharing information (including online links) were put under group two, and questions under group three. We distinguished a separate group for comments based on various emotions, such as hopes, disappointments, gratefulness, encouragements, jokes, and anger. It should be mentioned that this category was coded in a binary system, because in some cases, more than one information type was suitable to describe the comment. We assumed that comments

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[85] Whereas, when Steiner et al. (2004) measured quality of parliamentary discussions they referred to another concept of *constitutive politics,* which is very accurate for their discourse. However, in our case we deal with public discussions where fact of good participation is the most important. Hence, we decided that the term *consensus building* is more suitable in our case and reflects the real goal of the public discussions – to discuss in quality way and aim for the consensus, in such a case, even if it will not be reached, the discourse will be seen as deliberative. On the other hand, it should be mentioned that the core condition for both concepts (concept of constructive politics and concept of consensus building) is – force of better argument.

expressing opinions and sharing information were the most deliberative; questions and emotional comments were less deliberative; and self-promoting contributions demonstrated the least deliberative quality.

The second additional category that we measured was *consistency*. In scholarly literature, this category is also known as *coherence*. For instance, Graham and Witschge (2003) claim that *coherence* requires that all participants should maintain a decent level of commitment to the issue under discussion. Consequentially, in our study, posts discussing the main topic of the discussions were considered to be consistent (group one), and those discussing other not related issues – non-consistent (group two).

Finally, we aimed to identify *sources* that were used to support claims. Following Stromer-Galley (2007) we presumed that source analysis might be another way to measure justification, because suitable sourcing may help to improve quality of justification. For instance, discussing information provided in various documents may lead to a better understanding of the document's text or the issue itself. According to the sources of argumentation, comments were ascribed to one of the five groups: personal stories (group one), quoting experts, authorities or institutions (group two), referring to documents and scientific data (group three), citing media (group four), and linking to online content (group five). We considered that references to experts and documents may significantly increase quality of the justification, because these usually are primary sources for information (especially on climate change) and the possibility of misleading information is least likely. Media, meanwhile, is a major secondary source indicating more chances for misleading or inaccurate information emerging from inaccurate translation (see Chapter 3). Hence, we considered media to be a valuable source for our discussions; however, we also realized that media should be assessed critically. And finally, we assume that personal experiences and online sources possibly have the least input on high level of deliberation, mainly because of personal biases and questionable reliability of online sources. In other words, both personal experiences and online sources might be important in building discussions of good quality; however, these sources are least reliable. It should be also mentioned that this category was coded in a binary system, because in some cases more than one group was applicable.

Overall, the discussed categories composed the major instrument for our study and directed our way through further stages of data collection, coding, and analysis. In addition to the DQI based analysis, we also compared our data with the results of other two studies assessing quality of in face-to-face discussions, in order to make broader explanations and justified implications.

4.4. Quality of discussions online *versus* vis-à-vis: tracking similarities and distinguishing differences

Recently, a number of attempts to apply the DQI in studies of various discourses – including traditional media, face-to-face public discussions, or online forums – have emerged (see Chapter 3). However, at the time when we designed our study and performed our analysis, evaluations of online deliberation quality were in a very early stage, there was no strong evidence reported, and we did not find any suitable DQI applications to measure discourse quality in Web 2.0 based online communication environments. Therefore, we chose to compare our findings with results from studies evaluating public face-to-face discussions. We selected two studies where discourse quality in traditional communication environments was measured using DQI[86]. One study reported high deliberative level of the discussions and another – low deliberative level. We aimed to identify, where, in comparison with these projects, our sample stands.

The first study we selected for comparison was a PhD research project performed by D. Caluwaerts and published under the headline *Confrontation and communication: Experiments on deliberative democracy in linguistically divided Belgium* in 2012. The author measured quality of deliberation in discussions between linguistically divided Belgians (Flemish – Dutch speaking, and Walloons – French speaking). In 2010, the author with colleagues gathered 83 Belgian citizens representing both sides of linguistically divided Belgium. All participants were divided into experimental groups – mini-publics. Some participants were randomized to a linguistically homogeneous groups, whereas others – in linguistically divided groups. During the experiment participants were asked to discuss the question of how they saw the future of Belgium. Discussions were asked to result in a decision made using a simple majority, a two-third majority, or a unanimity rule. In general, results of this study were very promising and reported rather high discourse quality.

On the other side, we had a research project performed by J. E. Ugariza. He analyzed deliberation between more divided groups – ex-combatants of Colombia. Considering painful history and experience of the two combating sides there was no surprise that results of this study were relatively less optimistic. Results were published in a PhD dissertation under the headline *Potential for Deliberation Among Ex-Combatants in Columbia* in 2011. In total, the latter project consisted of 28 experimental groups: seven groups had to discuss proposals to achieve peace in the country and arrive at a consensus; another seven groups had to hold a majority vote;

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[86] It should be mentioned that both studies were performed as a part of a larger research project on deliberation in deeply divided societies, coordinated by Jürg Steiner from the University of Bern. The project had an explicit comparative aim of determining the favorable conditions for deliberation in deeply divided societies. Similar experiments were set up (or planned) in Belgium, Colombia, Bosnia-Herzegovina, Turkey, South Africa, Northern Ireland, and Spain.

and the remaining 14 groups were not instructed to reach a decision, and served as control group. The final data-set consisted of 1027 speech-acts. Overall, the latter study demonstrated lower quality of deliberation.

4.5. Designing a survey and implications on the data

In addition to the DQI analysis, we also performed participants' survey. Since, participants' Facebook profiles in many cases were not complete and a lot of socio-demographic data (including gender, age, education, and nationality) were missing, we saw a survey as a possible tool to fill in this gap. Therefore, the first aim of participants' survey was to collect missing socio-demographic information. Second of all, we also aimed to identify political and religious orientation and values of our participants in order to explore how these orientations might determine the quality of discussions. And finally, following the DQI categories we composed a *Likert-type* scale in order to explore how participants themselves evaluated the quality of the discussions, and how objective assessments based on the DQI correlated with subjective assessments of participants. The survey is presented in the Appendix 2.

We intended to send the survey to all 1424 active participants who contributed to our discussions at least once. The only way to reach participants was by contacting them via Facebook; therefore, we sent a link to the survey[87] one by one to individual participants who on their Facebook page had an option *Send a message*. The content of the message asking to fill in the survey was as follows:

> Dear xxx,
>
> My name is Inesa Birbilaite. I am a PhD student performing a research on deliberation online. In particular, I analyze Facebook page dedicated to COP15 event. In the process of my research I have found that You have participated in the mentioned Facebook discussion and contributed to it. This is the reason why I would like to kindly ask you to participate in a short survey. It will take only 5 minutes and would be of the great importance for my research.
>
> Please take the survey here:
> http://www.surveyshare.com/s/AQAY4GD
>
> In my research I aim to assess the quality of the discussion online, besides, it is important for the study to identify demographic characteristics of the people who are involved into the certain discussion and to learn their opinion about it; hence, the survey is designed mainly to get more information about You. It is expected that the results of the research will be helpful in determining value of deliberative discussions and identifying their value for contemporary decision-making.
>
> As an independent researcher I guarantee full confidentiality. Survey data will be accessed by myself and nobody else. It is critical for my research to relate Your information with the content You have created on the COP15 Facebook page; therefore, please indicate your full Facebook name in the survey. Later, Your data will be coded and Your Facebook name replaced by ID number.

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[87] The survey was created and published online at www.surveyshare.com, it was active for three months between August and November, 2012.

For more information about myself and my research visit
http://www.mediaresearch.lt/en/inesa-birbilaite

If you have any questions, please feel free to contact me on Facebook or at
i.birbilaite@pmdf.vdu.lt

Please take the survey here: http://www.surveyshare.com/s/AQAY4GD
Thank you so much for your time!

If option *Send a message* was not found on participant's profile, we could not contact him/her. Therefore, the surveys were sent only to 1397 (97%) participants out of 1424. However, the response rate was also very low, since only 47 participants (3.3%) responded to the survey. – Therefore, we could not consider this data in our further analysis, but we do shortly discuss it in the following sections[88].

4.5.1. Socio-demographic characteristics

The first group of questions of the survey constituted of six questions pertaining to socio-demographic characteristics. Participants were asked to indicate their Facebook name, age, nationality, and occupation, gender and education.

In terms of age, younger participants dominated but general age distribution was rather wide as participants' age ranged from 17 to 70 years old[89]. More than two thirds of respondents were males (32 or 68.1%) and one third was females (15 or 31.9%). Participants also represented a wide range of geographical distribution from both developed and developing countries. Twenty eight (59.6%) respondents claimed to be from 12 countries attributed to Annex I group[90] while 19 participants (40.4%) represented 9 Annex II countries[91]. Respondents from the USA, UK (Annex I countries) and India and Mexico (Annex II countries) seemed to be the most concerned and active in responding to the survey.

Respondent were well educated, as only one (2.1%) participant indicated that his/her education was lower than high school; while ten respondents (21.3%) had high school diplomas; sixteen participants (34.0%) claimed having college degree (BA and/or BS); eleven (23.4%) had master's degree; seven (14.9%) doctoral degree; and two participants had professional degrees

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[88] We noticed that participants who filled in the survey were extremely deliberative; they contacted us on Facebook asking for more information about the study, offering different kind of help related to the research, and were very supportive and optimistic about our project expressing big interest in it. Besides, awhile after our survey was finished (at least three month after it was published online), we started to receive messages from participants who did not reply on time apologizing and saying that our message was somehow lost among other Facebook information or that it was received only after a few weeks or months.

[89] 20 participants (42.6%) were between 17 and 30 years old, 14 participants (29.8%) were between 31 to 50 years old, and 12 participants (25.5%) were of 51 or older.

[90] USA (7), England (5), Sweden (3), Belgium (2 participants), Ireland (2), Portugal (2), Australia (1 participant), Canada (1), Czech Republic (1), Denmark (1), Finland (1), Netherlands (1).

[91] India (6), Mexico (3), Argentina (2 participants), Indonesia (2), Pakistan (2), Ecuador (1 participant), Malaysia (1), Philippines (1), South Africa (1).

(*medical doctor* and/or *juris doctor*). Meanwhile, participants' occupation varied[92] from students to research scholars, from nurses to medical doctors, from engineers to artists, and so on.

Although only 47 participants completed the survey, we still may see that our participants were very different in many senses – age, education, occupation, and national origin. These findings reflected the real picture of global online environments. As it could have been expected, since people are coming online from different cultural, political, social environments, they are very different but not only in socio-demographic characteristics, therefore, further we consider respondents' attitudes, values and orientations.

4.5.2. Values and orientations

The second block of questions in our survey was dedicated to reveal participants' religious affiliation, political orientation, attitudes to climate change and online communication in order to assess how these factors might have been influencing the quality of the discussions. Multiple-choice questions were provided to the participants asking to choose one answer; however if participant could not find an option suitable for him/her, participants also had a possibility to indicate their own answer.

Data indicated that bigger part of respondents were Christians[93] holding liberal or moderate political views[94]. Audience polarization in terms of political views was also obvious from this data as only 4 respondents claimed to be conservative or very conservative, while others were liberal, very liberal or moderate.

Further we asked respondents what they think about climate change. Four possible answers were provided. Data indicated that everybody acknowledged climate change as real problem and only three respondents (6.4%) (all of them declaring conservative views) believed that although climate change exists but humans have little or nothing to do with it. Not surprisingly, the majority of the respondents (liberals) supported the remaining choices: 24 participants (51.1%) believed that climate change is a mark of industrial civilization; 6 respondents (12.8%) claimed that climate change is anthropogenic and its' roots are in political ideology. Participants, who chose to indicate their own opinion in more explanatory ways also agreed to the idea of anthropogenic climate change. For instance, they claimed that:

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[92] Student (10), activist (2), (sales) manager (2), technician (1), university professor (1), media (1), climate / environmental consultant (4), civil servant (1), craft-person (1), research scholar (3), engineer (3), nurse (1), biologist (1), health-care specialist (2), artist (3), business administrator (1), IT specialist (2), Audio-visual producer (1), attorney (1), medical doctor (1), missing (5).
[93] Protestant Christians (4 or 8.5%), Roman Catholics (8 or 17.0%), Evangelical Christians (3 or 6.4%), Jewish (2 or 4.3%), Muslims (7 or 14.9%), Hindu (6 or 12.8%), Buddhists (2 or 4.3%), Atheists (9 or 19.2%), other (1 or 2.1), did not indicate their religious affiliations (5 or 10.6%).
[94] Liberal (18 or 38.3%), moderate (17 or 36.2%), very liberal (7 or 14.9%), conservative (3 or 6.4%), very conservative (1 or 2.1%), political views not indicated (1 or 2.1%)

"Most of it is due to human activity, regardless of economic or political ideology, although some cyclical natural climate change does occur" (17 years old male student from Canada).

"Climate change is not a natural dynamic, but the modern issue of anthropogenic interference through economic and global development. Therefore politicians must legislate green policies in order to mitigate future catastrophes" (47 years old male environmental consultant from England).

"It's real and part of it is our fault, but there might be some small part that's cyclic" (37 years old male nurse from Portugal).

Next, we aimed to find out what our participants think about online discussions on climate change. The question was followed by five answers and respondents were asked to choose one answer. If respondents did not find any suitable choices they also had an opportunity to explain their opinion in-depth. Data indicated that respondents were rather positive about online discussions. Only four participants (8.5%) claimed that Internet based communication is too chaotic to be considered. Supporting this position one respondent wrote:

"Online discussions provide an interesting demographic insight, but are too chaotic and prone to groupthink for policymakers to find [them] useful. These debates however hold the opportunity for great social change" (17 years old male student from Canada).

Significant part of respondents (15 participants constituting 31.9%), expressed their beliefs that online discussions on climate change have high value and policy makers should consider them in decision-making procedures, while 13 respondents (27.7%) claimed that discussions are valuable, but they cannot influence political decisions because of the attitudes that politicians have about conversations online. In addition to that one participant stated:

"Online discussions can be useful, but traditional policy making mechanisms are poorly adapted to taking on board traditional means of expression, let alone more modern ones" (39 years old female civil servant from England).

And finally, 4 participants (8.5%) believed that online discussions have a big potential but they should be improved to be used in decision-making processes. In addition, one participant also supported this position and added:

"<…> improved by doing them online in a structured way, as demonstrated at http://www.actor-atlas.info/global-resource:et-future-we-want-draft[95]" (52 years old male environmental consultant from Belgium).

Overall, participants tended to believe in value of online discussions but also agreed that they should be improved to be considered in political decision-making processes.

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[95] The participant refers to the online program, which is designed to map interactions between different actors or institutions (at a local and global levels).

4.5.3. Participants' subjective evaluations of the COP15 online discussions' quality

The last block of questions was presented as a *Likert-type* scale in order to assess participants' personal assessments of discursive quality. Respondents were asked to remember their experience on the COP15 Facebook page and express their individual opinions and feelings about the quality of the discussions[96]. Nineteen statements were provided for participants' evaluations[97]. The first three statements dealt with normative category of participation including structural and discursive equality.

Data indicated that the majority of participants thought that discussions were free and equal. Actually, only two respondents (4.3%) disagreed with this statement (see Table 1). On the other hand respondents were less positive about discursive equality. While only 12 respondents (25.5%) claimed that discussions were more or less equal and participants were not silenced by others, more participants were not sure and claimed that in this sense discussions were not equal.

Table 1: **Participants' evaluations of the category of participation**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
The discussion was free and equal	12 (25.5)	17 (36.2)	9 (19.1)	7 (14.9)	---	2 (4.3)	---	47 (100)
Some of the participants dominated the discussions and silenced the other	1 (2.1)	12 (25.5)	7 (14.9)	15 (31.9)	3 (6.39)	6 (12.8)	3 (6.4)	47 (100)
I personally was trying to avoid domination and shared the floor with others	6 (12.8)	19 (40.4)	5 (10.6)	13 (27.7)	1 (2.1)	2 (4.3)	---	46 (97.9)

When we asked about participants' personal intentions to dominate the discussions' floor, the majority of them claimed that they tried to avoid domination and shared the floor with others. Hence, subjective evaluation of category of participation is rather arbitrary. Although, participants tended to claim that discussions were free and structurally equal, rather big number of participants did acknowledged lack of discursive equality.

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[96] The question was formulated as follows: *based on your personal experience discussing on COP15 Facebook page, please express your opinion on the following aspects.*
[97] Statements were assessed by selecting one out of eight possible evaluative statements (*totally agree, agree, partly agree, unsure, partly disagree, disagree, and totally disagree*), which best reflected opinion and feelings of respondents.

The following two next questions addressed the category of respect. Participants were asked if they felt that other participants in general were respectful to each other and if respondent himself/herself acted respectfully. Results revealed that subjective participants' evaluation of respect was rather high. More than two thirds of participants more or less agreed that other participant of a discussion were respectful. Besides, we noticed that participants from Annex I countries were more critical about category of respect (4 respondents who disagreed with the statement were from Annex I countries). Also, participants seemed to be of better opinion about themselves than about others because the majority of the respondents more or less agreed that they were respectful towards others, and five participants were unsure (see Table 2).

Table 2: **Participants' evaluations of the category of respect**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Participants were respectful to each other	9 (19.1)	12 (25.5)	13 (27.7)	9 (19.1)	3 (6.4)	---	1 (2.1)	47 (100)
I personally was respectful to others	14 (29.8)	25 (53.2)	2 (4.3)	5 (10.6)	---	---	---	46 (97.9)

In terms of the level of listening, findings reveled that participants saw discussions to be rather deliberative: two thirds of participants more or less agreed that other participants were highly engaged into the discussions while one third was not sure or disagreed with the statement. Participants were similarly optimistic about their personal level of engagement (see Table 3).

Table 3: **Participants' evaluations of the category of listening**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Participants were highly engaged into the discussion and contributed more than one time	4 (8.5)	16 (34.0)	10 (21.3)	14 (29.8)	1 (2.1)	2 (4.3)	---	47 (100)
I personally was trying to reply to previous arguments and follow the discussion	3 (6.5)	18 (39.1)	11 (23.9)	9 (19.6)	2 (4.3)	2 (4.3)	1 (2.2)	46 (97.9)

Following statements on the scale dealt with justification. Participants were asked if arguments provided by other participants were fairly reasoned and justified. Majority of the

respondents thought that discussions were rather deliberative in terms of justification (see Table 4). Respondents were more optimistic about their performance.

Table 4: **Participants' evaluations of the category of justification**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Arguments provided by other participants were fairly reasoned and justified.	4 (8.7)	15 (32.6)	12 (26.1)	10 (21.7)	5 (10.9)	---	---	46 (97.9)
I believe that my arguments were justified properly.	5 (10.6)	24 (51.1)	6 (12.8)	11 (23.4)	1 (2.1)	---	---	47 (100)

Respondents' opinions about the category of force of better arguments were more diverse. Data indicated that 24 participants more or less agreed with the statement; while 11 were not sure and 10 disagreed (see Table 5). More optimism was demonstrated when asking about personal efforts to remain open to other opinions and acknowledgement of different values. Only one participant partly disagreed with the statement. It was a male more that 50 years old from Annex I country with a college degree, liberal, claimed that climate change is cyclic and that online discussions have a value but they should be improved.

Table 5: **Participants' evaluations of the category of force of better argument**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Participants were open for opposite views and appreciated different positions	3 (6.7)	14 (31.1)	7 (15.6)	11 (24.4)	8 (17.8)	1 (2.2)	1 (2.2)	45 (95.7)
I personally was open to diverse views and acknowledged their value.	10 (21.3)	16 (34.0)	14 (29.8)	6 (12.8)	1 (2.1)	---	---	47 (100)

Next statement dealt with the category of consistency. Respondents were asked if they thought that majority of the comments were consistent to the topic of the discussions and if they personally attempted to stick to climate change issues. Data reveled that, again, larger number of participants agreed that discussions were consistent (see Table 6). Participants tended to more optimistically evaluate their own performances, as 39 of them claimed that they personally tried to stick to the topic; while six respondents were not sure, one disagreed, and one did not answer the question.

Table 6: **Participants' evaluations of the category of consistency**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Majority of the comments were consistent to the topic of the discussion	5 (10.6)	17 (36.2)	9 (19.1)	7 (14.9)	8 (17.0)	1 (2.1)	---	47 (100)
I personally was trying to stick to the topic of Climate Change	13 (28.3)	23 (50.0)	3 (6.5)	6 (13.0)	---	1 (2.2)	---	46 (97.9)

In addition to the major questions revealing the quality of the discussions, we also asked additional questions about participants' sincerity and about general quality of the discussions. Data indicated that more than two thirds of the respondents believed that some participants were not sincere, while one third were not sure or believed that participants were open about their true intentions. Despite of low level of sincerity claimed by participants, general quality of the discussions by participants was perceived as relatively high (see Table 7).

Table 7: **Participants' evaluations of the category of sincerity and general quality of the discussions**

	Totally agree	Agree	Partly agree	Unsure	Partly disagree	Disagree	Totally disagree	Total
Absolute frequency distribution (relative frequency distribution)								
Sincerity: I believe that some of the participants were not sincere and possibly silent their true intentions.	3 (6.4)	11 (23.4)	14 (29.8)	15 (31.9)	1 (2.1)	2 (4.3)	1 (2.1)	47 (100)
Quality: In general, COP15 discussions on Facebook were of high value.	10 (21.3)	12 (25.5)	11 (23.4)	10 (21.3)	3 (6.4)	1 (2.1)	---	47 (100)

Overall, data from participants' survey indicated that respondents in general were rather satisfied about the discussions. All categories, except sincerity were evaluated positively. However, response rate to the survey was very low thus limiting generalizability of these findings. Also, we cannot incorporate this data in our further analysis but only treat it as a possible additional data, which could explain or support some of our main findings.

CHAPTER 5

MEASURING QUALITY OF THE CLIMATE CHANGE DISCUSSIONS ON FACEBOOK: DESCRIPTIVE DATA-ANALYSIS

For the empirical analysis we chose public discussions from the Facebook page *COP15 UN Climate Change Conference, 2009*. All the wall-posts and comments from this page were retrieved and examined following the DQI. Namely, we measured each comment for the level of participation, respect, justification, and force of better argument. The final sample constituted of 156 wall-posts published by page moderator(s) and 2788 comments made by 1424 active participants. The data were retrieved approximately two years after the COP15, coded, and stored in computer-based dataset. Next, we performed univariate analysis in order to discuss distribution of general quality level across individual DQI items. Also, we compared our data to previous studies where level of deliberation in face-to-face settings was explored in order to verify our tentative hypotheses questioning online discursive spaces as possible determinants of the quality of public discussions (Group 1 hypotheses see Chapter 4). Finally, we looked at the inter-coder reliability by comparing a sample of comments with an iterated coding of the same sample in order to check for a quality and reliability of coding procedures.

5.1. Basic guidelines for data evaluation before univariate analysis

Before turning to the analysis, for clarity matters some general rules, which we followed, should be discussed. First, wall-posts, which were not followed by a single comment, were excluded from further analysis as we did not consider them to be separate discussion. We found 25 wall-posts, which did not develop into wider conversations, majority of which were started shortly after the page was established; hence, there is no surprise that there were not many supporters at that time. In contrary, those wall-posts, which did have at least one comment were considered to be discussions and were measured for the level of deliberation.

Second, in cases when participants provided more than one comment in a row without interference of other participants' contributions, those comments were considered as a single unit of analysis. Normally, with the second or the third comment participants were specifying or clarifying previously expressed ideas; hence, it seemed to be reasonable to combine these comments and analyze them together.

Third, if participants reposted identical comments in the same discussion twice, we considered only the first comment and eliminated other copies from the further analysis. We considered that it was a personal or technical mistake, in some cases maybe indulgence of public

sphere. However, if the identical comment by the same participant was repeated in different discussions, we treated them as separate units and included all of them into the further analysis, because in different discussions the same comment tended to demonstrate different level of quality.

5.1.1. Participation

The length of comments in our sample ranged from 1 to 1276 words. Data indicated that there were more contributions shorter or equal to 75 words (or ≤30'') compared to ex-combatants uttered speech-acts. However, when we compared relatively frequencies of comments ranging from 1 to 150 words (or 1'' – 60''), we saw that our data closely corresponded to the data of the research of deliberation between Columbian ex-combatants (86.7% *versus* 87.8% respectively). Longer contributions (151 and more words or 61'' and longer) also constituted relatively similar share of entire sample (13.4% *versus* 12.2%) in both studies. When considering the different types of content distribution (uttering content aloud *versus* typing) it can be suggested that in our sample comments were approximately of a similar length as in previously mentioned research. Besides, the table below shows that in both studies the distribution of words per comment was skewed. Specifically, contributions lasting for one minute or less (1-150 words respectively) were most frequent and constituted 86.7 percent in our sample and 87.7 percent in ex-combatants' study. Longer comments or speech-acts were considerably rare (see Table 8).

Table 8: **Absolute and relative frequency distributions of respectful listening**

	Study of ex-combatants	Our sample	Study of Belgium
N (% within the entire sample)			
≤75 words or ≤ 30''	593 (57.7)	1965 (70.5)	---
76-150 words or 31-60''	309 (30.1)	451 (16.2)	---
151-300 words or 61-120''	75 (7.3)	228 (8.2)	---
301-450 words or 121-180''	28 (2.7)	66 (2.4)	---
≥451or ≥181''	22 (2.2)	78 (2.8)	---
Total	1027 (100)	2788 (100)	---

Following these findings, authors analyzing the data of ex-combatants' discussions indicated that in "regard to participation, the experiments with ex-combatants were far from the ideal of the deliberative model" (Steiner, 2012: 46). This assumption was also supported by the fact that 115 ex-combatants (34%) did not speak up at all in the experiments, which they

attended[98]. Authors argued that because of traumatic war experience ex-combatants "were cagey to utter wrong words and preferred to remain silent <…>. Constraints were not external in the sense that some participants were prevented from speaking up, there were rather internal constraints at play preventing a large number of the participants to speak up very little or not at all" (Steiner, 2012: 46). In our case, we were not able to identify the precise number of people who followed discussions but remained silent and did not contribute to it – we call them *passive listeners*. However, we recorded the number of Facebook users who followed the COP15 discussions (or to be precise *liked* it) at the time when we started to collect our data. There were 41.757 users following COP15 discussions compared to 1424 active participants. This might imply that participants were not concerned enough about the issue to be involved and actively participate (see Chapter 1).

From our data on participation it can be said that although Web 2.0 based online communication environments eliminate outside constraints and often support structural and discursive equality and autonomy, they do not necessarily secure highly participative and deliberative discussions. These findings support the preposition that these online environments are neither good nor bad *per se*, instead participants' behavior is what matters the most – participants should be concerned to take active position (see Chapter 1). However, our results indicated that because of unrevealed reasons majority of participants chose to follow discussions in passive manner (we do not know if they were silenced in any way or did they have any inner-psychological constrains), while only minority was actively engaged (and only small part of them contribute more than once). Also, our data corresponded to previous research demonstrating that the length of contributions reminded discussions between highly divided citizens' groups, which also pointed that despite the unconstrained nature (in terms of space and time) of the Internet participants chose to be brief and often pragmatic. Besides, contributions were very uneven in terms of length, while some of the comments were long and

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[98] Study of ex-combatants reported that although there were no significant external constrains preventing participants from speaking (only five speech-acts were interrupted), authors noticed internal constraints which likely determined that a large number of the participants spoke up very little or not at all (34% of participants remained silent, 30% spoke up once or twice, 28% spoke up 3-10 times, and 8 % spoke up more than 10 times). Such constrains are related to the painful history and personal experiences which possibly encouraged participants to carefully weight every word and express their opinions in peaceful way in order to avoid conflict. On the other side, research on deliberation between Belgian citizens reported that all 83 participants in the experiments spoke up but contributions were very uneven: while 20 people spoke up 10 times or less, 52 people – 11 to 30 times, 11 people – more than 30 times. Author also highlighted that 301 speech-acts (out of 1664) were interrupted, demonstrating that discussions in this case were much more constrained but at the same much more vital and dynamic. The question is, whether this is a good or a bad thing for deliberative quality? Here Steiner (2012) provides us with some explanations. He claims that although interruptions in general are seen as negative because participants are constrained and they cannot finish their contributions; but in some cases interruptions can be seen as a sign of vivid interactivity, which is good for deliberative quality. In addition to that, it should be said that in Belgians' study only two participants out of 301 complained that they were constrained. Hence, interruptions in this case were perceived as a positive thing. Overall, the level of participation in terms of equality and constrains was higher in discussions between linguistically divided Belgians than between ex-combatants.

comprehensive; others were short and poorly useful for the discussion. Overall, our data corresponded to previous findings discussed by Steiner (2012), who claimed that empirical world is far away from the Habermasian normative ideal of equal and unconstrained participation. Hence, it seems that online communication culture (although often referred as a participatory cultures, e.g. see Burges & Green, 2009) in our case in terms of participation can be described as uneven and is often comprised of the majority of passive listeners and the minority of active participants who also frequently tend to be very brief and pragmatic.

5.1.2. Respect

Respect is a critical category for quality deliberation. If participants do not treat each other in a respectful way, we cannot expect discussions to be of a good quality. One can expect that in Web 2.0 based online communication environments foul language is used more frequently and more freely (Steiner, 2012: 255); however, the level of respect in our sample did not actually differed a lot compared to previous face-to-face studies.

Previous researches indicated that the level of foul language was not actually determined by the structure of the group. In other words, largely divided groups (e.g. ex-combatants) used foul language in relatively similar amounts compared to less divided groups (e.g. linguistically divided Belgians). For instance, although authors expected that Columbian ex-combatants would demonstrate greater level of disrespectful language compared to Belgians (because of bigger divide), surprisingly, data indicated that the frequency of foul language at a personal level in both cases was similar. In contrast, Steiner with colleagues found that in European Parliament disrespectful language was used much more often. Authors concluded that citizens in general are reluctant to express disagreements and start the *fight* while the culture of political debates is a *fight* at its essence. In this dissertation we questioned online social network seeking to understand the main characteristics of online communication cultures and to find out how *combative* publics online are.

Comparing frequencies of foul language in three studies, we noticed that our discussions were somewhere in between. Specifically, foul language in our sample was less frequent than in the study of linguistically divided Belgium, but more often used than in the research with Columbian ex-combatants. On the other hand, comments from our sample more often contained foul language towards individuals (at a personal level) than towards arguments (1.4 *versus* 0.3 respectively), which was similar to ex-combatants case, but differed from Belgians' study (see Table 9). This implied lower level of respect, because in quality deliberations disagreements

based on personal level cannot be prioritized; instead personal matters should be silent in the name of common good.

Table 9: **Absolute and relative frequency distributions of foul language towards participants**

		At a personal level	Towards comments	No FL	Total
		N (% of the entire sample)			
Foul language I	Study of ex-combatants	6 (0.6)	3 (0.3)	1018 (99.1)	1027 (100)
	Our study	40 (1.4)	7 (0.3)	2741 (98.3)	2788 (100)
	Study of Belgians	13 (0.8)	55 (3.3)	1596 (95.9)	1664 (100)

Beside, in contrast to previous studies, where severe foul language was not recorded, we did find some examples of *strong* foul expressions, especially in those cases where foul language was pointed towards individuals at a personal level. For instance, in one comment participant criticized performance of the United Nations (UN) and named those who supported UN *dupes*:

> #065-05. "Seriously, does anyone with any intelligence want the UN in charge of anything? You are all dupes." // October 29, 2009

In some cases participants were called *idiots, freaks*, *fools*, etc. Foul language was also used towards arguments. Participants were criticized for their positions or opinions. In the following example participant was attacked for his/her comment about the magnitude of the US pollution claiming that the US was responsible for only 5 percent of the World's pollution. The argument was demolished in a disrespectful way: "WTF?!!??!!". Capital letters, exclamation, and question marks emphasized the level of outrage and made this comment even more offensive.

> #061-09. "WTF?!!??!! You seem to have mistyped 2, as the US produces 25% of the world's pollution. And when you consider that a huge amount of China and India's pollution is actually on behalf of First World consumers then the picture gets even worse." // November 5, 2009

However, if we omit the foul language used, we may see that the comment considered previous argument(s) in rather serious way. Participant suspected that previous contribution was misleading and articulated that. According to Steiner (2012), it is proper to characterize other arguments in negative terms if this is one's opinion. For example, if an argument appears to a listener as incoherent and logically flawed, this participant should say so and ask for clarifications. This may show that the argument of the other is taken seriously and that one wishes to understand it fully. However, foul language cannot not be justified because there is

always a nicer and more polite way to express opinions, even if they are totally opposite. Hence, although our data indicated that online discussions do not considerably differ from traditional communication settings regarding general frequency of foul language but online communication cultures might be related to increased frequency of foul language at a personal level and usage of severe foul expressions (which are not so common in face-to-face settings).

The category of respect was also measured by the frequency of respectful language used. As noticed by Talpin (2011), for ordinary citizens public expression of disagreement is a difficult move, in contrast agreement might be more favorable way to express positions (or oppositions). This statement was supported by the study exploring quality of deliberation between Belgians, where respectful language was much more frequently used compared to foul language. It seemed that participants were looking for more respectful ways to express their disagreements: instead of using foul language they more often tended to explicitly and respectfully agree with one group in such a way demonstrating their position and disagreement with other groups. However, authors concluded that the proportion of respectful language was still very low and ordinary citizens in general were reluctant to express explicit respect. The experiment with Columbian ex-combatants demonstrated even lower level of respect. Although, participants did not offend each often (0.9%), but even less they were engaged in respectful manner (0.8%). It is likely that painful events of the past determined closed manner of discussions between past enemies, where participants did not want to neither start a fight nor make friends with other side.

Our data, meanwhile, was again somewhere in the middle. Respectful language was used in 3.7 percent of all the comments, which was more compared to the case of ex-combatants (0.8%) and less compared to the case of Belgians (10.2%) (see Table 10).

Table 10: **Absolute and relative frequency distributions of respectful language towards participants**

		RL at a personal level or towards other comments	No RL	Total
N (% of the entire sample)				
Respectful language I	Study of ex-combatants	8 (0.8)	1019 (99.2)	1027 (100)
	Our study	102 (3.7)	2686 (96.3)	2788 (100)
	Study of Belgians	169 (10.2)	1495 (89.8)	1664 (100)

Respectful language in many cases was used in order to support previous arguments and included such phrases as *very well said*, *I fully agree, happy to hear that, brilliant,* etc. For instance, to the comment criticizing the US president Obama participant replied:

#061-14. "Thanks, xxx. We're on the same page. Obama's doing lots of talking, but taking no action." // November 5, 2009

These results were rather surprising as we expected the level of foul language to be much higher because of characteristics of online discursive spaces (or features of online communication cultures) – scholars frequently stress that online discussions tend to be offensive and disrespectful (Steiner, 2012). Secondly, we presumed that participants were global audiences with different cultural, political, and scientific literacy, which we expected to lead to even more misunderstandings and disrespect. And finally, contradicting origin of the topic under discussions – climate change – also suggested that discussions will be dominated by contradicting positions leading to fighting and disrespect. To explain these findings, let us shortly come back to the results from our survey pointing that our participants most likely were polarized, as most of the respondents declared to support liberal or moderate views (pro-environmentalists), while only minority were conservative or very conservative (do not believe in anthropogenic climate change). Hence, there is no surprise that disagreements between similarly thinking people are less likely and other socio-demographic characteristics seems to be less important (we saw that respondents of our survey were widely ranging in terms of age, gender, education, occupation, etc.).

In addition to the traditional DQI measurements of the category of respect, we also evaluated respect towards actors who did not directly participate in the Facebook discussions under investigation (i.e. politicians, experts, scientists, and others) but were important in general context. We call these indicators *foul language type II* and *respectful language type II*. We felt that when dealing with quality of online discussions this indicator might be significant, especially considering scholarly literature stressing that online discussions encourages public polarization, hate groups, and thus might greatly determine low quality of online discussions. Our findings under-covered another important characteristic of our online discussions and, probably, of online communication culture in general. In contrast to previously discussed results on respect, we found that offensive language towards outside discourse individuals or their ideas were used more often.

Already in the initial phase of our study we noticed that strong, angry, or offensive language more often pointed towards outside individuals than towards inside participants. Later on we supported this remark by the empirical findings. We counted comments expressing foul language towards outside actors and their ideas and found that in 118 comments (4.2%) participants spoke about outside individuals using foul language and in 118 comments (4.2%) foul language was used towards their ideas or thoughts (see Table 11).

Table 11: **Absolute and relative frequency distributions of foul language towards outsiders**

		At a personal level	Towards comments	No FL	Total
N (% of the entire sample)					
Foul language II	Study of ex-combatants	---	---	---	---
	Our study	118 (4.2)	118 (4.2)	2552 (91.5)	2788 (100)
	Study of Belgians	---	---	---	---

Politicians, governments, local and global institutions, experts, media, and scientists were the most frequently offended actors. For instance, during the conference one participant expressed his/her dissatisfaction about the performance of the governments of the World in the Summit, s/he posted:

> #001-21. "Stupid governments of the World: <…> Use the money you are wasting on talks and begin building shelter cities, detention camps and food reserves. Begin expanding military and civil service at once to cope with the wars and pillaging. This is not a fictitious warning; it is already too late unless unprecedented immediate and severe action is taken NOW. Thank You for your Decision." // December 13, 2010

We also found examples where participants used foul language to criticize arguments or ideas of outside individuals or groups. In the following example participant is annoyed by the slow pace of the global political debate on climate change:

> #061-16. "<…> If they can't reach agreement, countries need to STAND UP and push forward with massive emissions reductions, and stop this petty bureaucratic arguing and bullshit :-(" // November 5, 2009

We found that respectful language was also often used towards outside individuals or groups. In those cases politicians, media, investors and others were supported in a respectful way (see Table 12).

Table 12: **Absolute and relative frequency distributions of respectful language towards outsiders**

		RL at a personal level or towards previous comments	No RL	Total
		N (% of the entire sample)		
Respectful language II	Study of ex-combatants	---	---	---
	Our study	93 (3.3)	2695 (96.7)	2788 (100)
	Study of Belgians	---	---	---

In many examples the president of the US Barack Obama was respectfully supported and encouraged for major steps. For instance, one participant replied to the wall-post under the headline "Obama putting 3.4 billion US dollars toward a 'smart' power grid". Participant expressed his/her excitement and support for Obama – "Nice Job Obama!" The exclamation mark indicates that the participant was highly excited. Although rare, but we found some examples where investors were also applauded. In the following comment participant expressed his/her support for the US investor George Soros who announced that he would invest one billion US dollars in technology of clean energy.

> #077-18. "It's a great investment from Soros for longevity of life on earth. Hope and wish Like XXX, there are stringent watchdogs to oversee the framing of right policies and subsequently their powerful implementation with the strong will of top politicians in every nation to aggressively drive this drive to its logical conclusion. <…>." // October 13, 2009

Hence, data in this section demonstrated that although level of respect towards inside participants was unexpectedly high (yet relatively low), meaningful number of disrespectful and respectful expressions was found towards individuals or groups who did not participate in the discussions directly. Unfortunately, this might be related to the issue of polarization. In our case, participants tended to treat each other in a more respectful way, but fostered each other's (positive and negative) emotions about outside actors in turn forming and maintaining radical support or hate groups. Overall, online communication cultures in terms of respect can be defined as supporting audiences' polarization and providing with the basics for formation of hate and support groups. This suggests that quality deliberation in such environments is not likely, because discussions are dominated by one side only while opposing groups, probably, communicate in similar but distinct online environments. Overall, although online communication environments have potential to bring different publics to common discourse, seemingly, in natural settings it does not happen often (if at all).

5.1.3. Listening

The category of respect was also assessed by the indicator of listening, which was challenging for coders, because in some cases (in particular, when there were no direct references to previous contributions) it was difficult to decide if the comment was responsive to previous comment(s) or not. Ugarizza faced the same problem. As a consequence, he decided to drop indicator of listening from his further analysis. We decided to retain this indicator, because we wanted to address theoretical presuppositions arguing that online discussions, in general, are lacking reflexivity and consistency. Therefore, we considered that only comments directly replying to previous contribution(s) (i.e., indicating participants' name or quoting previous comments) were responsive. Replies to the previous arguments were either based on agreement, disagreement, or question. In the following comment participant directly (indicating the exact comment) agreed to the previous contributions arguing that there was no reliable data on how much influence agriculture had on climate change.

> #003-10. "Agree with comment above. There is a need for a peer-review of the study, which shows agriculture accounts for 51% of climate change however. I think that this is becoming an increasingly visible issue. <…>" // December 23, 2009

Our data also demonstrated that disagreements were also expressed in very polite ways, which was different to foul language used. And this is a very important aspect of deliberative discussions, because, as previous scholars argue, arguments should be put in a forceful and tough ways, to keep discussion vital and dynamic, but foul language is not acceptable (Steiner, 2012). For instance, rather strong counterargument was provided in the following example, where participant disagreed with previous comment claiming that hidro-power is a solution in a micro-level.

> #086-13. "XXX, that's where you're wrong it is macro a 1000MW is completely achievable, however this is where electricity generation is wrong Baseload power generation is so inefficient why do you want to replace it <…>." // September 29, 2009

Another example indicated more delicate way to present disagreement. Here participants discussed issue of growing population. In the following example participant wanted to prove that growing population does not contribute to CO^2 emissions.

> #026-15. "XXX and XXX, I'm not sure population is that significant, surely carbon is the issue? If US per capita is 20 tones, UK 8t and Brazilian 2t, then Brazilian population growth is not that big an issue?" // December 12, 2009 at 1:02pm

Also we found some examples were participants replied to previous comments by questioning them. In the discussion about the generous amount of money proposed by the US

investor Soros for fighting climate change, some participants were critical about such idea and claimed that Soros aimed for self-promotion. Following is a response to such comments:

> #077-12. "XXX, are you saying that Soros has decided that this is something else that he can make a LOT of money from? Could it be that ends justify the means? i.e. if his money can produce something positive its worth a go? (Should I say our money via him?)" // October 12, 2009

It should be mentioned that we refused to analyze types of responsiveness, which were originally described in the expanded version of the DQI, because in many cases it was impossible to distinguish between plain responses and responses where previous arguments were engaged in distorted or undistorted way.

Table 13: **Absolute and relative frequency distributions of respectful listening**

	Study of ex-combatants	Our sample	Study of Belgians
N (% within the entire sample)			
Ignoring	---	2199 (78.9)	200 (12.0)
Responding	---	589 (21.1)	1274 (78.6)
Total	---	2788 (100)	1474 (90.6) + 190 (11.4) missing

As we mentioned, Ugarizza dropped the indicator of listening from his analysis; however, this indicator was considered in the research measuring quality of deliberation between linguistically divided citizens of Belgium. It was found that a large majority (64%) of speech-acts demonstrated respectful listening to arguments or questions from others. In contrast, our results showed that comments more frequently were ignoring previous contributions and only 21.1 percent of the comments were responsive. Hence, data on listening demonstrated that our online discussions were of low level of responsiveness. It seemed that participants in many cases were speaking one over the over. However, this data could have been biased by the coding procedures, because only direct responses were considered in this category. Besides, data on listening was arbitrary, as a large number of Facebook users were passive participants of our discussions. Hence, on one hand, we partly confirmed previous scholarly propositions, that in global Web 2.0 based online communication environments it is very difficult to construct meaningful discussions, because people are speaking one over another and do not listen. On the other hand, we identified a large group of *passive listeners* who followed the discussion and were engaged in it in more or less passive ways, including personal choice to follow the discussions (Facebook user had to *like* it to become a member of the group), reading wall-posts, comments and *liking* them (we consider *liking* as a form of a passive engagement). Here we

identified two more characteristics of online communication cultures – passive listening and low responsiveness.

5.1.4. Level of justification

The category of justification deals with complexity of argumentation. Since a number of studies suggest that online discussions are not based on reasoned validity claims but, instead, on chaotic conversations, it is very important to explore if this is true in our case. In our example we found comments, which fell under six groups[99]. Contributions ascribed to the group one were those without an argument and, normally, they were questions, comments expressing personal emotions, or feelings about the discourse (but not about the topic under consideration). For instance, in the following example the participant asked for more information related to the outcomes of COP15. A mere request was provided without any opinion or position:

> #003-18. "Please give me the results of COP15… and I hope all of you don't mind to send it to my e-mail: xxx@xxx.xxx. Thanks. // December 24, 2009

In the second example we may see that participant expressed his/her gratefulness for other members of the discussion. Although positive position about the discussions themselves was expressed, but participant did not provide his/her attitude or opinion about the topic of the discussion; therefore, contribution below was coded as a comment without an argument.

> #002-14. "Thanks for keeping everyone updated." // January 15, 2010

Group two, meanwhile, consisted of contributions with unjustified arguments. For instance, in the following example opinion of the participant was provided but there was no reason or further explanation supporting that argument.

> #152-02. "Now we just need Canada to follow suit...." // June 9, 2009

Group three encompassed comments, which were justified by illustrations. In the following example participant argued that there should be mandatory requirements for all citizens in order to manage personal carbon footprints. S/he took personal instance to illustrate what and how it could be done and this was the way how s/he justified the argument.

> #009-23. "<…> I just wish they had made mandatory changes for everyone. I have been without a car for 2 years to reduce my carbon footprint. And that's not the only thing we can do!!! We need to continue spreading the word and make examples of ourselves. <…>" // December 20, 2009

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[99] (1) Comments without argument, (2) comments with argument but without explicit reasoning, (3) comments justified with illustrations, (4) comments with reasons but with no linkage, (5) comments provided with one reasoned and explained argument, and (6) comments provided with more than one reasoned and explained argument.

Reasoned comments with no linkage between argument and reason we attributed to group four. For instance, in the following example participant argued that president of Brazil Lula played an important role at COP15, but instead of clear explanations s/he provided general reflections about positions other countries had on climate change in such a way leaving us confused.

> #017-14. "Lula, from Brazil, is also playing a very important role in saving the Conference. Most of the developed nations are playing as if they had nothing to do with the problems humanity will be soon facing." // December 17, 2009

The fifth group encompassed contributions, which could be a good example of what Habermas considers rational argumentation. The comment provided bellow has one argument, which is properly reasoned. Participant explained why s/he thinks that the US must commit to reduce emissions. According to the participant, the main reason is that the US is the largest individual emitter of GHG.

> #072-06 "<…> The USA happens to be the largest individual emitter of GHG, and therefore if global reduction targets are to be achieved the USA must stand up as environmental leader and do their share. The proposed reduction of emissions is by no way anti-capitalist, nor anti-United States, there is no reason for capitalism not to thrive in a low emission environment where innovation and sustainability lead the way. <…>." // October 16, 2009

Finally, we also found comments with more than one reason supporting the argument (group six). In the following example we may see that participant wanted to prove that *cap and trade* scheme is not suitable for the situation we have. S/he argued that: "cap and trade does not work". Participant provided two reasons. First of all s/he predicted that: "in the USA it will cause even more industry to move to countries that do not have the environment requirements already seen in the USA". In the following sentence it is explained that: "cap and trade will cause even more American agriculture to move to the Amazon basis with less fertile soil, requiring more chemicals". Following, participant spoke up about the second reason why cap and trade does not work. S/he argued that it is money.

> #001-04. "<…> Cap and trade sounds good on paper, as protecting the environment is essential. However, In the USA it will cause even more industry to move to countries that do not have the environment requirements already seen in the USA. It will destroy even more of the necessary natural rain forest resource. Why is cap and trade being pursued. MONEY. The UN wants the USA to fund development in third world nations. The EU wants to economically cripple USA industry because we make essentially the same things. www.stealingamericasfuture.com // September 30, 2010

The number of separate arguments per comment in our sample ranged from zero to four with higher number suggesting higher level of justification. In total 2388 arguments have been articulated in 2344 comments. For the further analysis, contributions having more than one argument were evaluated considering only one argument demonstrating higher level of reasoning. For instance, if in the same comment we found two arguments and one of them was supported with illustration, another with a proper justification, we considered that the argument had proper reasoning and we coded it under the group *Reason + link V*.

Further, we compared our sample with other two studies[100]. The first thing we noticed was that only 15.5% of the comments did not contain any arguments, which was much lower than in Columbia (41.0%) and about the same level than in Belgium (13.0%) (see Table 14). Thus, in this respect the level of deliberation in our global online discussions was quite high. We thought that this might be related to the fact that the majority of the participants in our discussions were closely following the issue of climate change and demonstrated personal interest to discuss the issue with global publics.

Table 14: **Absolute and relative frequency of level of justification**

	Study of ex-combatants	Our study	Study of Belgium
N (% within the entire sample)			
No argument I	421 (41.0)	432 (15.5)	216 (13.0)
No reason II	210 (20.4)	1459 (52.3)	252 (15.1)
Illustration III	208 (20.3)	24 (0.9)	395 (23.7)
Reason IV	106 (10.3)	199 (7.1)	179 (10.8)
Reason + link V	62 (6.0)	620 (22.2)	543 (32.6)
Reason + link VI	20 (1.9)	54 (1.9)	79 (4.7)
Total	1027 (100)	2788 (100)	1664 (100)

Second of all, our data indicated that a big proportion of comments contained argument without any justification (52.3%), which was much higher when compared with the study of ex-combatants in Colombia (20.4%) and study of linguistic issues in Belgium (15.1%). In other

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[100] Belgians' study reported relatively higher level of justification compared to ex-combatants in Colombia. In particular, 43 percent of speech-acts in Belgians' study demonstrated proper level of justification compared to only 13 percent of speech-acts in ex-combatants study. However, we should acknowledge ex-combatants attempts to justify their opinions, although in most of the instances this was not done in a sophisticated way (either only with an illustration or a reason not clearly linked to the expressed opinion), but in 64 percent of the cases participants did it in one way or another. Considering the little formal education and traumatic recent experience their attempts were of high value. Belgians' case, meanwhile, reported more optimistic results. Quality of deliberation among Belgian citizens was relatively similar to quality of deliberation in committee meetings of national parliaments and plenary sessions of the European Parliament. Hence, "we should not underestimate the capacity of ordinary citizens to justify their opinions in a logically coherent way" (Steiner, 2012: 81).

words, participants in our discussions tended to express their opinions but did not bother to justify them. This suggested low level of deliberation. However, we found that the proportion of properly reasoned arguments with at least one reason (24.1%) was somewhere in the middle between research of Columbia (7.9%) and Belgium (37.3). In this respect too, participants in our study were quite deliberative.

Finally, we noticed that illustrations to justify argument were differently used in our study when compared to other two researches. Specifically, while in the study of ex-combatants illustrations were used in 20.3 percent of speech acts and in study of Belgians 23.7 percent, we found that only 1.1 percent of the entire comments included illustrations. This may be related to the topic of our discussions. Climate change is a topic of big uncertainties and it may be difficult to provide examples or stories about the things, which are not directly experienced by citizens.

Overall, participants of our discussions most often had their opinions and articulated them, but in many cases they were not justified that is different from traditional face-to-face settings where participants more often try to justify and support their positions.

5.1.5. Content of justification

Next, we measured content of justification. We found that in 77 comments (2.8%) references to costs or benefits of own group were introduced (see Table 15). This proportion was much closer to the results of linguistically divided Belgians' study (3.2%) than to the results of the ex-combatants study, where percentage of reference to own group was much higher (31%)[101]. This might be related to the fact that ex-combatants in Colombia were divided by the painful history, while participants in our study and Bengian's study did not experience such division at least in relation to the topic under consideration.

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[101] Considering indicator of content of justification it can be noticed that references to common good were somehow similar in both studies. In the experiments in *Belgium*, seven percent of speech-acts referred to the common good and nine percent to moral principles. Colombian ex-combatants were remarkably more deliberative in terms of references to the common good and moral principles. One would have expected that in Belgium as a mature democracy references to the common good and moral principles would have been higher than among traumatized ex-combatants in Colombia.

Table 15: **Absolute and relative frequency distributions of content of justification**

	Study of ex-combatants	Our study	Study of Belgians
	N (% within the entire sample)		
Own group	322 (31.0)	77 (2.8)	54 (3.2)

In our study participants often referred to the costs of climate change for own group. For instance, in the example below participant expressed his/her confidence in own group while fighting climate change suggesting that citizens "are powerful" and they can fight climate change by putting pressure on governments ("they can make the government work") or by promoting green life-style ("promoting carbon-neutral leisure, interest free credit, donations across the neighborhoods").

> #071-08. "Even if we find our leaders not agreeing on the binding targets, we would do better through promoting carbon-neutral leisure, interest free credit, donations across the neighborhoods. Citizens are powerful and they can make the government work for regulating those who do not follow the demands of ecological safety and security for people in Maldives and for the posterity." // October 20, 2009

As it can be noticed from the example listed, in many cases participants refer to own group in the first person, e.g., *us, we, our*. However, in rare cases participants used third person to refer to what we considered own group ("Citizens are powerful and **they** can make the government work"). Besides, in many cases while referring to costs or benefits of own group participants also tended to reflect on benefits or costs of other groups. Just like in the example above, participant underscored costs of own group (carefully controlling governments, self-organized initiatives promoting carbon-free life-style) and reacted to position of other groups – global leaders and governments, which cannot find agreement related to climate change and delay real actions.

References to other groups were more frequent than to own group in our sample. In fact, 262 comments, which constituted 9.4 percent of the entire sample referred to costs or benefits of other groups. In Ugarizza's study references to other groups constituted 9 percent of entire sample; however, they were significantly less frequent compared to own group (31%). Meanwhile, Caluwaert's study on Belgium did not consider this group (see Table 16).

Table 16: **Absolute and relative frequency distributions of content of justification**

	Study of ex-combatants	Our study	Study of Belgians
	N (% within the entire sample)		
Other group	95 (9.0)	262 (9.4)	---

In many cases participants referred to costs of future generations, benefits of rich countries, and costs of poor countries which already face climate change. In the following example participant referred to benefits and costs of future generations. S/he argued that citizens had to take action and acknowledge their responsibility for the good of future of our children.

> #093-04. "I think we better do more than just hope. If our leaders won't face the hard reality and respond accordingly, then it will be up to us, the people, to take the necessary leadership on our own. You can't just dream of a better future for your children and your grandchildren, you have to stand up and fight for it on their behalf. I hope we do get the breakthrough we all deserve at Copenhagen in December, but if we don't I'm ready to be part of a people-powered breakthrough. // September 18, 2009

We found only 30 comments referring to common good, which constituted 1.1 percent of the total sample. In other two studies references to common good were used more often (see Table 17).

Table 17: **Absolute and relative frequency distributions of content of justification**

	Study of ex-combatants	Our study	Study of Belgians
	N (% within the entire sample)		
Common good	96 (9.0)	30 (1.1)	122 (5.8)

Although participants emphasized differences of developed and developing countries or present and future generations, some comments referred to common good of confronting side. For instance, in the example below participant expressed his/her hope that it is possible to find a solution acceptable to all the sides. However, nothing was further suggested.

> #093-01. "Hopefully they will come into an agreement which will benefit not only the industrialized nation[s] but most especially [to] the third world countries that are greatly affected by climate change… // September 18, 2009

Much more comments referred to abstract principles (see Table 18). Our data indicated that in 494 contributions corresponding to 17.7 percent of entire sample explicit references to abstract principles were made. In other two studies references to abstract principles were less frequent: while participants in other cases easier could find common solutions useful for all the groups, our participants more often tended to talk about climate change in general terms but

faced difficulties to find solutions based on common good. Possibly, this is related to the context of climate change discussions. In particular, scientific uncertainties make it difficult to find solutions, which would satisfy confronting sides. On the other hand, references to abstract principles indicate that in general all sides aim for the same – for clean air, fresh water, and healthy environment for us and for future generations.

Table 18: **Absolute and relative frequency distributions of content of justification**

	Study of ex-combatants	Our study	Study of Belgians
	N (% within the entire sample)		
Abstract principles	51 (5.0)	494 (17.7)	141 (8.5)

Most frequently references to abstract principles questioned environmental health, future of our planet, and safety. For instance, the comment below demonstrates how participant acknowledge abstract principles of healthy environment:

#085-09. "XXX, whether we do or do not affect the earth, wouldn't it be great to leave a cleaner planet for out kids? Less smog, more forests, smaller dump piles, more animals off the endangered lists, clean water, etc. etc. etc... <…>" // September 30, 2009

We also counted comments where references to religious principles were used. We found 30 such comments, which constitute 1.1 percent of the entire sample. Majority of them expressed participant's faith that God can help to deal with global problems such as climate change; while others were more extreme suggesting that changing climate fulfills prophecies described in holly writings.

#002-03. "Global warming fulfills the Bible prophecies. The end time is surely here. Let's run to Jesus before it's too late." // January 15, 2010

#009-09. "It's a global problem and we only can solve it globally when mankind is working together seriously. May help us God before it's too late." // December 20, 2009

Overall, comments most frequently referred to abstract principles. We believe that this can be explained by broader scientific and political context of the issue of climate change, namely, scientific uncertainties, ambiguous political and public discussions. References to common good were used least frequently. We assumed that uncertainty of the issue makes it difficult for general public to find solutions acceptable to everyone. Finally, references to other groups in our sample were relatively more frequent in comparison to other studies. However, majority of such references questioned costs of other groups such as climate change effect on poor countries or future generations. Such trends suggested that our sample in accordance to category of content of justification demonstrated comparatively high (yet relatively low) level.

5.1.6. Force of better argument

If participant expressed his/her opinion more than once in the single discussion on the same topic, his/her contributions were assessed for the category of force of better argument. We found only 149 comments in which participants explicitly acknowledged the value of other participants' contributions. We did not find any comments where change in position would be openly expressed. However, comments indicating no change in position quite often were also provided with reasoning.

Below we can see an example of the comment where participant's position did not change but s/he acknowledged ideas of other participants. Two participants discussed UNICEF sponsored project for youth *Children's Climate Forum*. The first participant shared some information about the event:

> #104-03. "Hey guys, I just wanted to say, that here in the US they support youth action for Copenhagen, in which UNICEF will be sponsoring the Children's Climate Forum (CCF) during which children from over 40 countries will be participating the week before the actual meeting of the world leaders and will draft their own ideas to be presented to the leaders (I've applied, will find out soon!) <…>" // August 30, 2009

At this point the second participant joined the discussion. S/he supported previous argument and agreed that the initiative is applauded; however, s/he criticized Canada's position towards similar events and doubted if children from Canada will be able to participate:

> #104-05. "XXX, I'm not sure where Canada is on this one, I applaud the US for their support. Unfortunately, Canada says one thing, which always sounds great, but knowing our track record, our government tends to talk out of both sides of their mouths, will have to keep an eye on this, hopefully Canada will commit! I'll have to do some more digging!" // August 30, 2009

Following, the first participant assured that children from Canada will attend the event and expressed his rather positive and optimistic attitudes about countries' commitments (including Canada's position):

> #104-07. "XXX, Canada too will be participating in the CCF and J8 Summit, and there kids work collectively and agree on things through a democratic process, I believe that every country except a select few such as Germany and Denmark have followed through with promises for change for the better of the planet as in they met their Kyoto goals including the extra reduction set by the EU, it is possible to do and we can do it!" // August 30, 2009

The second participant then replied with more optimism about his/her country: "I know that through NGO groups, and environmental groups, and such Canadians are extremely concerned, especially for our Arctic wildlife, and the Inuit first nations"; however, when considering political level all this optimism disappeared:

#104-08. "I certainly hope so, as a Canadian I know that through NGO groups, and environmental groups, and such Canadians are extremely concerned, especially for our Arctic wildlife, and the Inuit first nations, but what happens in our North affects the whole world! When I looked at our report card, I was very surprised by what our PM is agreeing to, and then qualifying it, by pointing fingers at other countries, i.e. India, when we, Canadians should be helping these countries out more, and do less finger pointing, because in the long run, that helps no one! With people like yourself, and others, we will hopefully all be on the same podium! Thank you for the encouraging words!" // August 30, 2009

Hence, the second participant did not actually change his/her position, but acknowledged arguments of the first contributor. In other words, s/he agreed that citizens through NGOs and other groups do a lot to fight climate change, but there is a lack of action in a political level, especially in his/her country – Canada.

If to compare our results with the data of other studies it can be said that, our data are much skewed as there were only 149 comments, which could be evaluated according to the criterion.

Table 19: **Absolute and relative frequency distributions of force of better argument**

	Study of ex-combatants	Our data	Study of Belgium
Counts (% within the entire sample)			
Change + reason	---	---	12 (0.7)
Change	---	---	10 (0.6)
No change, but value of other arguments acknowledged	53 (5.0)	77 (2.8)	691 (41.5)
No change	974 (95.0)	71 (2.5)	951 (57.2)
Total	1027 (100)	149 (5.4) + 2639 (94.6) missing data	1664 (100)

Similar results were reported in the study of ex-combatants; however, it seemed that to the group *no change* author also attributed those speech-acts which were uttered for the first time, while we did not considered these comments for this category, as it was the first time when participants expressed their attitudes.

In ex-combatants study also nobody changed his/her position. Steiner (2012) in his meta-analysis underscored that the data for the ex-combatants in Colombia in this sense are in line with parliamentarians in mature democracies. Moreover, the situation in Belgium is hardly better. However, 22 speech-acts did indicate a change in position, and 12 of them were acknowledging previous arguments. Thus, a mere 0.7 percent of the speech acts correspond to the Habermasian ideal where an actor acknowledges that the force of the better argument

changed his or her opinion. Overall, our sample suggested that discussions under investigation were of low deliberative level in terms of FBA; however, the level of deliberation in terms of FBA were similar to level demonstrated in face-to-face discussions evaluated in previous researches.

5.1.7. Additional measurements

In addition to the major DQI categories we also measured comments for three more items, namely *information type, consistency* and *sources*.

First of all, we identified the type of information, which, as we assumed, might influence quality of the arguments provided. We grouped all the comments into five categories: *expressing opinion, sharing information, questioning, providing emotions, and self-promoting comments.* We assumed that comments with opinions were most deliberative while self-promoting comments – least deliberative. If there was more than one communication type used in a single comment (i.e. opinion, question and information shared), we coded the highest deliberative level. Data indicated that the vast majority or 73.4 percent of the comments contained opinions, while group of self-promotions demonstrating lowest deliberative level constituted only 0.3 percent of the entire sample. Thus, in terms of information type our sample demonstrated high deliberative level (see Table 20).

Table 20: **Absolute and relative frequency distributions of information type**

Opinions	Information	Question	Emotions	Self-promotions	Total
N (% within the entire sample)					
2046 (73.4)	253 (9.1)	113 (4.1)	368 (13.2)	8 (0.3)	2788 (100)

Secondly, we presumed that self-moderated online discussions might be questioning totally different topics than intended; therefore, we decided that it might be important to assess each comment under the category of consistency. We checked if each comment corresponded to the main topic of the discussion or if it questioned totally irrelevant issues. Our data indicated that the vast majority of comments, 90.0 percent to be precise, corresponded to the topic of the discussions. This was rather good news which confirmed that our discussions were consistent and this contributed to the higher level of deliberation (see Table 21).

Table 21: **Absolute and relative frequency distributions of consistency**

Consistent comments	Non-consistent comments	Total
N (% within the entire sample)		
2510 (90.0)	278 (10.0)	2788 (100)

Leaning on the scientific implications that suitable sourcing may help to improve quality of justification, we also looked for the sources used to justify arguments. Our data indicated that the most frequently used sources were online links (13.8%), which are not very reliable sources (although reliability and quality may vary from very high to very low); therefore, in terms of sourcing quality of our discussions might be questionable. However, it was not surprising to find out that in online environments online links are shared frequently, in contrary it is widely used form of info-sharing across the Internet. To give more precise assessment about our data, all the links should be re-evaluated; however, in this study it was not our aim. Besides, the percentage of comments containing online links was relatively low, thus we should not draw any stronger conclusions from this data (see Table 22).

Table 22: **Absolute and relative frequency distributions of sourcing**

Personal experience	Experts	Documents	Media	Online sources
N (% within the entire sample)				
49 (1.8)	78 (2.8)	12 (0.4)	28 (1.0)	386 (13.8)

Also, we found 78 comments (2.8%) quoting experts and 12 comments (0.4) discussing documents – these are the sources most likely contributing to higher level of deliberation. Again, the percentage was rather low; therefore, we could not conclude that these sources contributed to higher level of deliberation of our discussions or *vice verse*. Hence, additional measurements supported our findings and testified relatively high level of justification.

5.2. Concluding remarks: how and if characteristics of Web 2.0 online communication culture determine quality of public discussions online?

Overall, analysis indicated that our global discussions online were of low deliberative level because of a number of reasons. First of all, optimistic expectations that emerging online public sphere would eventually lead to a global public discussions of good quality is not likely to be true in our case. Although, Web 2.0 based online communication environments *per se* do have huge potential for new type of well-functioning public sphere to occur; however, the behavior of participants is what matters the most in fostering deliberative communication culture online. Unfortunately, possibility for global publics to join and discuss together does not necessarily

secure that citizens will do that. Our case demonstrated that majority of participants chose to remain passive instead of actively engaging and contributing to the discussions. Moreover, active participants also were not very involved and usually contributed very shortly or only once. So, we consider our discussions to be of low participative level.

Second of all, our data pointed that discussions under consideration, most likely, is dominated by one position and therefore is polarized (this supported our data from participants' surveys): although participants remained rather respectful towards each other they were engaged into the process of formation of hate or radical support groups while discussing (in very respectful or very foul language) outside actors or their thoughts.

Third of all, our discussions seemed to be not responsive – comments tended to ignore previous contributions. This data supported theoretical assumptions that Web 2.0 online communication environments foster chaotic communication culture where participants are talking one over the other and previous contributions are not acknowledged therefore – ignored. On the other hand, level of consistency was maintained as people usually stuck to the topic of the discussion. This finding suggests that discussions in general were not incoherent or non meaningful at all, instead, they had meaningful and valuable episodes, which were often disturbed by distracting contributions.

Fourth, the discussions were not properly justified. Participants freely expressed their opinions, but did not bother to support them. Besides, in many cases justifications were limited to sharing online information or expressing once feelings about the issue.

Finally, process of consensus building cannot be discussed, because only minority of participants acknowledged previous contributions and none changes his/her opinion.

Meanwhile, when we compared our data with the results of other studies exploring quality of discussions in traditional face-to-face settings, we under-covered main characteristics of our discussions in comparison to organized face-to-face based discussions. Major differences could be found in each DQI category. In particular, we found that while in organized face-to-face discussions polarization issues can be controlled, Web 2.0 based online communication environments often face this issue. Furthermore, organized face-to-face discussions also demonstrate higher level of responsiveness and justification, which also suggest that unattended and self-moderated discussions online do not demonstrate high quality of discussions.

Table 23: **Characterizing online communication culture**

	Defining online communication cultures	Organized face-to-face communication settings
Active participation	**PASSIVE:** participants chose to remain passive instead of actively engaging and contributing to the discussions. Moreover, active participants also are not very involved and usually contribute very shortly or only once.	**PASSIVE:** majority of participants remain silent or talk very shortly.
Equal participation	**POLARIZED:** discussions were dominated by pro-environmentalists, who believe in climate change and are eager to act in order to stop it.	**EQUAL:** while forming a group for discussion, experts or scholars seek to make it as equal as possible inviting different parties and opposing groups.
Respect	**DISRESPECTFUL** because severe foul language used against actors who do not participate in the discussions directly and this support the presumption that in such environments as ours hate groups are formed.	**RESPECTFUL** because foul language is used rarely.
Responsiveness	**NON-RESPONSIVE**: although consistency is sustained, majority of the comments do not acknowledge previous contributions. (However these results can be biased by the way we performed the analysis).	**MEDIUM LEVEL OF RESPONSIVENESS**: majority of the contributions are responsive and acknowledge previous contributions.
Justification	**LOW LEVEL OF JUSTIFICATION:** opinions are usually provided without any support.	**MEDIUM LEVEL OF JUSTIFICATION**: if opinion is provided it is more likely to be justified in one or another way.
Consensus building	**NO CONSENSUS BUILDING**: no consensus can be built if only one side is attending the discussion.	**LOW**: participants very rarely change their opinions and acknowledge other positions.

Following these findings we discuss two of our hypotheses related to discursive spaces. First, we could not verify our presumption about the importance of scale because we found that our discussions were led mainly by one position. Following previous literature, we guessed that scale is not the main precondition for the quality of deliberation. Acknowledging that larger deliberative settings are more difficult to handle, we presumed that the actual number of participants is not as important as their readiness to deliberate. Namely, we believed that *global online discussions involving limitless number of participants are not less deliberative than small local face-to-face discussions with restricted number of citizens* (H1). The empirical data partially supported this hypothesis – in comparison to previous studies measuring face-to-face discussions, our sample was somewhere in between. Hence, scale *per se* did not actually determine the quality of the discussions. However, we should not be deluded by this data and the possible participants' polarization (suggested by the survey) should be taken into the consideration. In other words, if the discussions are dominated by one position – it can be polarized and therefore be non-deliberative at all (because excludes other important positions).

Following, we assumed that *participants' polarization online is a strong characteristic of online communication culture preventing online discursive spaces from establishment of well-functioning public sphere* (H2). Our data supported this tentative hypothesis. Namely, participants often used explicit respectful and foul expressions towards outside actors in such a way supporting or criticizing them – this pointed to the possibility that our discussions were polarized and represented by only one side. This data was also supported by the results from our survey (although survey was not complete). Hence, participants' polarization seemed to be an important characteristic of our sample. Furthermore, it is most likely, that polarization was the major obstacle why quality discussions could not be carried – only one side of story was discussed, while others invisible.

5.3. Data reliability test

Before we turn to further analysis of the empirical research data, it is important to ascertain that the coding process was reliable. Since the entire empirical data of this research project were collected and coded by only one coder, we had to perform an inter-coder reliability analysis. After the data were coded by the main coder (who was the author of this dissertation), the DQI was introduced and explained to four other coders, who were third year bachelor students studying public communications at Vytautas Magnus University in Kaunas, Lithuania. One discussion was coded together with students and afterwards they were asked to analyze randomly selected four separate discussions following the instrument of the DQI. In total 192 comments were re-coded. The results of this analysis are reported in the Table 24.

To assess the inter-coder reliability we followed Sterner et al. (2004) and other authors who have used the DQI, in turn, to assess the reliability we relied on several standard indicators. Hence, first of all, we calculated ratio of coding agreement (RCA), which indicates the ratio of number of the identical codes given by the coders and total number of codes (Steiner et al., 2004). Next, we used Cohen's kappa (κ) to measure inter-coder reliability where aspect of chance was taken into the account to make sure, that the coding and variance is systematic and not accidental. Cohen's kappa was computed only if RCA was less than 1.000. Furthermore, we calculated Spearman's rank correlation (r) in order to identify how far apart these codes were. In addition, where rank correlation was calculated, we also measured Cronbach's alpha (α), which is a commonly used reliability statistics (Steiner et al., 2004).

Table 24: **DQI inter-coder reliability of the discussions**

	RCA	K	Spearman r	A
Participation				
Length	1.000	---	---	---
Respect				
FL1	0.974	0.536***	0.556**	0.712
FL2	0.828	0.470***	0.498**	0.694
RL1	0.990	0.745***	0.770**	0.855
RL2	1.000	---	---	---
Listening	1.000	---	---	---
Justification (level and content)				
Level	0.844	0.761***	0.902**	0.942
Own group	0.969	0.652***	0.696**	0.795
Other group	0.932	0.411***	0.508**	0.599
Common good	0.943	0.401***	0.501**	0.587
Abstract principles	0.922	0.682***	0.686**	0.812
Religious principles	0.984	0.392***	0.401**	0.564
Consensus building				
FBA	0.932	0.493***	0.554**	0.875
Additional measurements				
Communication type	0.932	0.786***	0.789**	0.892
Consistency	0.901	0.670***	0.670**	0.802
Sourcing	0.932	0.644***	0.654**	0.831
Overall	**0.935**	---	---	---

In general, the table shows that the coding process was reliable, as the overall RCA was 0.935, which means that coders agreed on 93.5 of the cases. In terms of the category of participation, we may witness a perfect overlap between coders. However, it was the easiest part of the work, as coders were asked to just count the number of words used in the comment. Meanwhile, category of respect also demonstrated very high level of inter-coder reliability. Coders agreed on all cases of categories of respectful language type II and listening, therefore,

there was a perfect inter-coder agreement. Yet, lowest level of reliability was achieved while coding category of foul language type II. This difference can be explained by the fact that sometimes for additional coders it was difficult to identify between slight foul languages pointed to outside actors or their thoughts, i.e. what was considered to be slight foul language by main coder, to the others seemed to be simply strong contra-argument. In other words, main coder was in general stricter. However, Cohen's kappa indicated that the level of agreement was but moderate and therefore acceptable (Landis & Koch, 1977).

The inter-coder reliability for the category of justification (including level of justification and content of justification) point to the same direction as the level of RCA is very high for all categories. However, Cohen's kappa demonstrated that although inter-coder reliability was substantial while coding categories of level of justification, references to own group, and references to abstract principles, it was moderate in case of references to other groups and slight while coding references to common good and religious principles. We believe that this slight level of inter-coder reliability in categories of references to common good and religious principles can be explained by very low variance, i.e. main coder found three cases of references to religious principles out of 192 comments, while other coders identified two such cases; however, only one case was perceived as referring to religious principles by all coders. If we look to the cases, which caused disagreements between coders, it is evident that the main coder was more careful and attentive. Very similar case was with the category of common good. Besides, it was noticed that while coding of two students was perfectly matching coding of the main researcher, other two coders did not identify any cases referring to common good (while main coder found eight such cases). After the discussion with these coders it became evident that they did not fully understand how this category should be coded and agreed with position of main coder.

Next, inter-reliability level of the category of force of better argument was also high and Cohen's kappa demonstrated moderate level of agreement. Again, while agreement between codes of main researcher and two students were very high, codes of two other students were slightly different. This, probably, demonstrate that while two students were taking coding seriously and responsibly, other two either accomplish this request carelessly or did not understand task completely. However, despite this we see that in general inter-coder reliability was acceptable. Moreover, we also found that RCA was rather high for the additional measurements, which were added to the original version of the DQI in order to gather more data about our discussions. Namely, categories of communication type, consistency, and sourcing demonstrated both high RCA level and substantial level of Cohen's kappa.

CHAPTER 6

EXPLAINING VARIATIONS OF THE DELIBERATIVE QUALITY: TIMING OF DISCUSSION, TOPIC OF DISCUSSION, COUNTRY OF ORIGIN OF PARTICIPANTS

In the previous chapter we described general quality variations in the individual categories of the DQI. Now that we know basic characteristics of our sample, we may proceed to more comprehensive explanations of our data and explore what effects different factors might have on each category of the DQI. In this chapter we discuss the DQI categories from two distinct approaches – external and internal (or structural).

First of all, we examine how the quality of our discussions was influenced by the external factor of time. In the light of the general context of the conference, we explain the variation of the discussions' quality in three time periods – before, during, and after the COP15.

Secondly, we assumed that internal effects such as topics under discussions or demographic characteristics of participants might also influence level of deliberation. Therefore, we considered topics of the discussions and investigated how they influenced discussions' quality or what level of quality certain categories of the DQI demonstrated in different thematic groups. In addition, we investigated internal or demographic effects on the quality of the discussions. We aimed to analyze the prevalence of our sample in terms of participants' gender, age, education, and nationality; however, due to incomplete data, this analysis was limited to participants' nationality only.

6.1. The timing of the discussion as an explanatory factor

To describe dynamics of the quality of the discussions in accordance to the time frame, we introduced three-time period approach: pre-conference (April 20, 2009 – December 7, 2009 or 223 days), during-conference (December 8, 2009 – December 18, 2009 or 11 days) and post-conference (December 19, 2009 – September 27, 2010 or 283 days) (see Table 25). In total Facebook page was active for 520 days if to count from the first to the last wall-post published.

Our data indicated that the majority of the wall-posts were generated before the Summit. That was not surprising because pre-conference period was long (yet not longest). It started in April 20, 2009 and lasted for 226 days. On average every second day moderator(s) introduced new wall-posts, which were followed by total of 1553 comments. Moderator(s) actively stimulated discussions with new wall-posts likely aiming to inform, engage publics, and retain the pace of the discussions. Rather low level of public's participation might be explained by the

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fact that it took some time to attract public's attention, gather Facebook users around the discussions, and engage them into the discussions before the event has started.

Table 25: **Wall-posts and comments within three time-periods**

	Pre-conference	Conference	Post-conference
N (% within entire sample)			
Total wall-posts	124 (82.3)	20 (11.1)	12 (6.6)
Wall-posts per day (mean)	0.55	1.8	0.04
Total comments	1553 (55.7)	677 (24.3)	558 (20)
Comments per day (mean)	6.9	61.5	1.9
Comments per wall-posts (range)	1-51	21-57	32-65
Comments per wall-posts (mean)	12.5	33.85	46.5

The frequency of wall-posts increased in the second time period, when in eleven days of the conference nearly 2 new wall-posts were published each day by the moderator(s). Discussions during the conference were shortest but demonstrated highest intensity and tended to be more deliberative in terms of frequency of new topics and number of discussions and comments per day. Moderator(s) were highly involved and stimulated discussions often; publics also demonstrated very high level of participation, as on average 61.5 comments were posted each day.

After the event, moderator(s) took a rather passive role and in 283 days posted only 12 new wall-posts. However, publics maintained their activity and 20 percent of all comments were generated in this time period. Consequently, more comments were published under each wall-post compared to before and during the conference. However, general intensity of the discussions decreased. On average only 1.9 comments were published each day.

Overall, data indicated that in order to achieve higher level of participation all members (participants and moderators) should be properly dedicated to it. We saw, that when discussions were actively stimulated by moderator(s) (before and during the event) activity of participants grew and level of engagement increased. On contrary, when moderator(s) quit stimulating the discussions (after the event), participation level gradually declined, though participants kept their activity for a while. This suggested that for a higher deliberative quality in online communication environments combined communication is important (top-down + bottom-up). In general the majority of online discussions (including those generated in Web 2.0 online communication environments) are more or less moderated by someone (professional or amateur) and activity of the discussion in many aspects is determined by him/her. For instance, topics for

news blogs are proposed by bloggers, Facebook comments are thematically related to the wall-post published by the owner of the profile, online discussion forums in professional media channels are determined by the topic of the article published, etc. Hence, in general, if we want participants to be active on any online environment moderator(s) must be active, and *vice versa* if we do not publish, there will not be any material to comment on and discussions will not be started or continued. However, we cannot assess exactly how important moderator(s) are for the activity of the discussions in our study, because participants' activity variations in our sample might be closely related to the nature of our discourse. In particular, our discussions were dedicated to the concrete event, which lasted for the certain amount of time and moderator(s) as well as other participants closely followed the patterns of COP15. In other words, decreasing activity of the participation after the COP15 might be related to the fact that the event was already over. On the other hand, our data also highlight that during such global events citizens' participation and concerns increases and we believe that this might and should be considered and used to improve practices of decision making.

6.1.1. Participation

We found that the average length of comments (number of words per comment) was not significantly different across three time periods (p=0.024)[102]. However, if we look to the data in the Table 26 it is evident that before and after the COP15 contributions were shorter while during the event they were longer. Hence in terms of participation, discussions were more comprehensive during the conference; however, we are rather critical about the length of the comment as a significant indicator of quality, because the length *per se* (especially when the difference is not statistically significant) cannot determine that the comment is of better quality; instead other categories have to be assessed in order to draw any reliable conclusions.

Table 26: **Participation length (means and ranges) within three time-periods**

	PRE	DURING	POST	Total	Statistics
Mean	34.59	46.65	37.68	38.14	p=0.024
Range	1-1240	1-1240	1-1276	1-1276	

Hence, considering intensity of our discussions, we may say that they were more active during the event. Although this period lasted only for 11 days (shortest period compared to before and after the event), it demonstrated highest intensity – moderator(s) were highly

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[102] Continues variables (e.g., number of words per comment) were compared using one-way analysis of variance (ANOVA). Significant differences were further explored by using Sheffe test. Value of $p<0.005$ was considered statistically significant, and if $p \geq 0.005$ but $p<0.01$, we considered that the difference indicated trend.

involved and stimulated discussions often (on average twice a day new wall-post was published); public also demonstrated very high level of participation, as on average 61.5 comments were posted each day. This second to our previous findings that combined communication is essential in order to set and maintain quality discussions online.

6.1.2. Respect

The next category we measured was respect, including foul and respectful language. The data indicated that foul language towards participants or their arguments (foul language type I) was used similarly across three time groups and no significant differences were found. Meanwhile, frequency of foul language towards outside actors and their positions (foul language type II) was significantly different before, during, and after the conference ($p<0.001$)[103]. Specifically, foul language towards outside individuals or their positions was significantly more often used after the event compared to time periods before ($p<0.001$) and during ($p<0.001$) the *Summit* (Table 27). Probably it can be explained by the fact that after the event moods of participants from optimistic shifted to different direction: participants were not satisfied with *Copenhagen Accord*, in turn, disappointment was openly demonstrated and outside actors and their ideas were addressed with foul expressions aiming to express disappointment, distrust, and resentment.

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[103] Categorical variables were compared using Pearson's Chi-Squared test. Significant differences were followed by post-hoc analysis using Pearson's Chi-Squared test or Fisher's exact test when appropriate. Value of $p<0.005$ was considered statistically significant, and if $p \geq 0.005$ but $p<0.01$, we considered that the difference indicated trend.

Table 27: **Absolute and relative frequency distributions of foul language (type I and type II) within three time-periods**

FL TYPE I[104]				
	PRE	**DURING**	**POST**	**Total**
N (% within the PRE/DUR/POST groups)				
FL at personal level	26 (1.7)	5 (0.7)	11 (2.0)	42
FL towards comment	2 (0.1)	3 (0.4)	2 (0.4)	7
Total	28 (1.8)	8 (1.1)	13 (2.4)	49
FL TYPE II[105]				
FL at personal level	35 (2.3)**	31 (4.6)**	52 (9.3)**	118
FL towards comment	35 (2.3)**	26 (3.8)**	56 (10.0)**	118
Total	70 (4.6)	57 (8.4)	108 (19.3)	236

*Sign. * <0.05; ** <0.001*

Similarly, respectful language towards participants or their arguments did not demonstrate any significant frequency differences in three time groups. Hence, after having looked at foul and respectful language towards inside participants, we can be brief - there were indeed no significant differences over the three time periods and, in general, participants tended to be more respectful than disrespectful towards each other. Which was rather surprising, because considering characteristics of online communication culture, we expected our discussions to be less respectful.

At the meantime, we also found that frequency of respectful language towards outside individuals or groups was significantly different (Table 28). While usage of foul language type II increased over time, respectful language type II – decreased. Specifically, respectful language type II was more often used before the conference compared to during (p=0.01) and after (p=0.002) the event. The data suggests that before the conference participants were positive about the up-coming event and expected it to succeed. Positive moods were expressed in respectful language towards outside individuals, addressing them with trust, respect, and encouragements.

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[104] *Foul language type I* and *respectful language type I* in this dissertation refer to DQI measurements where foul and respectful language towards discourse participants is assessed.

[105] In addition to the traditional DQI measurements of the category of respect (including foul and respectful language), we also evaluated level of respect towards participants who did not directly participate (i.e. politicians, experts, scientists, and others) in the discussions, we named these indicators *foul language type II* and *respectful language type II*.

Table 28: **Absolute and relative frequency distributions of respectful language (type I and type II) within three time-periods**

RL TYPE I			
	PRE	**DURING**	**POST**	**Total**
N (% within PRE/DUR/POST groups)			
RL used	47 (3.0)	28 (4.1)	25 (4.5)	100
RL TYPE II			
RL used	69 (4.4)**	15 (2.2)**	10 (1.8)**	94

*Sign. * <0.05; ** <0.001*

Hence, in sense of respect towards outside actors, discussions before and during the conference were relatively more respectful compared to the discussions after the event. These findings clarified the picture of the quality of our discussions even more. We already saw that after the event moderator(s) stimulated discussions less frequently and the level of participation decreased. Data on category of respect supplemented these findings and suggested that discussions after the COP15 were also least respectful towards outside actors.

We also measured the level of respectful listening before, during, and after the COP15. In the following Table 29 frequency distribution of listening levels (ignoring or responding) are described. We had 156 comments (5.6%), which were not considered for this category, because they were the first contributions; therefore, the total sum of comments does not equal to 2788. Our data indicated that the level of responsiveness decreased over time (p<0.003). Post-hoc analysis revealed that comments before the event tended to be more responsive than after the conference (p=0.01).

Table 29: **Absolute and relative frequency distributions of listening within three time-periods**

	PRE	**DURING**	**POST**	**Total**	**Statistics**
N (% within PRE/DUR/POST groups)					
Ignoring	1072 (69.0)	522 (77.1)	446 (79.9)	2040 (73.2)	p=0.003
Responding	357 (23.0)	135 (19.9)	100 (17.9)	592 (21.2)	
Total	1553 (100)	677 (100)	558 (100)	2632 (94.4)	---

These results supplemented our previous findings on the category of respect, where we found that foul language towards outside individuals increased over time, while frequency of respectful language decreased. It should be also mentioned that category of listening was more about the inter-relations between participants, similarly to indicators of respectful language type I and foul language type I. While we did not find any significant differences in frequencies of

respectful and foul language towards participants or their arguments, data on listening revealed that respectful listening was significantly decreasing over time (as well as level of respect towards outside actors). It seemed that, disappointment with the results and growing anger distracted participants from the essence of the climate change problems, instead, yielding way for comments based on emotions.

6.1.3. Justification

A few interesting trends was noticed while assessing quality variations in terms of level of justification across three time periods. First, the share of comments with arguments significantly decreased over the time and reached the lowest level after the conference. Specifically, after the conference comments with no arguments were significantly more frequent compared to time periods before ($p<0.001$) and during the event ($p<0.001$). On the other hand, if we consider comments with arguments, our data also implied that after the conference significantly fewer comments were lacking reasoning compared to before ($p<0.001$) and after the event ($p<0.001$). In addition, comments provided with reasoning (but without proper linkage) were significantly more frequent during the event than compared to before ($p<0.001$) and after the event ($p=0.004$). As data are quite contradicting, it is difficult to draw any reliable conclusions. However, our data showed that the level of justification in discussions before and during the event was somehow similar (e.g., the percentage of comments without argumentation before and during the event was low in both groups - 11.2% and 12.6% respectively) while after the event emotions were high and different groups of participants took a possibility to express themselves according to their understanding – while some simply expressed their feelings without any arguments, others tried to provide arguments with justifications (see Table 30).

Table 30: **Absolute and relative frequency distributions of level of justification within three time-periods**

	PRE	DURING	POST	Total	Statistics
	N (% within PRE/DUR/POST groups)				
No argument I	174 (11.2)	85 (12.6)	173 (31.0)	432 (15.5)	p<0.001
No reason II	845 (54.4)	385 (56.9)	229 (41.0)	1459 (52.3)	p<0.001
Illustration III	10 (0.6)	7 (1.0)	7 (1.3)	24 (0.9)	p=0.591
Reason IV	141 (9.1)	21 (3.1)	37 (6.6)	199 (7.1)	p<0.001
Reason + link V	361 (23.2)	166 (24.5)	93 (16.7)	620 (22.2)	p=0.014
Reasons + link VI	22 (1.4)	13 (1.9)	19 (3.4)	54 (1.9)	p=0.07
Total	1553 (100)	677 (100)	558 (100)	2788	---

We did not find any significant differences related to the frequency of illustrations or reasoned and properly linked contributions. In all three time-periods the level of references to illustrations was relatively similar and remained low. Even though we expected that after the event people might have more experience and understanding about the issue and as a result share it with others, this was not significantly expressed in our sample.

While the category of level of justification dealt with the formal characteristics of the justification, further we discuss the substance or content of justification. We found that only references to other groups and references to abstract principles were significantly different across three time groups. First of all, data indicated that during the conference comments significantly less often provided references to other groups, compared to comments made before (p=0.001) and after the event (p=0.001). It might be related to the fact that before and after the COP15 participants had more time to discuss outcomes of climate change and questioned costs and benefits of own or other groups, while during the event attention was concentrated on the COP15 decisions and course of the event but not on the benefits or costs of own or other groups (Table 31).

Table 31: **Absolute and relative frequency distributions of content of justification within three time-periods**

	PRE	DURING	POST	Total	Statistics
N (% within PRE/DUR/POST groups)					
Own group	50 (3.2)	12 (1.8)	16 (2.9)	78 (2.8)	p=0.162
Other group	203 (13.1)	28 (4.1)	32 (5.7)	263 (9.4)	p<0.001
Common good	16 (1.0)	7 (1.0)	8 (1.4)	31 (1.1)	p<0.720
Abstract principles	212 (13.7)	171 (25.3)	112 (20.1)	495 (17.8)	p<0.001
Religious principles	16 (1.0)	6 (0.9)	9 (1.6)	31 (1.1)	p=0.431
Total	497	224	177	898	---

Furthermore, we observed that comments before the event significantly less frequently provided references to abstract principles compared to comments during the event (p<0.001). This suggested that during the conference participants were more concerned about the outcomes, which would correspond to abstract principles of environmental health, welfare of future generations, and citizens' safety. In general, discussions during the conference seemed to be more concentrated towards the fundamental topic and abstract principles, while in discussions before and after the event participants had time and will to question wider issues, such as costs or benefits to own or other groups.

6.1.4. Force of better argument

Regarding the category of force of better argument, we did not find any significant changes over time. This can be easily explained if we consider the possible polarization of our discussions – majority of the participants who were actively engaged shared similar thinking while opposing views were articulated only in a small amount of the contributions; therefore, there was no actual need to yield for the stronger or better argument, as majority of them were similarly good and often only supported each other without any opposition.

Table 32: **Absolute and relative frequency distributions of force of better argument within three time-periods**

	PRE	DURING	POST	Total	Statistics
N (% within PRE/DUR/POST groups)					
Change + reason	0	0	0	0	---
Change	0	0	0	0	---
No change + reason	47 (3.0)	17 (2.5)	14 (2.5)	78 (2.8)	p=0.086
No change	30 (1.9)	21 (3.1)	20 (3.6)	71 (2.5)	
Total	77	38	34	149	---

Data discussed in this and previous sections suggested that in terms of time our analysis demonstrated a number of interesting variations. Namely, discussions after the event was of least intensity, demonstrated lowest level of respectful language and respectful listening, and comments had weakest justification level. Whereas, discussions before and during the event demonstrated somehow similar level of justification. Albeit the first was stronger in terms of respect and justification, the second scored better in category of participation and content of justification.

6.1.5. Additional assessments: information type, consistency, and sourcing

We also assumed that additional information about the type of information, consistency, and sourcing may provide us with more important findings about the quality of our discussions before, during, and after the event. First, we explored the variation of information type across three time groups. We found that frequencies of expressing opinions and sharing information were significantly different before, during, and after the COP15 (see Table 33).

Table 33: **Absolute and relative frequency distributions of information type within three time-periods**

	PRE	DURING	POST	Total	Statistics
N (% within PRE/DUR/POST groups)					
Opinion	1162 (74.8)	520 (76.8)	362 (64.9)	2044	p<0.001
Info-sharing	172 (11.1)	64 (9.5)	125 (22.4)	361	p<0.001
Self-promotion	21 (1.4)	1 (0.1)	5 (0.9)	27	p=0.028
Question	118 (7.6)	56 (8.3)	35 (6.3)	209	p=0.403
Emotions	399 (25.7)	159 (23.5)	151 (27.1)	709	p=0.335

Post-hoc analysis revealed that after the event opinions were significantly less often expressed compared to pre-conference (p<0.001) and during the conference (p<0.001) discussions. Information sharing increased after the event. As we considered opinions and information sharing to be most deliberative types of information, discussions became neither more deliberative, nor less deliberative.

Surprisingly there were no statistically significant differences in frequency distribution of emotions across three time periods. We expected that after the event the level of emotions may increase as people expressed their attitudes and dissatisfactions about the COP15 outcomes. However, it seemed that negative moods were more often based on different information than on personal stories or emotions.

The next item we measured dealt with comments' consistency. Findings largely followed the same pattern of previous results. Specifically, we found that after the event consistency of the comments significantly decreased when compared to pre-conference (p<0.001) and during-conference (p<0.001) periods (see Table 34) meaning that after the event participants more often discussed issues which were not consistent to the main topic of the discussion. Again, this indicated that after the event participants were disturbed by the outcomes of the COP15 and led by emotions, disappointment, and anger, therefore, in many cases participants just provided their attitude and expressed opinions (mostly negative) ignoring the general topic of the discussion. This, of course, leads us to the conclusion, that after the event quality of the discussions in regard of consistency was significantly decreasing.

Table 34: **Absolute and relative frequency distributions of consistency within the three time-periods**

	PRE	DURING	POST	Total	Statistics
Counts (% within PRE/DUR/POST groups)					
Consistent	1425 (91.8)	623 (92.0)	452 (81.0)	2500 (89.6)	p<0.001
Not consistent	128 (8.2)	54 (8.0)	106 (19.0)	288 (10.4)	
Total	1553 (100)	677 (100)	558 (100)	2788 (100)	---

The last item we incorporated into our analysis was sourcing. First of all, we noticed that after the conference significantly fewer comments were lacking sourcing compared to discussions before (p<0.001) and during (p<0.001) the COP15. With no surprise, after the event it was easier to find sources supporting once arguments: media quotes, experts' opinions, or personal experience from Copenhagen. In this sense, post-conference discussions seemed to be more deliberative. However, when we looked which of the sources were used more frequently after the event, we saw, first, that comments after the event more frequently referred to personal stories than compared to comments before (p<0.001) and during (p<0.001) the event, and second, comments after the event more often provided online links compared to before (p<0.001) and during the event (p<0.001). Neither personal stories, nor online links are sign of better discussions' quality, hence, although more comments were provided with sources after the event, but not necessarily these references increased quality of the discussions after the *Summit*.

Table 35: **Absolute and relative frequency distributions of sourcing within three time-periods**

	PRE	DURING	POST	Total	Statistics
N (% within PRE/DUR/PODT groups)					
No sourcing	1311 (84.4)	567 (83.8)	391 (70.1)	2269 (81.4)	p<0.001
Personal stories	14 (0.9)	8 (1.2)	26 (4.7)	48 (1.7)	p<0.001
Experts	32 (2.1)	31 (4.6)	14 (2.5)	77 (2.8)	p=0.004
Documents	5 (0.3)	3 (0.4)	4 (0.7)	12 (0.4)	p=0.473
Professional media	14 (0.9)	9 (1.3)	6 (1.1)	29 (1.0)	p=0.655
Online links	180 (11.6)	78 (11.5)	127 (22.8)	385 (13.8)	p<0.001

We also found that during the conferences references to experts were significantly more frequent compared to comments made before the event (p<0.001). Since we considered that references to experts and documents determined better quality of the discussions compared to other sources, we may think that in terms of sourcing comments during the event were more deliberative.

Hence, analysis of the additional categories supported our earlier findings and highlighted that discussions after the event were also of lower deliberative level in terms of consistency. Whereas, comments published during the event demonstrated higher level of deliberation in terms of sourcing, as more participants quoted experts and referred to their ideas.

6.2. The topic of discussion as an explanatory factor

For more comprehensive analysis, next we decided to explore if level of deliberation differed in accordance to the topic under discussion. In particular, we expected that scientific framing of climate change would demonstrate higher level of discussions' quality in comparison to political or other framing of climate change issues (H4). Herewith, we aimed to find out what impact recent phenomenon of science privatization, commercialization and democratization have on publics' understanding of science. We also were not sure if we find any significant differences in quality across two groups of national and global politics. We assumed that discussions on national politics could be less deliberative because participants might be not satisfied with the national position their country declares. On the other hand, low quality of discussions on global politics might be related to disagreements between different countries and their publics. Besides, we also assumed that discussions on financial topics would be less deliberative that scientific discussions, because it is not easy to agree when big money are involved and difficult to find the agreement who must pay and how much. It is more likely that participants from developed countries would be confronting those from developing parts of the world.

Hence, in the following sections we discussed quality variations of our discussions across five topical groups in order to confirm our presumptions and identify most and least deliberative topics. We sorted comments into five topical groups according to the topic of the initial wall-post. The first group encompassed discussions about *scientific issues.* To this group we attributed comments questioning scientific results, new research data, and scientists' forecasts related to climate change. We found 15 such discussions followed by 241 comments (8.6%). Similar amount of attention was attained by the topic of *financial matters,* as it was considered in 17 discussions or in 234 comments (8.4%). Discussions about *national and global politics* were most popular. In 43 discussions or in 735 comments (26.4%) *national political* attitudes, positions, and actions related to climate change were considered. Yet, majority of the comments primarily questioned *global political* issues of climate change, including international agreements, global treaties, positions and actions of international or sub-national institutions, etc. Specifically, global politics was under consideration in 55 discussions or 1098 comments

(39.4%). Finally, 26 discussions or 480 comments questioned other climate change related topics, such as public engagement, organizational matters of COP15, etc.

Our data indicated that topical distribution was significantly different before, during and after the COP15. Scientific issues were significantly differently frequent in three time periods (significance varied from p=0.001 to p<0.001). In particular, scientific aspects of climate change were more frequently discussed before the event than compared to during and after it – prevalence of scientific issues disappeared over time. Comments related to financial matters followed the same pattern. Specifically, climate change funding was significantly more often questioned before the event than compared to during and after the COP15 (significance in all cases was p<0.001). Somehow similar trends were observed when analyzing frequency of national politics in all three time-periods – over time frequency of such topics significantly decreased (measures of all three periods differed significantly: p<0.001). On the other hand, global politics after the event became the most important issue and at that time it was discussed significantly more often than compared to before (p<0.001) or during the event (p<0.001) (see Table 36).

Table 36: **Absolute and relative frequency distributions of comments within topical-groups and time-periods**

	PRE	DURING	POST	Total	Statistics
N (% within PRE/DUR/PODT groups)					
Scientific issues	191 (12.3)	50 (7.4)	---	241	p<0.001
Financial matters	210 (13.5)	24 (3.5)	---	234	p<0.001
National politics	435 (59.2)	256 (37.8)	44 (7.9)	735	p<0.001
Global politics	440 (28.3)	257 (38.0)	401 (71.9)	1098	p<0.001
Other	277 (17.8)	90 (13.3)	113 (20.3)	480	p<0.001
Total	1553 (100)	677 (100)	558 (100)	2788	---

So, the main conclusions from this section are: first, we noticed that discussions before the conference were much more diverse and considered scientific, financial, political and other aspects of climate change. However, when the conference began, discussions shrank in terms of topical variety. In particular, during the conference discussions mostly questioned national political issues (59.2%), while scientific and financial matters were considered rarely. The shrinkage became even more noticeable after the event, when the vast majority of the discussions questioned global political matters. Hence, frequency distribution of comments according to their topic indicated that the discussions were shrinking in terms of topical variety.

It might be also assumed that shrinking topical variety might have had an influence on decreasing quality of the discussions over time.

6.2.1. Participation

In terms of participation length (number of words per comment), we found that comments discussing scientific issues tended to be shortest across five topical groups (p=0.01). We did not actually expect that, but we found a rather reasonable explanation – scientific topics in general are not easy to discuss for general public, because they require advanced knowledge, understanding, and awareness, which is not common for everybody especially than we speak about global public. Hence, we thought that participants did not feel confident about their scientific knowledge; therefore, comments were shortest. On the other hand, such public brace might have other explanations. For instance, recent contradictory scientific debate on climate change and general trends of science privatization and commercialization might have determined such internal constrains. Unfortunately, these findings suggested that discussions about scientific issues were not of such high deliberative level as we expected (see Table 37).

Table 37: **Length of participation (means and ranges) within topical-groups**

	Scientific issues	Finance	Politics in national level	Global politics	Other	Statistics
Mean	33.56	38.24	35.28	34.85	52.30	p=0.01
Range	1-418	1-504	1-919	1-1276	1-1240	

Comments related to climate change funding, climate change politics in national and global levels were longer (though not significantly). Probably, participants had more knowledge and understanding about these issues; therefore, they felt confident and free to express their attitudes, opinions, and discuss with others. In contrary to scientific discussions financial and political issues were free of internal constrains and lack of knowledge did not limit participants.

From these primary data about participation length we cannot draw any in-depth conclusions, because, as it was explained in Chapter 5, longer comments *per se* do not necessarily demonstrate better quality. Therefore, we proceed to other categories in order to explore how level of deliberation varied in five topical groups.

6.2.2. Respect

Regarding frequency of foul language towards participants and their arguments (foul language type I), we did not find any significant differences. In particular, the share of foul language in all

five groups was relatively low. Hence, participants treated each other in relatively nice and respectful way.

However, foul language towards outside actors (foul language type II) was more frequent than foul language toward inside participants. Foul language type II was significantly more often used in discussions related to global politics compared to all other four groups (significance varied from $p<0.001$ to $p=0.003$) (see Table 38).

Table 38: **Absolute and relative frequency distributions of foul language (type I and type II) within topical-groups**

	Science	Finance	National	Global	Other	Total
FL TYPE I						
N (% within the PRE/DUR/POST groups)						
FL at personal level	5 (2.1)	4 (1.7)	10 (1.4)	14 (1.3)	9 (1.9)	42 (1.5)
FL towards comment	1 (0.4)	---	2 (0.3)	2 (0.2)	2 (0.4)	7 (0.3)
Total	6 (2.5)	4 (1.7)	12 (1.7)	16 (1.5)	11 (2.3)	49
FL TYPE II						
FL at personal level	7** (2.9)	5** (2.1)	32** (4.4)	56** (5.2)	18** (3.8)	118 (4.2)
FL towards comment	6** (2.5)	5** (2.1)	16** (2.2)	76** (6.9)	14** (2.9)	117 (4.2)
Total	13 (5.4)	10 (4.2)	48 (6.6)	132 (12.1)	32 (6.7)	235

*Sign. * <0.05; ** <0.001*

Furthermore, we also found significant differences in frequencies of respectful language towards participants or their arguments (respectful language type I). In particular, respectful language in discussions about other topics was more frequent compared to discussions questioning national politics ($p<0.001$) or global politics ($p<0.001$).

Table 39: **Absolute and relative frequency distributions of respectful language (type I and type II) within topical-groups**

RL TYPE I						
	Science	Finance	National	Global	Other	Total
N (% within the PRE/DUR/POST groups)						
RL used	10**	7**	13**	34**	36**	100
	(4.1)	(3.0)	(1.8)	(3.1)	(7.5)	(3.6)
RL TYPE II						
RL used	2 (0.8)	8 (3.4)	29 (3.9)	42 (3.8)	13 (2.7)	94 (3.4)

*Sign. * <0.05; ** <0.001*

Respectful language towards outside actors (type II) was less frequently used in discussions related to scientific matters. These findings supported our earlier argument about the precaution, which was demonstrated by participants while discussing scientific matters. Although citizens remained respectful towards scientists (foul language type II used only in 13 comments), yet at the same time they were not very supportive but rather restrained (respectful language type II used only in 2 comments). Hence, in general, it might be said that the public in our case was skeptic and cautious about science and scientists.

We have also seen that participation length did not coincide with the data on respect. In other words, longer comments did not imply higher quality in terms of respect. In particular, we found that comments about global politics were relatively longer but least respectful.

Furthermore, we also assessed indicator of listening. Here we found that for global politics, participants did most often ignore arguments of others and did not respond (significance varied from $p < 0.001$ to $p = 0.008$). This also implied lower level of deliberative quality of discussions related to global politics (see Table 40).

Table 40: **Absolute and relative frequency distributions of listening within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
N (% within topical-groups)							
Ignoring	157	160	518	860	351	2046	p<0.001
	(65.1)	(68.4)	(70.5)	(78.3)	(73.1)	(73.4)	
Responding	69	58	176	184	108	595 (21.3)	
	(28.6)	(24.8)	(23.9)	(16.8)	(22.5)		

Overall, data on the category of respect implied that scientific discussions were respectful but somehow constrained – these discussions were shortest and less deliberative in

terms of respectful language type II. Secondly, discussions on global politics seemed to be most emotional but not actually deliberative, because both foul language (type II) and respectful language (type I and type II) were very frequently used, but level of responsiveness was significantly lower. Third, comments attributed to the group of other topics were significantly longer and used respectful language (type I) significantly more frequently. Finally, comments related to finance and national politics did not demonstrate any significant differences – they were of moderate rate of responsiveness and used foul language rarely. Besides, we also noticed that comments questioning national politics used respectful language towards inside participants least often while most frequently referred to outside actors with respectful words (however, these differences were not significant, therefore we did not discuss them in length).

6.2.3. Justification

We found only two significant differences analyzing the level of justification across five topical groups. First of all, our data indicated that significantly more comments were missing argumentation in the group of comments discussing global politics compared to the group of funding matters (p=0.018) and national politics (p=0.007). These results contributed to our previous findings that discussions on global political matters were more emotional (included more foul expressions, less responsive and also were less justified). Second, we also noticed that comments under the group other topics were significantly more often missing argument than compared to other groups (significance varied from p<0.001 to p=0.001). These findings suggested that in terms of argumentation comments under the group other topics were least deliberative (see Table 41).

Table 41: **Absolute and relative frequency distributions of level of justification within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
N (% within topical-groups)							
No argument I	29 (12.0)	24 (10.3)	87 (11.8)	180 (16.4)	112 (23.3)	432 (15.5)	p<0.001
No reason II	123 (51.0)	122 (52.1)	400 (54.4)	582 (53.0)	232 (48.3)	1459 (52.3)	p=0.316
Illustration III	3 (1.2)	2 (0.9)	8 (1.1)	9 (0.8)	2 (0.4)	24 (0.9)	p=0.737
Reason IV	24 (10.0)	13 (5.6)	53 (7.2)	84 (7.7)	25 (5.2)	199	p=0.141
Reason + link V	56 (23.2)	67 (28.6)	170 (23.1)	227 (20.7)	100 (20.8)	620 (22.2)	p=0.088
Reasons + link VI	6 (2.5)	6 (2.6)	17 (2.3)	16 (1.5)	9 (1.9)	54 (1.9)	p=0.599

Meanwhile, data on content of justification suggested that comments on scientific issues significantly more often referred to costs or benefits of own group compared to comments questioning national or global politics (p=0.001 and p<0.001 respectively). Furthermore, comments on scientific issues also significantly less often referred to other groups compared to comments about finances (p<0.001) and national politics (p=0.005). In other words, participants discussing scientific issues were more concerned about costs and benefits of own group than about other groups. Participants assessed how scientific forecasts would affect their personal future and lives of their group members (see Table 42).

Discussions on finances, national politics, and global politics more often considered other groups. In most of these cases benefits of other groups were underscored. Participants resented that other countries hesitated too long and did not commit to the global deal fearing for financial or other commitments, which indicate a low level of deliberation.

Furthermore, abstract principles were more frequently discussed in comments under the group other topics compared to the discussions on financial matters (p=0.006), national politics (p=0.001), or global politics (p<0.001).

Table 42: **Absolute and relative frequency distributions of content of justification within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
N (% within topical-groups)							
Own group	15 (6.2)	5 (2.1)	15 (2.0)	22 (2.0)	21 (4.4)	78 (2.8)	p<0.001
Other group	11 (4.6)	35 (15.0)	78 (10.6)	96 (8.7)	43 (9.0)	263 (9.4)	p=0.002
Common good	2 (0.8)	---	10 (1.4)	14 (1.3)	5 (1.0)	31 (1.1)	p=0.477
Abstract principles	50 (20.7)	37 (15.8)	124 (16.9)	165 (15.0)	119 (24.8)	495 (17.8)	p<0.001
Religious principles	1 (0.4)	1 (0.4)	7 (1.0)	9 (0.8)	13 (2.7)	31 (1.1)	p=0.017

6.2.4. Force of better argument

We did not find any significant differences in the data on force of better argument. As it was noticed earlier in the research (see Chapter 5), there were no comments demonstrating change in position; therefore, the only conclusion we can make is that all the groups were similarly low deliberative in terms of force of better argument.

Table 43: **Absolute and relative frequency distributions of force of better argument within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
N (% within topical-groups)							
Change + reason	---	---	---	---	---	---	---
Change	---	---	---	---	---	---	---
No change + reason	4 (1.7)	5 (2.1)	20 (2.7)	30 (2.7)	19 (4.0)	78 (2.8)	p=0.343
No change	4 (1.7)	8 (3.4)	11 (1.5)	35 (3.2)	13 (2.7)	71 (2.5)	p=0.343
Total	8 (0.3)	13 (0.5)	31 (1.1)	65 (2.3)	32 (1.1)	149 (5.3)	---

6.2.5. Additional measurements

Further, we analyze and discuss additional assessments. First of all, we noticed that significant differences might be detected across the comments providing opinions (p=0.001), sharing information (p<0.001), and expressing emotions (p<0.001). Following, post-hoc analysis pointed that comments under the group other topics significantly less often presented opinions compared to comments under the groups national politics (p<0.001) or global politics (p<0.001) but significantly more often compared to comments discussing scientific issues (p=0.001) and financial matters (p<0.001). Second, comments discussing other topics also more frequently shared information compared to other four topical groups (significance p<0.001 in all four cases). Finally, comments under the group other topics significantly less often expressed emotions compared to comments under the groups of national politics (p<0.001) and global politics (p<0.001) but more often than comments related to scientific issues (p<0.001) or financial matters (p=0.005). These results rather comprehensively described the comments under the group other topics. In terms of opinion sharing and emotional expressions we may see that comments under the group other topics served as a distinction between two groups of comments: the first group constituted of less opinion and less emotionally based comments related to scientific issues and financial matters; while the second encompassed comments discussing national and global politics and these comments were more opinion based and more emotional.

These findings contributed to the previous results and confirmed that political issues were discussed more openly and freely involving both personal opinions and feelings, while scientific and financial discussions were more constrained and less frequently were based on personal attitudes or emotions (see Table 44).

Table 44: **Absolute and relative frequency distributions of information type within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
	N (% within topical-groups)						
Opinion	176 (8.6)	17 (9.1)	563 (27.5)	824 (40.3)	296 (14.5)	2046 (100)	p<0.001
Info-sharing	28 (7.9)	19 (5.4)	71 (20.1)	128 (11.7)	108 (30.5)	354 (100)	p<0.001
Self-promotion	1 (3.8)	1 (3.8)	6 (23.1)	9 (34.6)	9 (34.6)	26 (100)	p=0.183
Question	20 (9.5)	25 (11.8)	54 (25.6)	81 (38.4)	31 (14.7)	211 (100)	p=0.356
Emotions	51 (7.2)	54 (7.6)	68 (27.7)	277 (39.0)	160 (22.5)	710 (100)	p<0.001

The second additional measurement we considered was consistency. We did not find any significant differences regarding level of consistence across five topical groups (see Table 45).

Table 45: **Absolute and relative frequency distributions of consistency within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
N (% within topical-groups)							
Consistent	218	217	675	981	419	2510	p=0.056
	(8.7)	(8.6)	(26.9)	(39.1)	(16.7)	(90)	
Not consistent	23	17	60	117	61	278	
	(8.3)	(6.1)	(21.6)	(42.1)	(42.1)	(10)	
Total	241	234	735	1098	480	2788	---
	(8.6)	(8.4)	(26.4)	(39.4)	(17.2)	(100)	

Regarding sourcing, we found that comments under the group other topics were significantly more often provided with sources compared to groups of national (p<0.001) and global politics (p<0.001) and less provided with sources than comments related to scientific (p<0.001) or financial matters (p=0.002). Hence, again, scientific and financial issues were based not on personal opinions or emotions, but instead on information from different sources, while political issues were more frequently based on personal emotions and positions. Besides, data also suggested that comments under the group other topics more often used online sources compared to comments related to scientific (p=0.001), financial issues (p<0.001) or national politics (p<0.001), and less often than in comments on global politics (p<0.001) (see Table 46).

Table 46: **Absolute and relative frequency distributions of sourcing within topical-groups**

	Scientific issues	Finance	National politics	Global politics	Other	Total	Statistics
	N (% within topical groups)						
No sourcing	200 (8.8)	201 (8.8)	625 (27.4)	910 (39.8)	349 (15.3)	2285	p<0.001
Personal stories	3 (6.1)	4 (8.2)	10 (20.4)	20 (40.8)	12 (24.5)	49	p=0.627
Experts	7 (9.0)	4 (5.1)	25 (32.1)	28 (35.9)	14 (17.9)	78	p=0.683
Documents	3 (25.0)	1 (8.3)	4 (33.3)	2 (16.7)	2 (16.7)	12	p=0.237
Professional media	3 (10.7)	3 (10.7)	4 (14.3)	12 (42.9)	6 (21.4)	28	p=0.687
Online links	30 (7.8)	24 (6.2)	79 (20.5)	150 (38.9)	103 (26.7)	386	p<0.001

Overall, assessments of the additional measurements indicated that comments under the topical group of other topics were less deliberative in terms of justification level; however, in terms of information type and sourcing, such comments were somewhere in between more constrained scientific comments and more emotional political comments. As mentioned, discussions under this group questioned various technical, organizational matters or public involvement into COP15. However, following discussions were not sticking to these topics, instead discussing other issues which in many cases were primarily related to the other aspects of climate change including scientific, financial, and political.

In this section we explored how structural settings of the discussions might influence level of deliberation; however, we also assumed that internal effects such as different socio-demographic characteristics determined interesting variations across our data.

6.3. The country of the participants as an explanatory factor

We did not have information about important characteristics of the participants such as gender, age, and education. But we knew for many participants their country of origin, which we could use as an additional explanatory factor.

We assumed that discussions will be dominated by participants from developed countries, as they possibly have more knowledge and skills about communication online, it is also more likely that access to the Internet is easier for those citizens. Second of all, our presumptions about deliberative level of participants representing these two groups – developed and developing countries – were somehow ambiguous. We thought that participants from developed countries might be more educated and have more skills about how to properly justify their arguments, listen to others, and yield to better arguments compared to the participants from

developing countries. However, we also assumed that these participants might be more skeptical about climate change because this issue does not affect them directly yet and because higher level of scientific literacy decreases trust in science and scientific inventions. Hence we hypothesized that *participants from developed countries are more likely to have necessary knowledge and skills to facilitate quality deliberations online therefore they are more deliberative in comparison to participants from developing countries who have fewer opportunities to join the discussions, and less skills and knowledge about how to effectively deliberate* (H5).

Participants of our discussions represented 88 different countries from 6 continents. We divided all these countries into two groups: *Annex I countries*[106] and *Annex II countries*[107]. In some of the cases it was impossible to locate the participant, therefore 1151 or 41.3 percent of the meanings were missing.

Table 47: **Absolute and relative frequency distributions of comments within country-groups and time-periods**

	Annex I countries	Annex II countries	Total	Statistics
N (% within PRE/DUR/POST groups)				
PRE-conference	569 (62.5)	341 (37.5)	910 (100)	p=0.005
Conference	217 (53.8)	186 (46.2)	403 (100)	p=0.008
POST-conference	188 (58.0)	136 (42.0)	324 (100)	p=0.512
Total comments	974	663	1637	---

Data indicated that participants from developed countries tended to dominate the discussions in two time periods – before the event (p=0.005) and during the conference (p=0.008) participants from the developed countries constituted bigger part of all the participants. As expected, our data indicated that participants from developed Annex I countries

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[106] **Annex I countries:** England (4.1%), Denmark (3.5%), Canada (2.8%), Australia (2.1%), Sweden (1.3%), Germany (1.2%), Italy (1.2%), Portugal (1.2%), Netherlands (1.0%), Spain (0.9%), Belgium (0.8%), Japan (0.8%), France (0.5%), Ghana (0.4%), the US (0.4%), New Zealand (0.3%), Norway (0.3%), Turkey (0.3%), Czech Republic (0.2%), Austria (0.1%), Belarus (0.01%), Burma (0.01%), Finland (0.1%), Greece (0.1%), Hungary (0.01%), Iceland (0.1%), Ireland (0.1%), Malta (0.01%), Poland (0.01%), Romania (0.1%), Russia (0.01%), Scotland (0.1%), Slovakia (0.01%), and Switzerland (1.0%).
[107] **Annex II countries:** India (6.9%), Brazil (1.9%), Mexico (1.8%), Argentina (1.5%), Indonesia (1.1%), South Africa (1.1%), Bangladesh (1.0%), Kenya (0.9%), Chile (0.6%), China (0.6%), Malaysia (0.5%), Nepal (0.5%), Nigeria (0.4%), Pakistan (0.4%), Philippines (0.4%), Singapore (0.4%), Vietnam (0.4%), United Arab Emirates (0.3%), Ecuador (0.2%), Egypt (0.2%), Ethiopia (0.2%), Peru (0.2%), Bosnia and Herzegovina (0.1%), Cyprus (0.1%), Colombia (0.1%), Costa Rica (0.1%), Iran (0.1%), Israel (0.1%), Lebanon (0.1%), Madagascar (0.1%), Mozambique (0.01%), Namibia (0.1%), Oman (0.1%), Palestine (0.1%), Panama (0.1%), Paraguay (0.1%), Saudi Arabia (0.1%), Senegal (0.1%), Serbia (0.1%), Syrian Arab Republic (0.1%), Sri Lanka (0.1%), Tanzania (0.1%), Thailand (0.1%), Uganda (0.1%), Cameroon (0.01%), Cuba (0.01%), Honduras (0.01%), Iraq (0.01%), Jordan (0.01%), Gambia (0.01%), South Korea (0.01%), and Papua New Guinea (0.01%).

were more active and generated more comments – 974 *versus* 663. This might be related to the issue of lower level of education of participants from developing countries (language skills, technical Internet usage skills, etc.) or general personal constrains and distrust resulted by poorly known Web 2.0 online communication environments. However, we did not measure these qualities; hence, we cannot make any certain conclusions here.

Further analysis suggested that participants from Annex II countries more frequently discussed national politics (p=0.003). Interestingly, comments on global politics were discussed very similarly in both groups – 39.8% of total comments in Annex I and Annex II groups were dedicated to global politics (see Table 48).

Table 48: **Absolute and relative frequency distributions of comments within topical-groups and country-groups**

	Annex I countries	Annex II countries	Total	Statistics
N (% within Annex I and Annex II groups)				
Scientific issues	96 (9.9)	43 (6.5)	139	p=0.016
Financial matters	85 (8.7)	45 (6.8)	130	p=0.154
National politics	235 (24.1)	204 (30.8)	439	p=0.003
Global politics	388 (39.8)	264 (39.8)	652	p=0.995
Other topics	170 (17.5)	107 (16.1)	277	p=0.486
Total	974 (100)	663 (100)	1637	---

Hence, although discussions were slightly dominated by participants from developed countries, participants from Annex II countries also had their say; therefore, we assumed that in terms of equal participation both groups were properly represented.

6.3.1. Participation

Further, our data indicated that participants from developing countries spoke much briefer. We noticed that comments by participants from developing countries were significantly shorter (p=0.001). We thought that this might be also a sign of participants' constrains to express their thoughts and justify them (see Table 49).

Table 49: **Length of participation (means and ranges) within two country-groups**

	Annex I countries	Annex II countries	Total	Statistics
Mean	43.13	26.70	36.47	p=0.001
Range	1-1240	1-495	1-1240	

As we have seen before, length of participation does not always determine high level of deliberation so that it is interesting to look also at other deliberative elements in order to make any further and deeper conclusions.

6.3.2. Respect

Next, we investigated how the level of respect varied in two country groups. We found that comments made by participants from developed countries used foul language significantly more frequently towards both participants ($p<0.001$) and outside actors ($p<0.001$). These data, on one hand, showed that participants from developed countries were less respectful. However, on the other hand, the data also suggested that participants from developing countries were constrained and cautious about the words they used and positions they articulated. We explained earlier that this might be related to the fact that for those participants unrestricted online environment was new and poorly known; therefore, their behavior was careful and constrained (see Table 50).

Table 50: **Absolute and relative frequency distributions of foul language (type I and type II) within two country-groups**

FL TYPE I			
	Annex I	Annex II	Total
N (% of country-groups)			
FL at personal level	20 (2.1)	4 (0.6)	24 (1.5)
FL towards comment	3 (0.3)	2 (0.3)	5 (0.3)
Total	23 (2.4)**	6 (0.9)**	29
FL TYPE II			
FL at personal level	47 (4.8)	20 (3.0)	67 (4.1)
FL towards comment	50 (5.1)	23 (3.5)	73 (4.5)
Total	97 (9.9)**	43 (6.5)**	140

*Sign. * <0.05; ** <0.001*

Also, we found that respectful language was used very similarly across both country groups. We did not find any significant differences between frequency of respectful language

(type I and type II) across two country groups. However, we also noticed that respectful language towards inside participants (type I) was relatively more frequently used compared to foul language (type I) in both country groups. Such findings implied that participants were more respectful than disrespectful towards each other.

Furthermore, even though rather constrained participants from developing countries were cautious in using foul language, respectful language by them was used more freely. Besides, while participants from developing countries used foul language (type II) less often compared to participants from developed countries, respectful language was used very similarly across both groups (see Table 51).

Table 51: **Absolute and relative frequency distributions of respectful language (type I and type II) within two country-groups**

	Annex I	Annex II	Total
RL TYPE I			
	Annex I	Annex II	Total
N (% of country-groups)			
RL used	32 (3.3)	19 (2.9)	51 (3.1)
RL TYPE II			
RL used	29 (3.0)	20 (3.0)	49 (3.0)

*Sign. * <0.05; ** <0.001*

Regarding category of listening, we did not find any significant differences, but we noticed that participants from poor countries were less responsive. Again, this might be related to the fact that citizens of developing countries lack of knowledge of how to follow online discussions and how to properly respond to them. They also ignored comments by other participants more often (see Table 52).

Table 52: **Absolute and relative frequency distributions of listening within two country-groups**

	Annex I	Annex II	Total	Statistics
N (% within country-groups)				
Ignoring	697 (71.6)	497 (75.0)	1194 (72.9)	p=0.030
Responding	228 (23.4)	122 (18.4)	350 (21.4)	
Total	974 (100)	663 (100)	1637	---

Overall, our findings indicated that in terms of respect participants from both country groups demonstrated low level of quality. Participants from developed countries more frequently were disrespectful, but their comments were more vital, which is good for

deliberation. On the other hand, participants from developing countries demonstrated internal constrains which resulted in lack of vitality and low discursive interactivity.

6.3.3. Justification

In terms of category of justification, we found that participants from developed countries less often tended to provide reasons for their arguments compared to participants from developing countries ($p=0.01$). These findings were surprising because previously we claimed that participants from developed countries had more knowledge and skills for online communications. However, data suggested that in some cases knowledge and skills are not the only determinants influencing quality of deliberation (see Table 53).

Table 53: **Absolute and relative frequency distributions of level of justification within the country-groups**

	Annex I countries	Annex II countries	Total	Statistics
	N (% within country-groups)			
No argument I	145 (14.9)	100 (15.1)	245 (15.0)	p=0.913
No reason II	497 (51.0)	379 (57.2)	876 (53.5)	p=0.01
Illustration III	8 (0.8)	5 (0.8)	13 (0.8)	p=0.880
Reason IV	76 (7.8)	38 (5.7)	114 (7.0)	p=0.106
Reason + link V	231 (23.7)	134 (20.2)	365 (22.3)	p=0.094
Reasons + link VI	17 (1.7)	7 (1.1)	24 (1.5)	p=0.254
Total	974 (100)	663 (100)	1637	---

It seems that there should be other explanations why in this case participants from developed countries did not strive to explain their positions. On one hand, it might be related to the online communication culture – it is free of any rules indicating *what* and *how* should be communicated: nobody requires to justify one's opinion, there is no penalties if you spread misleading information; therefore, many things such as justification of your own position depends on a personal understanding and personal culture.

Content of justification was very similar in both groups and no significant differences were found (see Table 54).

Table 54: **Absolute and relative frequency distributions of content of justification within the country-groups**

	Annex I countries	Annex II countries	Total	Statistics
N (% within country-groups)				
Own group	25 (2.6)	26 (3.9)	51 (3.1)	p=0.121
Other group	80 (8.2)	61 (9.2)	141 (8.6)	p=0.485
Common good	8 (0.8)	5 (0.8)	13 (0.8)	p=0.880
Abstract principles	147 (15.1)	127 (19.2)	274 (16.7)	p=0.031
Religious principles	8 (0.8)	8 (1.2)	16 (1.0)	p=0.437

Overall, from this data there can be only one conclusion – participants from developed countries less often provided reasons for their arguments.

6.3.4. Force of better argument

Findings on level of justification and content of justification suggested that participants from developing countries were a bit more deliberative. It should also be mentioned that we did not find any significant differences across two country groups in terms of force of better argument. Only 90 comments were assessed for this indicator (others were first-time contributions, or nationality of their author was not identified).

Table 55: **Absolute and relative frequency distributions of force of better argument within the country-groups**

	Annex I countries	Annex II countries	Total	Statistics
N (% within country-groups)				
Change + reason	---	---	---	---
Change	---	---	---	---
No change + reason	33 (53.2)	14 (50.0)	47	p=0.169
No change	29 (46.8)	14 (50.0)	43	
Total	62	28	90	---

Overall, this analysis highlighted three significant things. First, we cannot say that participants from Annex I countries were more or less deliberative than participants from Annex II countries. While comments made by participants from developed countries were longer, more vital, and better justified in terms of sourcing; they also more frequently included disrespectful language and often were not reasoned. Whereas, comments made by participants from

developing countries were constrained and cautious (they were shorter, used less foul language and little respectful language), participants demonstrated close emotional linkage to the topic of climate change (more frequently referred to abstract principles) but weak relationship to the other participants (low level of listening).

Our second remark was that participants from developing countries were very constrained and cautious. We assumed that this could be related to the lack of knowledge and skills (including foreign language skills, technical skills of Internet usage, and scientific knowledge about climate change). With no surprise, their comments were mostly based on personal and emotional understanding on climate change, which demonstrated high interconnection between these people and the issue of climate change, but on the other hand there was a lack of engagement into a discussions and connection with other participants.

Finally, we discovered that knowledge about online environments might also decrease level of discussions' quality. In other words, participants from developed countries had more understanding about basic principles of online discussions, but they less frequently justified their arguments. While participants from developing countries justified their arguments more frequently, possibly following general rules of debates.

6.3.5. Additional measurements

To get additional information about the citizens' groups, we also evaluated additional measurements. First of all, we evaluated information type. No significant differences between countries' groups were found.

Table 56: **Absolute and relative frequency distributions of information type within country-groups**

	Annex I countries	Annex II countries	Total	Statistics
	N (% within country-groups)			
Opinion	722 (74.1)	473 (71.3)	1195 (73.0)	p=0.213
Info-sharing	130 (13.3)	71 (10.7)	201 (12.3)	p=0.110
Self-promotion	9 (0.9)	6 (0.9)	15 (0.9)	p=0.968
Question	71 (7.3)	47 (7.1)	118 (7.2)	p=0.878
Emotions	243 (24.9)	194 (29.3)	437 (26.7)	p=0.053

Next, we evaluated the category of consistency and we did not find any significant differences across the two groups. In particular, participants from Annex I countries made 872 consistent comments (89.5%) and participants from Annex II countries posted 604 consistent

comments (91.1%). Hence, consistence level in comments made by participants from both country groups was relatively high.

Table 57: **Absolute and relative frequency distributions of consistency within two country-groups**

	Annex I countries	Annex II countries	Total	Statistics
N (% within country-groups)				
Consistent	872 (89.5)	604 (91.1)	1476	p=0.294
Not consistent	102 (10.5)	59 (8.9)	161	
Total	974	663	1637	---

Regarding the category of sourcing, it might be said that comments made by participants from Annex I countries were more often referring to all sources. However, no significant differences were found.

Table 58: **Absolute and relative frequency distributions of sourcing within country-groups**

	Annex I countries	Annex II countries	Total	Statistics
N (% within country-group)				
Personal stories	22 (2.3)	7 (1.1)	29 (1.8)	p=0.070
Experts	24 (2.5)	9 (1.4)	33 (2.0)	p=0.118
Documents	6 (0.6)	1 (0.2)	7 (0.4)	p=0.157
Professional media	15 (1.5)	3 (0.5)	18 (1.1)	p=0.038
Online links	132 (13.6)	66 (10.0)	198 (12.1)	p=0.028

6. 4. Concluding remarks: the determinants of variations of discussions' quality

In this chapter we discovered that the level of the quality of the discussions is not consistent measure and might be increased or decreased if certain external or internal conditions are met or ignored.

First, quality is best when the requirements of combined communication are followed: both participants and moderator(s) are fully engaged into the discussions. Second, the general context of the topic under consideration matters a lot: we noticed that when general moods of the discourse were optimistic (before the COP15), discussions demonstrated rather high level of deliberation (in terms of participation, respect, justification, and consistency); however, when general context shifted into more pessimistic direction (after the COP15), quality of our discussions significantly decreased. Higher level of deliberation before the conference we associated with common beliefs that the problem of climate change could be solved – politicians

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and experts claimed to be ready to commit and publics with optimism hoped for a global deal. Everything changed after the COP15. Agreement was not reached. Shortly, media broadcasted disappointing moods. Public's hopes turned into frustrations and anger. This shift was clearly expressed in our discussions, as after the conference, quality significantly decreased – participants became more disrespectful towards outside actors, number of justified arguments decreased, and consistency also declined.

These findings supported our presumption that, *if in real life disagreements among major discourse actors increase the level of justification and respect decrease* (H3). Hence, it seems that dissensus brings chaos into the discussions and the power of the Fifth Estate (citizens are empowered with) seems to lead to destructive outcomes.

Analysis of quality variations between topical groups revealed that our primarily presumptions about different distributions of quality across topical groups was partly true; however, our hypothesis claiming that *scientific aspects of climate change will demonstrate higher level of deliberation compared to the political framing* (H4) was not supported. Although, comments on scientific issues were more deliberative in terms of respectful language towards participants, foul language towards other actors, and content of justification, but categories of participation length and respectful language towards other actors indicated that participants discussing scientific issues were somehow cautious and constrained. Participants demonstrated internal constrains similarly as in the study of ex-combatants where participants were carefully picking words for discussion in order to avoid fighting. We thought that such a brace might be associated with a number of factors. First and most likely, participants were disturbed by the contradictory political debate on climate change (see Chapter 2). Secondly, it might be that participants did not have enough knowledge to discuss scientific aspects of climate change and therefore were careful in expressing their opinions (see Chapter 1). Thirdly, it is possible that, in general, participants were disappointed with science because of spreading processes of science privatization and commercialization (see Chapter 2). It is likely that all these factors to some extent determined the position participants demonstrated. Comments discussing political matters, on the other hand, were vital as they included more explicit respectful expressions towards outside actors (compared to scientific discussions), but they were more disrespectful. Low level of deliberation was demonstrated by low responsiveness and low justification levels. Hence, both political and scientific topics did not demonstrate high level of deliberation.

Interestingly, our findings did not support our other hypothesis, claiming *participants from developed countries are more likely to have necessary knowledge and skills to facilitate quality deliberations online therefore they are more deliberative in comparison to participants*

from developing countries who have fewer opportunities to join the discussions, less skills and knowledge about how to effectively deliberate. Our data indicated that although participants from developed countries were more explicit with their comments but they were more offensive and more often failed to provide reasons for their arguments. Meanwhile, those representing developing countries tended to focus on local issues (national politics), generated shorter contributions, and were rather constrained and cautious (as less often used respectful and foul language) but more often provided justified opinions. This implies that knowledge and technical skills are not the only determinants of quality of the discussions. Besides, those who have more knowledge and skills are more likely to critically assess and manipulate it.

Overall, quality of discussion is not a consistent value, but it is flexible and sensitive to the inside and outside factors: it closely follows the moods in the general discourse, depends on a knowledge and position participants have upon topic under consideration, and is determined by some demographic characteristics of the discourse participants. These notifications are of extreme importance for those who aim to build and maintain quality deliberations online.

CONCLUDING HYPOTHESES[108], RECOMMENDATIONS, AND DISCUSSION

The COP15 demonstrated that traditional democratic ways of policy-making are no longer sufficient in effectively dealing with global risks and uncertainties of climate change. As a result, no global binding agreements can be reached and, in turn, while some countries take independent actions to fight climate change, others – wait. However, such misbalanced and pluralistic approach to this problem of the 21st century is not an option – single actions are powerless; instead, global agreements based on consensus should be adopted and implemented worldwide. How this situation could be changed? After the COP15 was held in Copenhagen in 2009 some scholars, experts, politicians, and journalists have noticed that while official political debates were stiff and slow, public discussions online were vitally questioning different aspects of climate change, discussing processes of the COP15, and closely following statements and actions of global leaders. Although, we cannot expect global publics to overtake the leading role in building global consensus on anthropogenic climate change, but at least attempts to do so (or to come in closer relation with experts) were evident during the COP15. These attempts also demonstrated, first, that global publics are in great need for closer involvement into processes of policy making (especially related to such global risk issues), and second, that Web 2.0 based online communication environments are probably able to provide global citizens with a new type of communicative power exercised through public participation and deliberation.

While public participation is essential and explains *if* and *how* citizens are involved into the global public discussions on climate change; deliberation, on the other hand, is more about the quality of the discussions and describes citizens' input in a qualitative way. In this dissertation we assumed that deliberative practices (which are fundamental for deliberative democracies) are essential in solving problems of the 21st century: dealing with post-normal science, democratic deficit, global risks, etc. As deliberative practices seek for harmonization of relations between society and politics that are based not on resistance or duty but on willingness to act together for the common good, they satisfies both: citizens' willingness to be closely involved and contribute to the political discourses; and on the other hand, experts' (scientists',

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[108] As we have mentioned, in our research we combine qualitative and quantitative research traditions. While we collected and analyzed our data in quantitative way, we provide conclusions in qualitative way, meaning, that instead of conclusions, we formulate concluding hypotheses, which should be tested in future researches. We decided that concluding hypotheses are the better way to finnish our work because they allow us to predict the meaning of our results in broader context, e.g., in other Web 2.0 based communication environemnts or in discussions considering different but similar topics. Hence the process of our research was as follows: theory → tentative hypotheses → observation → concluding hypotheses.

politicians', etc.) need for more information (about environmental conditions, social and cultural preferences, political attitudes, etc.) and closer relation in order to bring citizens to action.

The second most important assumption of this dissertation was that Web 2.0 based online communication environments are able to provide global citizens with a new type of communicative power exercised through public participation and deliberation. As discussed in previous chapters, the debate about value of the Internet based public participation is very controversial; however, such events as COP15 demonstrate that some kind of communicative power can be exercised through public discussions online. Hence, following these theoretical discussions and general context on climate change we aimed to investigate the quality of discussions online assuming that good quality is the major precondition for discussions to be considered by policy-makers.

1.   Unfortunately, our findings suggested that self-moderated discussions on **Web 2.0 based online communication environment of Facebook on climate change are not of sufficient quality and as they are today cannot be useful for policy-makers; instead they tend to foster radical hate and support groups, which encourage dogmatic and narrow thinking without acknowledgement of other possible options; therefore, main precondition of quality deliberation – force of better argument – cannot be exercised**. In other words, public discussions on Web 2.0 online communication environments do not lead to consolidation of democratic processes, rather to confusion and destabilization of public sphere and democratic societies in general. Such situation complicates general discourses on climate change even more creating closed circle where solutions for the problems we face are found but they are not helpful: although, some scholars expect online deliberations to improve democratic processes while dealing with global problems of climate change, real situation indicates that, in fact, online discussions cause other essential problems while dealing with climate change issues – in particular, formation of radical hate or support groups, which limit citizens knowledge and possibilities to find the best decisions for all; social polarization, and, in general, fosters the recent culture of individualism and self-centeredness, which is not in line with recommendations how to fight climate change.

2.   The major obstacles determining low quality of these discussions are related to the characteristics of Facebook as an online public sphere with unique online communication culture. For now, audience polarization seems to be the major obstacle preventing Facebook to become well-functioning public sphere; furthermore, leaning on our case, we conclude with a hypothesis that similar problems are relevant in other Web 2.0 based online communication environments where content is created and managed by users themselves: **well-functioning public sphere in Web 2.0 based online communication environments (such as Facebook or**

Twitter) is not possible primarily because audiences in such environments do not satisfy the major requirements of structural and discursive equality - one position or group of people strongly dominate the discussions causing polarization of the discourse and formation of strong and often radical hate or support groups. As noticed by scholars of deliberative democracy, deliberation is only effective if the final decision is acceptable for all the groups representing opposing ideas; if only one or minority of the groups are involved in the discourse, it is most likely that interests of other groups will not be considered, and the final solution will not be the best for all, just for those who participated. Hence, we cannot speak about deliberation or good quality of discussions. In other words, polarized online communication environments are major obstacle to built deliberative discourses online.

3.   On the other hand, if obstacle of polarization could be demolished, Web 2.0 based online communication environments are then due to the problem of diversity of opinions. Specifically, the more positions are being articulated, the more difficult it can be to find consensus and agreement. Importantly, this is not actually related to the issue of scale (number of participants involved into the discussions) in general, because, as it was demonstrated in our sample, the actual number of participants does not disturb discussions if they share similar positions and values. In our sample this was clear – over one thousand participants were present and their inner-relations were basically grounded on respect and trust to each other (while outside actors and opposite ideas were often met with disrespect, dissatisfaction, and distrust). Hence, our third concluding hypothesis is that: **scale (or number of participants)** *per se* **do not actually lead to decreased quality of discussions, instead diversity of opinions (number of confronting positions) may cause increasing disagreements among participants and in turn lead to lower quality.**

4.   Our further findings demonstrated some other important conditions, which have to be met in order to maintain proper deliberation quality and to reach best outcomes. Quality of the discourse is highly determined by the changes in political, social, and cultural context and dominant discourse. Our results pointed that people online very quickly and emotionally react to the contextual changes, therefore our next concluding hypothesis is: **if in real life disagreements among major discourse actors (politicians, scientists, media, etc.) increase, the quality of public discussions decreases because opposition between different groups widens, hate or radical support groups become very active, sensitive, and may employ power of the Fifth Estate in destructive ways sowing chaos and anger in society, and encouraging resistance.** In contrast, while general context related to the issue under consideration is optimistic and based on different types of agreements (yet not consensus based) public discussions might demonstrate rather good quality – participants and discourse actors are

addressed with respect and positive emotions, positions are rationally justified, and contributions are consistent and responsive. Meanwhile, growing tension between major political actors, experts, and other stakeholders is clearly reflected in Web 2.0 based communication environments, in particular by shrinking to even smaller hate or support groups based on destructiveness and chaos.

5.　　Furthermore, our data pointed that some of the aspects or frames of the topic can be more deliberative than others. Specifically we found that **the quality of the discussion is largely determined by the frames selected by the moderator or introduced by participants because some frames are more deliberative than others, namely general public knowledge and trust in the preselected frames (e.g., scientific, political, cultural frames) correlates with the quality of the discussion.** The more participants know about the issue, the more free and unconstrained discussion can be tracked. However, it does not mean that such discussion will be of good quality. We noticed that when participants do not feel any constrains they tend to be less respectful, less reasonable, and more emotional, which is not compatible with high quality of discussions.

6.　　Finally, quality of the discussions can be also determined by the demographic characteristics of the participants but not in the way as one can expect. For instance, we thought that participants from developed countries are more likely to have necessary knowledge and skills to facilitate quality deliberations online; therefore, they are more deliberative in comparison to participants from developing countries who have fewer opportunities to join the discussions, less skills and knowledge about how to deliberate effectively. However, our results indicated that this tentative hypothesis has to be reconsidered. Knowledge that citizens have about the issue is important; however, if someone does not have this knowledge it can be gained. Meanwhile, willingness and motivation for serious deliberation is even more important and might be more difficult to attain, because, seemingly, once citizens gain knowledge and understanding they become more critical, skeptical, and manipulative and do not trust in deliberative ways to solve the problem. Hence, our final concluding hypothesis is: **citizens who have more knowledge, understanding about the issue and technical skills how to communicate online do not necessarily are more deliberative, instead they are more skeptical, critical, and manipulative and, therefore, often ignore the rules of rational discussions, criticize authorities by establishing and maintaining hate groups.** In turn, those who do not believe and are not motivated hardly will agree to participate in discussions and deliberate.

　　The overall conclusion of this dissertation is: although Web 2.0 based online social networks as deliberative spaces do have potency for well-functioning public sphere to occur;

however, for now quality public deliberations can be only exercised through artificially established discussion forums based on combined communication, where discussions are stimulated and maintained by moderator, because self-moderated online social networks seems to be too chaotic in some senses and too polarized in others. In addition, for quality deliberation moderators should consider number of recommendations related to the discursive space and topic under consideration. Hence, in general our research seconds to previous empirical findings and supports the ideas of Jürg Steiner (2012) who argues that, indeed, online discussions may be and apparently already are essential for political praxis; however, online discussions are very vulnerable to different abuses (i.e., social polarization, formation of radical hate and support groups, etc.); therefore, some basic rules have to be considered by moderators supervising online discussions.

Recommendations: Following our findings, a number of recommendations can be suggested to improve the quality of online discussions. Since, self-moderated Web 2.0 online communication environments do not guarantee quality discussions, but intead lead to polarized discourses, we suggest that, at least for now, moderated and well-planed discussions might be a good option to foster emerging tradition of deliberative democracies. Participants for such discussions would be selected by moderator (ensuring representation of various possitions, avoiding polarization and hate-groups' formation): it is expected that participants would support different positions; they should represent different social, cultural, and political groups. In addition, participants should be registered in order to ensure higher quality of respect and have personal profile, which could be accessed by other participants, in order to get the impression who are they discussing with. Besides, at the very beginning of the discussion participants should be called to contribute to the discussions in order to become active participant (maybe starting with short introduction of each participant).

Second, participants should be introduced to the basic rules of the discussion, underlying the principles of ethical discussion. Most importantly, participants should know that they are free to express their position, but it has to be justified and reasoned, no foul language, racist or sexist remarks is acceptable in the discussion (if such cases occur, moderator have to react, in severe cases, disrespectful participants should be eliminated from the discussion). Moderator should be also active and ask for clarifications, when arguments are not clear or bring participants back to the topic, when discussion departs from it; on the other hand, moderator should not stop participants from telling personal stories (if they are related to the topic) and in any other ways constrain participants. Moderator also is responsible that all perspectives are included in the discussion; therefore, moderator(s) should introduce missing positions asking for participant's elaboration.

Third, moderator should indicate the possible and actual value of these discussions – if there is a clear understanding that the decision made by the group will be considered by policy-makers, participants will be more serious and deliberative.

Fourth, moderator should provide participants with the main documents, reliable data, and scientific calculations, which may be important for the discussion. If new documents are released they should be also added. Moderator should follow the general discourse on the issue and react to it by adding information or raising questions. Different aspects (or frames) of the issue should be covered and discussed. Those aspects which are more difficult to understand and public knowledge is limited should be considered even more explaining, providing justified arguments for and against, and increasing public knowledge and, more importantly, public concerns.

Fifth, effective discussions online on political issues are expected to come to some conclusions. Moderator is the one who helps participants to reach the decision. Decision can be made by consensus or majority votes.

To be clear, we do not suggest that these recommendations are a way to improve quality of global online discussions to the level for deliberative online communication culture to emerge. While artificially created and moderated online communication environments might be a solution for single cases (e.g., discussing local issues and looking for the solution for local community) it is not a solution in a global range. However, what is actually needed is a global transition from participative online communication culture to deliberative online communication culture, hence, such transitions invite big changes in values and priorities recent societies postulate.

Discussion: So, which theoretical assumptions our concluding hypotheses support? At the very beginning of this work, we set a goal with our empirical analysis to bring some clarity into the theoretical debate on value of Web 2.0 based online communication environments for the democracies facing identity crisis (related to global risks) and support one of the sides (those who believe in democratizing value of online public communication and those who do not) with empirical evidence. Now, it is time to elaborate on how the theoretical assumptions, discussed in the opening chapters of our dissertation, were supported or neglected by our results.

For those who expect that Web 2.0 based online communication environments are panacea for the democracies undergoing crisis, we do not have much good news. However, the real problem lies not in the online communication environments *per se*, instead, it is a problem of the social values directing lives of global citizens. Moreover, Web 2.0 based online communication environments, indeed, do have power in bringing publics together and fostering public participation. It is evident that emerging public sphere online (independently from its

quality) raises new generation of citizens, who are de-territorialized, mobile and technologically savvy individuals choosing to "connect, to tune in and to return, as opposed to their decisions to withdraw, to stay away and to disconnect with regard to own country's problems, debates of mutual significance, and the like" (Balčytienė, 2013). While it might be perceived as a good sign for the intensity and volume of public participation, it does not necessarily contribute to the betterment of quality of public sphere. In other words, participative online communication culture, which we witness today, does not equal to deliberative online communication culture. Hence, although Web 2.0 based online communication environments correspond to the recent social requirements, as they foster individualism, self-centeredness, and participative culture; for now they do not actually have power to support traditions of deliberative democracies, mainly because deliberative culture online is week if at all trackable.

Since there is no deliberative communication culture online, the communication power, which lies in discursive spaces of global social networks, is either wasted (by creating and supporting radical talk-groups, which do not aim for real action, an example of COP15 Facebook page) or realized through coercion and resistance (non-legitimate forms of participation, example of Arab Spring). Unfortunately, there is no evidence of discursive power to bloom, mainly because of dominant participative communication culture, which is not oriented into quality of the content.

The shift from participative online communication culture to deliberative culture is possible only with major changes in social and cultural values and priorities. For instance, the meaning and value of concept of unity should be reconsidered: while dealing with the global problems of the second modernity global unity and consensus is necessary. However, recent culture of individualism, self-centeredness, and personified consumption direct our attention to opposite side: community oriented issues are not popular, moreover, they contradict to the principles of recent societies – namely, they limit individualism and personal choice (by inviting for consensus and common action), they also conflict with the values proposed by society oriented to consumption (by promoting ideas of sustainable development). Unfortunately, until there is no shift from self-centeredness to common good orientation, deliberative online communication culture is just a mirage.

So, the further question is, *how* and *when* the values of society change? We believe that reasons for such change are more than enough (at least if we speak about climate change): scientific consensus, democratic deficit, increasing severe weather events, among others. But it is again restrained by political solutions echoing the same social values and priorities of consumptionalism and self-centeredness. Indeed, uncertainties exist and, unfortunately, there is no way to overcome them, but is it smart to deny everything? In other words, despite not much

promising results of this research, deliberation seems to be effective way to deal with global risk issues such as climate change effectively (in political, cultural, and social level), and the Web 2.0 communication environments, for now, are also most promising, as they are able to ensure the floor for the global debate. Hence, we have the problem (global climate change), and we have the tool or formula how global citizens could be gathered in order to solve it (global deliberation online), now it is a question of time when global society will be ready to stand up and start acting.

And for the very end, it should be highlighted that this dissertation was one of the first attempts to measure quality of discussions on Web 2.0 online communication environments by applying the DQI instrument. It is obvious that much more in the field remains to be done in order to undercover big picture of online communication cultures, their value to democratization processes, and possibilities to built well-functioning public sphere online supporting deliberative online communication culture. But, most importantly, we succeeded in offering new empirical approach to the analysis of quality of discussions online. Hopefully, our research will encourage further, so much needed, studies on quality of online discussions, probably providing with further and stronger guidelines for deliberative online communicative culture to emerge, bloom, and assisst in processes of policy making in such a way fostering traditions of deliberative democracy.

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262.	European Commission	2011	Special Eurobarometer 372 / Wave EB75.4. *Climate Change*	http://ec.europa.eu/public_opinion/archives/ebs/ebs_372_en.pdf (2013-05-02)
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275.	Intergovernmental Panel on Climate Change	2001a	*Third Assessment Report. Working Group I: The Scientific Basis*	http://www.grida.no/publications/other/ipcc_tar/ (2013-05-02)
276.	Intergovernmental Panel on Climate Change	2001b	*Third Assessment Report. Working Group II: Impacts, Adaptation, and Vulnerability*	http://www.grida.no/publications/other/ipcc_tar/ (2013-05-02)
277.	Intergovernmental Panel on Climate Change	2001c	*Third Assessment Report. Working Group III: Mitigation*	http://www.grida.no/publications/other/ipcc_tar/ (2013-05-02)
278.	Intergovernmental Panel on Climate Change	2007	*Fourth Assessment Report*	http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html (2013-05-02)
279.	Intergovernmental Panel on Climate Change	2007a	*Fourth Assessment Report. Working Group I: The Physical Science Basis*	http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html (2013-05-02)
280.	Intergovernmental Panel on Climate Change	2007b	*Fourth Assessment Report. Working Group II: Impacts, Adaptation, and Vulnerability*	http://www.ipcc.ch/publications_and_data/ar4/wg2/en/contents.html (2013-05-02)
281.	Intergovernmental Panel on Climate Change	2007c	*Fourth Assessment Report. Working Group III: Mitigation of Climate Change*	http://www.ipcc.ch/publications_and_data/ar4/wg3/en/contents.html (2013-05-02)
282.	National Research Council	1996	*National Science Education Standards*	http://www.nap.edu/openbook.php?record_id=4962 (2013-05-02)
283.	National Science Board	2012	*Science and Engineering Indicators*	http://www.nsf.gov/statistics/seind12/ (2013-05-02)
284.	Pew Research Center	2009	*Scientists Fault Public, Media*	http://people-press.org/report/528/ (2013-05-02)
285.	Pew Research Center	2012	*Politics on Social Networking Sites*	http://pewinternet.org/~/media//Files/Reports/2012/PIP_PoliticalLifeonSocialNetworkingSites.pdf (2013-05-02)
286.	Senate Committee on Foreign	1997	*Resolution 98: Conditions Regarding U.N. Framework Convention*	http://www.nationalcenter.org/KyotoSenate.html (2013-

	Relations		on Climate Change, S. Rept. 105-54	05-02)
287.	Stern, N.	2007	*The Economics of Climate Change: The Stern Review*	http://webarchive.nationalar chives.gov.uk/+/http://www .hm-treasury.gov.uk/stern_revie w_report.htm (2013-05-02)
288.	United Nations	1992	*Agenda 21*	http://sustainabledevelopme nt.un.org/content/documents /Agenda21.pdf (2013-05-02)
289.	United Nations	1987	*World Commission on Environment and Development: Our Common Future / Brundtland Report*	http://conspect.nl/pdf/Our_ Common_Future-Brundtland_Report_1987.p df (2013-05-02)
290.	United Nations	2010	*Sustainable Development: From Brundtland to Rio 2012*	http://www.un.org/wcm/we bdav/site/climatechange/sha red/gsp/docs/GSP1-6_Background%20on%20S ustainable%20Devt.pdf (2013-05-02)
291.	United Nations Framework Convention on Climate Change	1998	*Kyoto Protocol*	http://unfccc.int/resource/do cs/convkp/kpeng.pdf (2013-05-02)

APPENDIX 1

Discourse Quality Index: Codebook

1. GENERAL INFORMATION:

(1) ID number of the wall-post (indicate).

(2) Number of wall-post's "likes" (indicate).

(3) Number of comments (indicate).

(4) ID number of the comment (indicate).

(5) ID number of the participant (indicate).

(6) Date of the comment (indicate).

2. PARTICIPATION:

2.1. Length (number of words):

(1) Count words used in the comment.

2.2. Communication type:

If more than one communication type is applicable, code all of them.

(1) Expressing opinions, attitudes, believes, etc.

(2) Sharing information.

(3) Self-promoting, presence maintaining, advertising, etc.

(4) Questions.

(5) Other: greetings, hopes, disappointments, thanks, encouragements, agreement, reminder, jokes, anger, disappointment, or the communication type is not clear.

3. RESPECT

3.1. Foul language (I):

(1) The disputant uses foul (and/or sarcastic/ironic) language to attack participants of the discussion at a personal level. Strong and mild foul language included. For instance, "you are liar" or "you seem a little confused". Code the name of the participant attacked, and give exact quote of the foul language.

(2) The disputant uses foul (and/or sarcastic/ironic) language to attack arguments of other participants but abstains from personal attacks. Strong and mild foul language included. For instance, "this argument is stupid" or "this argument is a little week". Code the name of the participant attacked, and give exact quote of the foul language.

(3) No foul language used towards participants of the discussion or their arguments.

3.2. Foul language (II):

(1) The disputant uses foul (and/or sarcastic/ironic) language to attack other people or groups (which do not necessarily participate in the discussion) at personal level. Strong and mild foul language included. For instance, "he is liar" or "they seem confused". Code name of person or group attacked, and give exact quote of the foul language.

(2) The disputant uses foul language (and/or sarcastic/ironic) to attack arguments of other people or groups (which do not necessarily participate in the discussion) but abstains from personal attacks. Strong and mild foul language included. For instance, "their arguments are stupid" or "his arguments are a little week". Code the name of person or group attacked, and give the exact quote of the foul language.

(3) No foul language used towards other people, groups or their arguments.

3.3. Respectful language (I):

(1) The disputant uses respectful language towards other participants of the discussion and/or their arguments. Include also moderately respectful language, not only statements such as "your arguments is truly brilliant" but also statements such as "you argument is not bad." Indicate those participants and give the exact quotes of the respectful language.

(2) No respectful language used towards participants of the discussion or their arguments.

3.4. Respectful language (II):

(1) The disputant uses respectful language towards other people, groups (which do not necessarily directly participate in the discussion) or their arguments. Include also moderately respectful language, not only statements such as "their arguments are truly brilliant" but also statements such as "their argument is not bad". Indicate those other people or groups and give the exact quote of the respectful language.

(2) No respectful language used towards other people or groups (which do not necessarily participate in the discussion) or their arguments.

3.5. Listening:

(1) The disputant ignores previous speech acts (including but not limiting to arguments and questions addressed to him/her). Or it is not clear if participant ignores or reacts to previous speech acts.

(2) The disputant does not ignore previous speech acts (including but not limiting to arguments and questions addressed to him/her) and <u>directly</u> replies to them by agreeing, disagreeing, or questioning previous contributions.

(3) It is the first contribution in the discussion.

3.6. Consistency:

(1) The comment is consistent to the main topic of the discourse.

(2) The comment in not consistent to the main topic of the discourse or the content of the comment is not clear.

4. JUSTIFICATION

4.1. Level of justification:

If there is more than one argument, code the highest score.

(1) The disputant does not provide any argument (asks, for example, merely for additional information, etc.) or the justification level is not clear.

(2) The disputant gives an argument but no further justification. For instance, the disputant only says that X should or should not be done, that it is good or bad, etc.

(3) The disputant justifies only with illustrations why X should or should not be done.

(4) The disputant gives a reason Y why X should or should not be done. But no linkage is made why Y will contribute to X.

(5) The disputant gives a reason Y why X should or should not be done, and a linkage is made why Y will contribute to X.

(6) The disputant gives at least two reasons why X should or should not be done and at least for two reasons a linkage is made with X.

4.2. Content of justification – own group:

(1) The disputant refers to benefits and costs for own group. Give exact quote of how the group is referred to.

(2) The disputant does not refer to benefits and costs for own group.

4.3. Content of justification – other groups:

(1) The disputant refers to benefits and costs for other groups. Give exact quote of how those other groups are referred to.

(2) The disputant does not refer to benefits and costs for other groups.

4.4. Content of justification – common good:

(1) The disputant refers to benefits and costs for <u>all</u> groups. Give exact quote of how the groups are referred to.

(2) The disputant does not refer to benefits and costs for all groups.

4.5. Content of justification – abstract principles:

(1) The disputant refers to abstract principles, for example social justice, quality of life, peace, etc. Give exact quotes of how these principles are formulated.

(2) The disputant does not refer to any abstract principles.

4.6. Content of justification – religious believes:

(1) The disputant refers to his/her religious believes. Give exact quotes of how these principles are formulated.

(2) The disputant does not refer to any religious believes.

4.7. Content of justification – type of sourcing:

If there are more than one source, code each of them separately.

(1) Personal stories. (Yes – 1, No - 0)

(2) Experts, authorities, or institutions. (Yes – 1, No - 0)

(3) Documents and scientific data. (Yes – 1, No - 0)

(4) Media. (Yes – 1, No - 0)

(5) Online links. (Yes – 1, No - 0)

5. FORCE OF BETTER ARGUMENT

(1) The disputant indicates change in position. Gives a reason for change, - arguments heard during the discussion.

(2) The disputant indicates a change in position. Does not refer to arguments heard during the discussion.

(3) The disputant does not indicate a change in position. But does acknowledge the value of other positions heard during the discussion.

(4) The disputant does not indicate a change in position. And does not acknowledge the value of other positions heard during the discussion.

(5) No position articulated in the comment or the comment is not clear.

(6) It is the first time disputant articulates his/her position.

APPENDIX 2

Participants' Survey

Dear Sir or Madam,

Thank you for your time and honest answers. The information you provide will be responsibly stored and used only for research purposes.

Your help is very valuable!

Sincerely,
Inesa Birbilaite
PhD candidate

1. **Your full Facebook name:**

2. **Are you Male or Female?**
    a. Male
    b. Female

3. **How old are you?**

4. **What is the highest level of education you have completed so far?**
    a. Less than High School
    b. High School
    c. College degree (BS, BA)
    d. Master's degree
    e. Doctoral degree
    f. Medical doctor or Juris doctor
    g. Other: *indicate*

5. **What is your religious affiliation?**
    a. Christian
    b. Jewish
    c. Muslim
    d. Hindu
    e. Buddhist
    f. Other: *indicate.*

6. **What is your political orientation:**
    a. Very liberal

b. Liberal
  c. Moderate
  d. Conservative
  e. Very conservative

7. **What is your occupation?**

8. **What are your thoughts on Climate Change?**
  a. Doesn't exist
  b. It exists, but human civilization has little or no effect on it.
  c. It is a mark of irresponsibility of industrial civilization, which is why we must take measures to reduce CO_2 emissions NOW.
  d. Other: *indicate.*

9. **What do you think about public discussions online related to Climate Change issues?**
  a. There are no constructive discussions online, just chaotic monologues.
  b. I believe that online discussions are of high value and should be considered by policy makers.
  c. Online discussions are valuable, but no-one cares. Policy makers have their own ambitions and public discussions cannot change it.
  d. The quality of online discussions should be improved; afterwards they may be useful in decision making processes.
  e. Other: *indicate.*

10. Based on your personal experience discussing on COP15 Facebook page, please express your opinion on the following aspects.

	totally agree	agree	partly agree	unsure	partly disagree	disagree	totally disagree
(a) The discussion was free and equal							
(b) Some of the participants dominated discussions and silenced the others							
(c) I personally was trying to avoid domination and shared the floor with others							
(d) Majority of the comments were consistent to the topic of the discussion							
(e) Too many comments were out of the topic							
(f) I personally was trying to stick to the topic of Climate Change							
(g) Reasoning of the arguments was very weak if provided at all							
(h) Arguments were fairly reasoned							
(i) I believe that my arguments were justified properly							
(j) Participants were not discussing to each other or replying to previous comments							
(k) Participants were highly engaged into the discussion and contributed more than one time							
(l) I personally was trying to reply to previous arguments and follow the discussion							
(m) Participants were very stubborn and were not likely to change their positions							
(n) Participants were open for opposite views and appreciated different positions							
(o) I personally was open to diverse views and acknowledged their value.							
(p) Participants were respectful to each other							
(q) There were too much foul language used							
(r) I personally was respectful to others							
(s) I believe that some of the participants were not sincere and possibly silent their true intentions.							
(t) In general, COP15 discussions on Facebook was of high value.							

Inesa BIRBILAITĖ

MANIFESTATIONS OF DELIBERATIVE DEMOCRACY ONLINE: MEASURING QUALITY OF GLOBAL PUBLIC DISCUSSIONS ON CLIMATE CHANGE ON FACEBOOK

Doctoral Dissertation