Depicting climate change in a vulnerable country: Agenda-setting and a discourse network approach on Philippine broadsheet media

Master Thesis

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1. Introduction

Climate change has become a pressing global issue in the last decade. It is no longer just an environmental or scientific issue, but one that encompasses different facets of our individual and shared economic, political, cultural and social lives (Boykoff, 2011). Even though scientists have reached consensus on its main physical aspects (Pachauri et al., 2015) and though many countries have made commitments at the international sphere to reduce their greenhouse gas emissions (under the United Nations Framework Convention on Climate Change); implementation of climate action and policies varies across countries (Burck et al., 2019). Tackling the issue is not easy because climate change is a complex phenomenon of manifold implications not easily perceivable (Hulme, 2009), cutting across sectors and boundaries.

With climate change being such a complex issue of multiple facets, "lay" people as well as decision-makers use media as one of the main sources of information on climate change (Boykoff, 2011; M. S. Schäfer & Schlichting, 2014). Additionally, media is a dynamic arena "where various actors contend with one another for visibility, for power, and for the opportunity to communicate, as well as where they promote their policy preferences." (Tindall et al., 2018). Hence, media plays a big role in the public as well as political agenda-setting process (McCombs & Shaw, 1972; Van Aelst, 2014). Using a constructivist or cultural circuit lens, stakeholders are understood to not just consume but in a complex process also produce these social constructions of the climate change problem that eventually feed back into policy-making. Quoting Hulme (2009) "Messages about climate change have no starting point and no ending point; they travel around this circuitry, changing frame, form and meaning as they go." Hence, in this thesis, I specifically look into media to gain insight into climate change politics.

In order to tackle climate change at the global level, these depictions of climate change and discourse on its various related issues need to be understood in light of different timelines and socio-cultural, socio-ecological, and socio-economic factors around the world. Research on climate change media coverage and more recently, political discourse, has gained attention through the years (Broadbent et al., 2016; M. S. Schäfer & Schlichting, 2014; Schmidt et al., 2013; Tindall et al., 2018). Such studies have shown that countries differ in their amount of climate change coverage, degree of controversy about climate science, and framing of its risks and policies (Billett, 2010; Boykoff, 2011; Broadbent et al., 2016; M. S. Schäfer & Schlichting, 2014). Some studies have tried to explain country differences in light of macro-economic factors (Barkemeyer et al., 2017; M. S. Schäfer & Schlichting, 2014; Schmidt et al., 2013), in view of historical contexts and media system (Gkiouzepas & Botetzagias, 2017; Pan et al., 2019), link frames to likelihood of reducing emissions (Broadbent et al., 2016), and some explain changing discourse in light of external events (Kammerer et al., 2020; Liu et al., 2011; Schneider & Ollmann, 2013). However, despite various case-studies and comparative studies,

there has been imbalanced global representation throughout the years, and sometimes lack empirical evidence or are outdated (M. S. Schäfer & Schlichting, 2014). This leads to an incomplete picture of climate change coverage and discourse. Hence, expanding the geographical scope of this type of research is vital and will provide a more holistic grasp of the various understandings and perspectives on climate change and its governance around the globe (M. S. Schäfer & Schlichting, 2014; Ylä-Anttila et al., 2018). It is vital for understanding also climate politics because the direction of its development depends on the social construction of the problem (Hajer, 1995).

Most studies have been conducted in Europe, North America, and East Asia – mostly developed countries, leaving out the perspective from the developing world; numerous studies stress that there is a need to fill this geographical gap (Billett, 2010; Boykoff, 2011; M. S. Schäfer & Schlichting, 2014; Shanahan, 2009; Ylä-Anttila et al., 2018). Developing countries often happen to be the most affected by the impacts of climate change while having the least capacity to cope with its consequences (Eckstein et al., 2018). This brings us to the concept known as vulnerability. In the context of climate change, it can be defined as "the degree to which a system is susceptible to and unable to cope with adverse effects of climate change" (McCarthy et al., 2001). In terms of political commitment for example, Sprinz & Vaahtoranta (1994) have found that highly vulnerable countries push for more ambitious international climate change mitigation measures than those that are not so vulnerable. The collective perception of an issue is also influenced by social, cultural, and political contexts of a country (Hulme, 2009; Stehr & von Storch, 1995). Hence, it is likely that the discourse of climate change and policies in vulnerable countries do not align with the findings of studies in the Western world because of these circumstances. Ergo, this study looks into how climate change is depicted in one of the most vulnerable countries to climate change in the world, The Philippines. I specifically ask: *How has climate change coverage evolved in Philippine broadsheet media and what issues and actors dominate the policy discourse on climate change?*

The Philippines makes for an excellent case as it provides new insights into the climate change discussion from the perspective of vulnerable island states, where such studies are practically non-existent. Given its geographic location, ecology and socio-economic context, the effects of climate change will greatly impact the country - the Philippines is ranked among the most vulnerable countries to climate change by several global reports (Burck et al., 2019; Paun et al., 2018). Additionally, climate policies are relevant in the Philippine context as it has internationally: ratified the Paris Agreement and been chair of the Climate Vulnerable Forum group at the UNFCCC negotiations; and nationally: put into law a Clean Air Act in 1999, Renewable Energy Act in 2008, a Climate Change Act in 2009, and a Green jobs Act among others. In fact, in a new report by the Climate Action Tracker team, the Philippines is evaluated

to have an overall decent continuity in its climate policies and institutions, and is rated to be on the "2°C compatible" track; however, it still needs strengthening of institutional capacities and a steering away from coal (Climate Action Tracker, 2019, 2020).

The thesis is composed of three levels or components. Firstly, I explore the climate change coverage in Philippine newspapers. This entails frames analysis which examines how complex social and political issues are communicated to audiences by media workers and news sources (Stoddart et al., 2016). This is rooted in the agenda-setting theory (McCombs & Shaw, 1972), where the press and media are seen to filter and reshape reality, rather than wholly reflect it, affecting what people think about. In the second component, I aim to make sense of the implications of media representations on a 'scope of politics'. How and what ideas actors express moves certain issues and policies into the foreground, gaining attention and acceptability (Fischer, 2003; Kaal, 2014). Media serves a platform where various actors contend with one another for visibility and the opportunity to communicate their ideas and policy preferences (Tindall et al., 2018). An exercise of power takes place in this context as only certain ideas [promulgated by certain actors] make their way into public policy (Cairney, 2012). This web of powerful actors and ideas will be investigated through a social network perspective. Lastly, the element of time and drivers of change come in. I will determine changes in the media attention in the last two decades and describe changes in discourse networks as an indicator of policy change between the COP15 and COP21 periods.

This study expands the global picture on climate change discourse to more vulnerable countries. Understanding how understudied societies such as the Philippines frame and interpret the common problem of climate change may aid international negotiations and policy formation by being able to identify barriers or common ground for collaboration (Broadbent et al., 2016). The results of the study also serve as baseline information on media development, salient climate change-related aspects and issues, and vital actors in the climate change domain in the Philippines itself. This may hopefully feed into guided strategies for policy development and be used for further national comprehensive studies. Additionally, the thesis contributes to the database and methodological development of the discourse network analysis method as part of the COMPON (Comparing Climate Change Policy Networks) project, an international collaboration of researchers that investigate variations in beliefs and national policy responses to climate change around the globe, which this thesis has been inspired by.

I structure this manuscript to dive deeper into every component outlined in the introduction. I start with a chapter that provides the theoretical context and vital literature to understand climate change media and policy studies. Then I discuss the research design by explaining the selection and providing context of the Philippine case, and then operationalize the research question on three levels and provide expectations. What follows is the methodology in detail.

Then, I present the results and discuss them. Lastly, I summarizes vital aspects of the study and provide recommendations for improvement in the conclusion.

2. Theoretical Background & Rationale

This chapter provides information on the vital concepts and theories to provide a better understanding of the study and why it matters. It first discusses the climate change problem, explains the role of media, provides a link to policy and discourse, and explains policy change.

2.1. The climate change problem

In the early 20th century, the first link between a warming climate and greenhouse gases from human industrial activities was uncovered (Hulme, 2009). Since then, the understanding of climate and climate change has evolved as the physical phenomenon became more apparent and studied by scientists. On the international sphere, the problem began to be politically recognized when it was first discussed in 1972 at the United Nation's Conference on the Human Environment in Stockholm, and in 1992 at the Earth Summit when countries decided on a treaty to create the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC set the stage for countries to meet on a yearly basis to come up with global strategies and goals to prevent dangerous human interference with the climate system. From the Kyoto Protocol which set binding GHG emission reduction targets for 37 industrialized countries and economies in transition within the Convention, we have now moved to a new era of climate change governance under the Paris Agreement. Under this agreement, 195 countries, developed and developing countries alike, committed to binding (self-determined) targets to reduce their GHG emissions with the aim of limiting a global temperature increase to 2 degrees Celsius (1.5 °C at best) above pre-industrial levels. Nevertheless achieving this limit seems far-reaching as there are varying implementation success of commitments and degree of climate action and policies around the globe (Burck et al., 2019) and current projections estimate that we are globally on a track to exhaust the emissions budget of a 1.5 target within 7 years and a 2 target within about 25 years (Mercator Research Institute on Global Commons and Climate Change, 2020).

Tackling the climate change issue is not easy as it is a complex phenomenon of manifold implications not easily perceivable (Hulme, 2009). Additionally, various definitions of climate change have led to confusion on how to respond and set the stage for polarizing climate science especially in the United States (Boykoff, 2011). Even the definition of the IPCC and the UNFCCC are not quite aligned. According to the IPCC, climate change "refers to a change in

the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use." In contrast, the UNFCCC emphasizes the anthropogenic influence in the process. In its Article 1, climate change is defined 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". Widespread also was the use of the term global warming, which although encompassing the human-induced element, can falsely signify a climate trend in the temperature warming direction only. Through time, the definition of climate change has grown to include new concepts from its consequences or action (e.g. sea-level rise, clean development mechanism, climate justice) and as cutting across other issues and sectors (e.g. biodiversity, agriculture, disaster risks, national security). Climate change is no longer just an environmental/scientific phenomenon, but one that has implications in the social, economic, and cultural spheres as well (Hulme, 2009). It cuts across sectors and boundaries, affects various groups differently, and hence leads to multiple perceptions, messages, and strategies. Due to this complex nature of climate change which is boundary-less yet impacts different groups at varying magnitudes, multiple and sometimes conflicting messages have been circulating the globe and been interpreted in different socio-cultural contexts. These interpretations are vital and need to be understood in order to determine the direction in which climate change governance is going, because (as to be further explained in the next sections) it is not so much the physical climate change phenomenon but rather the social construct of it which ultimately shapes climate policy (Hajer, 1995; Stehr & von Storch, 1995).

2.2. The role of media and link to policy

The communication of the multiple (and sometimes conflicting) dimensions of climate change have sparked the interest of various social science researchers. Media is often the agent of transmission of such messages; hence, researchers have looked towards it to understand social constructions in terms of perceptions and attitudes towards various phenomenon and problems. Media can refer to newspapers, magazines, books, radio, television, film, social media, and websites. Technically, media is defined as a "means of communication that distribute content – such as text, pictures, and sound—to an anonymous and spatially diverse public via technical means"(McQuail, 1983). Studies that analyze how media depicts climate change emerged in the early 1990s (Schäfer & Schlichting, 2014) and came into public spotlight through the book by Maxwell Boykoff (2011) entitled "Who Speaks for Climate Change", which hoped to inspire research that interrogates why and how media representations of climate

change are produced, negotiated and disseminated through inequalities of access and resources. In his book, he discussed coverage cases in the United Kingdom and the United States, where the validity of anthropogenic climate change has been quite controversial.

Communication studies investigating how climate change is covered by and depicted in media have taken their root in the agenda-setting function theory (formally developed by Max McCombs and Donald Shaw) where the press and the media are seen to not completely reflect reality but rather both consciously and unconsciously, filter and reshape it. It states that media cannot tell people what to think, but it does definitely tell people what to think about. To illustrate, McCombs and Shaw (1972) found a correlation between what issues are prominently reported in the media and what issues people believe to be important. In other words, people grow concerned about particular issues of a problem, the more that it appears to them on media. This theory has been expanded later on to see media as not just influencing what we think about, but also how to think about it through a phenomenon called framing. To frame is traditionally defined by Entman (1993) as "to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation". Frames contain a congruent set of concepts consistently used by actors and therefore has ideological and intrinsic compatibility (Leifeld, 2016). They can select out some parts of reality or a problem at the expense of others, and make some elements more meaningful and noticed by audience, oftentimes as a result of trying to reduce complexity of a problem (Entman, 1993; Goffman, 1974). In other words, the frame or organizing narrative at which a problem is reported influences how the audience evaluates the merit of an issue or idea. Indeed, numerous research has confirmed that media matter in affecting public opinion (Tindall et al., 2018).

This attention and influence on the public agenda, in turn, influences decision-making and policy (Fischer, 2003; Van Aelst, 2014). Climate change framing has thus become a topic of interest not just to communication researchers but to policy researchers as well. Policy encompasses a multifarious of definitions; simplified, it can refer to an aim, a decision, an outcome, or consequently an issue addressed, or consequently not addressed, by decision-makers (Cairney, 2012). Public policy is studied to understand how and why particular decisions are made and to improve policy outcomes. In other words, to understand how to address climate change effectively, I view it on a scope of politics.

The agenda-setting concept in political science, although with overlapping functions, does not refer to the exact same thing (Van Aelst, 2014). Political agenda-setting can be seen as part of the larger policy process. This has been viewed as a series of stages in a continuous process consisting of: problem identification, policy formulation, policy adoption, implementation,

and evaluation (Cairney, 2012). This first phase, problem identification, is sometimes also referred to as agenda-setting phase, and refers to when problems receive attention of decision-makers and the nature of the problem is defined. This relates to the limited attention of policy makers to a wide range of issues. Typically, issues that are high on the media agenda then also make their way unto the political agenda (Baumgartner & Jones, 1993). The policy formulation stage on the other hand is when objectives are identified and solutions are evaluated. Media also contributes to this stage as it is a site where various actors "contend with one another for visibility, for power, and for the opportunity to communicate, as well as where they promote their policy preferences." (Tindall et al., 2018). In other words, media is a platform of policy debates or policy discourse, I discuss this in the next section.

2.3. Investigating discourse

Analyses of political decision-making processes in the last decades have gained the insight that the complexity of policy-making processes lies in the uncertainty and subjectivity of the perceptions and interpretations of the actors involved in the decision-making process and in their modification through an ongoing discussion process (Fischer, 2003; Janning et al., 2009). We can refer to this as an "argumentative turn" in political research (Cairney, 2012). This discussion process, can be referred to as discourse, and can often be fragmented and contradictory, being shaped through a complex social construction process (Hajer, 1995).

In a broad sense, discourse can be seen as order producing social systems of statements and attributions of meanings (Hajer, 1995). This can be traced back to Foucault's poststructuralist theory of power. It assumes that in every society, the production of discourse is controlled, selected, and channeled (Foucault, 1973). Discourses focus on and formulate topics as socially relevant problems of interpretation and action. They materialize in ensembles of categories and practices that equip actors with arguments and patters on interpretation for the respective problems (Janning et al., 2009). An exercise of power takes place in this context as only certain ideas (often of the elite) may be considered acceptable and make their way into public policy (Cairney, 2012). At the same time, the discourse alters actor's and public's perception of the matter which then feeds back into institutional and decision-making processes (Leifeld, 2016b). It is a complex and far-reaching process that involves many individuals, groups, and institutions (Cairney, 2012). We can understand this by seeing policy actors like authors of a play, engaged in the manipulation of signs and symbols that shape the way objects are seen and understood. "Political action, like action generally, is shaped and controlled by the discourses that supply it with meaning" (Fischer, 2003, p. 23).

Policy discourse particularly, can concretely be defined the verbally and publicly expressed opinion of actors about a given issue, policy, or its instruments (Leifeld, 2016). Diverse ideas

meet in policy debates and compete for discourse sovereignty to form a policy image (how an issue is portrayed and should be solved). In this process, social groups and special actors with interpretative power become active and join together to form coalitions. Hence, public discourse is also linked to actor constellations in the policy process (Schneider & Ollmann, 2013), who, when using common frames or sharing beliefs, form discourse coalitions (Hajer, 1995) or advocacy coalitions (Sabatier & Jenkins-Smith, 1993). The way environmental issues are dealt with depends largely on the balance of competing discourses (Dryzek, 2013). An agenda is set when actors successfully express and move certain issues and policy preferences into the foreground (Kaal, 2014).

Political discourse analysis has become well established in the last 20 years (Fischer, 2003). However, traditional discourse analysis and its qualitative nature has a strong micro-orientation, providing only few possibilities to tap into specifics of actor constellations or determine the cohesion of discourse coalitions (Janning et al., 2009). Hence, in the last decade, researchers have turned to the network perspective to analyze discourse. Here, we view discourse as a web of powerful ideas and actors (Fischer, 2003), and network analysis can put focus on the relational links between them (Patty & Penn, 2016). As we learned, statements that actors contribute to a discourse are dependent on each other in cross-sectional and temporal ways (Leifeld, 2016b). The network approach becomes powerful in the analysis of policy-making and discourse because it provides a mechanism to account for disparate parts of a system affecting each other through indirect connection and interdependencies, describing the structure of the system and its componential connections in both a rigorous yet flexible way (Borgatti et al., 2013; Patty & Penn, 2016).

The network approach to analyzing discourse was first applied by Leifeld to pension studies in Germany (Leifeld, 2016a) and became known as discourse network analysis. A few studies part of the COMPON group have applied this approach to the analysis of climate change discourse in media (the method is discussed in detail in **chapter 4.3**). In the field of climate change policy, examples of studies are Wagner and Payne (2017) in Ireland, Gkiouzepas and Botetzagias (2017) in Greece, Kammerer and colleagues (2020) in Germany and Switzerland, and Fisher and colleagues (2013) in the United States using congressional hearings data. A few studies have also been conducted in developing countries but these specifically focus on the REDD+ program (Cronin et al., 2016; Di Gregorio et al., 2015; Gebara et al., 2017).

Vivid policy discourse can also pave the way for policy change (Baumgartner & Jones, 1993) and political actors can turn to 'reframing' to move stagnant issues due to conflicting frames (Fischer, 2003). Hence, the analysis of public discourse, whether in a qualitative or quantitative manner, is an important component of policy analysis (Schneider & Ollmann, 2013) and is vital to tackle challenges in climate change governance.

2.4. Policy change

Media and discourse analysis can also be used to gain insights into policy change. Policy change is central to policy analysis and concerns the changes of policy content. Typically, such a change is reflected in new policy output and adjusted programs (Cairney, 2012). There are various strands of literature that try to explain policy change; I focus on events external to the control of political actors, which we shall refer to as focusing events. In Baumgartner and Jones' Punctuated Equilibrium Theory (1993), "decision-making exhibits long periods of stability that are punctuated by short bursts of instability and policy change." It is assumed that this equilibrium can be disrupted by such focusing events. The logic behind this is that focusing events cause a disruption within policy subsystems by shifting public attention and political resources towards or away from a policy issue.

Focusing events are defined as sudden and relatively uncommon events that concern a particular geographical area or community of interest and must reach the awareness of both the public and policy makers simultaneously (Birkland, 1998). Typically, focusing events are catastrophes (e.g. storms, flooding, nuclear plant accidents) but can also be the sudden change in socio-economic conditions (e.g. global recession), an effect of policies from other subsystems, international political events (e.g. signing of new agreement) or sudden public opinion movements (e.g. Friday's for Future movement) or administration (Birkland, 1998; Sabatier & Jenkins-Smith, 1993). Such disruptions to the equilibrium can bring about new ideas about policy problems and content of debates about it and alternative solutions. Ideas catch on through the process of positive feedback where attention to issues expand across different venues of policy-making (Baumgartner & Jones, 1993). Through the feedback, as more actors become involved and still attract participants in their immediate networks, an upward swing of interest occurs and attention surges in a non-linear fashion. The policy topic then opens up to general debate and discussion right across the political system and in full public view, advocated by various interest groups (Baumgartner & Jones, 1993). This then affects how actors behave in the policy process, their choices of interaction with other actors, and forming of coalitions and strategies to push for their preferences which either support the status quo or push new policy directions (Birkland, 1998). Policy content can also change because the traditionally dominant actor coalition can learn and adjust its preferences in the process initiated by the focusing event; this is referred to as policy-oriented learning in the Advocacy Coalition Framework (Sabatier & Jenkins-Smith, 1993).

3. Research Design

Especially when it comes to environmental issues, effects between media, public opinion, and policy agendas have empirically shown to be strongly multi-directional (Soroka, 2002; Van Aelst, 2014). Media becomes a vital medium in the agenda-setting and policy formulation stage of the policy cycle because it is a site where actors both obtain their source of information and definition of problems and political concern (Boykoff, 2011; Hansen, 2014; Hulme, 2009) and at the same time contend with one for the opportunity to promote their ideologies and policy preferences (Baumgartner & Jones, 1993; Fischer, 2003; Tindall et al., 2018). In other words, media dynamically reproduces the social construction of climate change and at the same time is a platform for policy discourse. Hence, in this study, I turn to political discourse as reflected in the media as an indicator of climate change politics (in terms of actors influential in the policy process) as well as climate change policy (in terms of issues and instruments).

We recall the research question: *How has climate change coverage evolved in Philippine media and what concepts and actors dominate the policy discourse on climate change?* Essentially, this question can be dissected into three levels, rationalized in the theories discussed in the previous chapter, which will be the basis of analytical framework of the study. I aim to illustrate this through **Figure 1.** In the first level, I determine how climate change enters the public agenda by investigating how much attention the topic receives and is framed by the press. In the second level, I turn to identifying the content of discourse and the powerful voices that potentially steer the climate change policy direction in the country. In the third level, I examine how the public agenda, in the form of coverage and discourse, has evolved through time and changed in light of the Copenhagen and Paris UNFCCC Conference of the Parties.

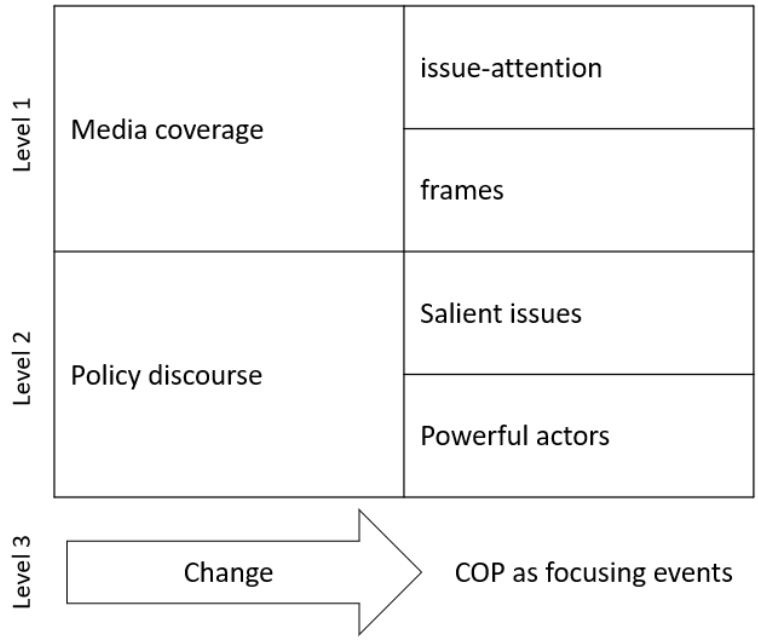

Figure 1. Analytical framework (own illustration)

The study also aims to fill a research gap in literature (as discussed in the introduction) by painting a picture of the social construction of climate change in the vulnerable countries in the world. However, we must recognize that social constructions and more specifically, discourse, are highly context specific (Hulme, 2009; Stehr & von Storch, 1995). The nature of this, does not allow us to generalize conclusions that hold for all vulnerable countries, especially considering that existing studies have already found manifold of differences. Hence, I limit this study to a one country case-study. So, I ask the research questions in the Philippine context and dedicate the next section to explain the case selection and provide background information on the Philippines. Thereafter, I provide a section (**section 3.1**) with expectations based on a combination of theories and results of related studies.

3.1. Case selection & Philippine background

The country case selection is based on three criteria: degree of vulnerability, active climate change politics, and case knowledge.

Vulnerability can generally be defined as "the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impact of hazards" (UNDRR, 2020). The UN identifies three determinants of vulnerability: exposure, sensitivity, and coping or adaptive capacity. Exposure is the degree at which a system could be exposed to climate variations and impacts while sensitivity is the degree by which the system could be directly or indirectly harmed (or positively affected) by such exposure. Adaptive capacity is the ability of the system

to adapt to climate change or in other words "to moderate potential damages, to take advantage of opportunities, or to cope with the consequences" (McCarthy et al., 2001). We may understand this concept better through **Figure 2.**

Figure 2. Degree of vulnerability illustrated by the relationship of its three components: exposure, sensitivity, and adaptive capacity (source: Loftus & International Council for Local Environmental Initiatives, 2011)

Macroeconomic studies such as that of Sprinz & Vaahtoranta (1994) have shown that more vulnerable countries tend to push for more ambitious international climate change mitigation policies. We may also expect this kind of attitude to be reflected in a vulnerable country's policy discourse, considering its dialectic role in the policy-making process. The Philippines has been ranked as the third most vulnerable country to climate change in an assessment conducted by the HSBC Global Research group (Paun et al., 2018), is among the top five most affected in the Climate Risk Index reports by Germanwatch (Burck et al., 2019), and is ranked number one at risk in terms of sensitivity to extreme events (Paun et al., 2018). So, it does not just fill the geographical scope gap to include an island-state of the global South, but also represents the most vulnerable perspective.

Additionally, in order to investigate policy discourse, a criteria must be that there are relevant climate change policies and politics. Investigation of the discourse only then becomes politically relevant. In a new report by the Climate Action Tracker team, a first volume of a series of climate governance assessment, the Philippines is evaluated to have an overall decent continuity in its climate policies and institutions and can be said to have played a leadership role in climate change internationally (Climate Action Tracker, 2019).

Lastly, sufficient case knowledge is a criteria because it is vital for the interpretation of results and understanding them in the socio-historical context of the country. As I have lived in the Philippines from the year 2004-2018, I do have this context advantage. The sub-sections that follow provide more background information important for the understanding of the Philippine context, ordered according to the three selection elements.

4.1.1. Case knowledge: Background on Philippines and political system

The Philippines is an archipelago of 7,164 islands with a land area of approximately 300,000 km^2 and 36,289 km coastline bounded by the Pacific Ocean to the north and east, the South China Sea to the west, and the Sulawesi Sea to the south (Licuanan et al., 2019). This is geographically within the area known as the "Coral triangle" (region of highest marine biodiversity in the world), Pacific "ring of fire" (region of high volcanic and seismic activity), and "typhoon belt" (region of frequent and intense storms). It has a population of about 105 million individuals (as of 2017, Statista), more than half of which live in coastal areas, and a tenth in the dense capital region called Metro Manila. Despite fast economic growth for a developing nation, around 20% of the population live below the poverty line (Asian Development Bank, 2014).

The Philippines is a democratic republic with a presidential form of government, where power is equally divided among its executive, legislative, and judicial branches. It exhibits a nonrigid multi-party system, has a legislative branch consists of a Senate (24 members) and House of Representatives (250), and consists of 17 administrative provincial regions. Popularly, the Philippines is lauded as the first democracy in Asia. However, it was under authoritarian rule from 1972 to 1986 under Ferdinand Marcos regime and recently, with President Duterte at power and his allies occupying majority of government, democracy is once again on an eroding road with disregard of human rights and civil liberties (Bertelsmann Stiftung, 2020). The Freedom House classifies the Philippines as partly free, as its applications of the rule of law heavily favor political and economic elites (Freedom House, 2019). The transparency international corruption index has consistently ranked the Philippines in the middle lower half of the world (current ranking: 113 of 198; (Transparency International, 2020). Hence, it is important to note that what is politically expressed and enacted into laws may not necessarily reflect the enforcement of such stances and policies.

The Philippines was under colonial rule of Spain for 333 years, nearly five decades of occupation by the USA, and three years under Japanese occupation. While the Spanish reign greatly shaped Philippine culture and religion, the Philippine health, education, and political system (including the constitution) were established through American influence. Together with Tagalog, English is an official national language in the Philippines and often the more prominent written language in the formal setting.

Although originally containing two major parties, the current Philippine party system can be described as multiple and non-rigid, with politicians often moving from party to party as they are essentially nonideological vehicles for personal ambitions (Bertelsmann Stiftung, 2020). Political family dynasties are common and it is not uncommon for celebrities to be elected

unto top positions. A huge number of interest groups and organizations work as mediators between society and the political system, and its 1987 constitution and local government code provide favorable political incentives for such groups. The Philippines has the largest number of NGOs per capita in Asia (Bertelsmann Stiftung, 2020). With 90% of the population being Christian, the Catholic Church and Christian organizations have also been influential institutions.

Due to its predominantly mountainous territory and archipelagic nature, large population and population growth rate, it being extremely multiethnic and multilingual, a growing inequality gap despite growing GDP, improving but still limited infrastructure, it is difficult for the Philippine central government to effectively govern the country (Bertelsmann Stiftung, 2020) and makes the country's adaptive capacity to climate change low.

4.1.2. Vulnerability: Climate change impacts

Responsible to get the Philippines among the top of the climate risk list is its sensitivity to extreme events, where it ranked number one. A total of 1,220 tropical cyclones have entered the Philippine Area of Responsibility (PAR) from 1951 to 2013 (annual mean of 19.4 cyclones) (Cinco et al., 2016; Villarin et al., 2016). These tropical cyclones are highly damaging because besides destructive winds, they can cause storm surges, several landslides, and bring with them extreme precipitation events. Of the 20 most disastrous cyclones in terms of damages that the Philippines had from 1970-2011, 18 occurred in the two decades from 1990 to 2011 (Republic of the Philippines, 2014). More recent and notable events that may come to mind are: typhoon Mangkhut, the world's most intense storm of the year 2018, and typhoon Haiyan in November 2013, Earth's strongest typhoon on record that made landfall (caused the death of 6,245 people). This trend is consistent with a study by Holden & Marshall (2018) on Philippine climate models and the IPCC Western North Pacific Report which states that cyclones will not necessarily become more frequent, but the frequency of cyclones with higher intensity is more likely than not to increase.

Over the 2007 to 2016 period, the Philippines incurred costs from climate-related extreme events equivalent to 1% of the national GDP on average (Paun et al., 2018). Under the A2 scenario, this cost is estimated to be 2.2% of GDP by 2100, way above the global average projected 0.6% GDP loss. If the computation is done to include non-market impacts related to health and ecosystems, a 5.6% GDP loss should be estimated (Hijioka et al., 2014). The Philippines also has the highest number of people affected annually by disaster events. – an average of 102 per 1,000 people from 2007 to 2016 (Paun et al., 2018). The Global Report on Internal Displacement (Internal Displacement Monitoring Centre, 2018) also places the Philippines in 2nd rank in terms of number of disaster-induced displacements.

The annual mean temperature in the Philippines has risen by 0.68 °C from 1951 to 2015. For the moderate and high emission scenario, the temperature may increase by 0.9-1.9 and 1.2-2.3 respectively by the mid-21st century (2036-2065). Towards the end of the century, this may go to a 2.5 to 4.1°C increase (PAGASA, 2018). Considering that the average temperature in the Philippines is more than 26°C, the new temperatures will be difficult to bear, especially for people in the dense metropolitan area where the Urban Heat Island effect comes into play. Villarin and colleagues (2016) report an increasing trend in the number of hot days and warm nights from the analysis of extreme daily temperatures from 1951 to 2008.

Unlike the uniform rise in temperature, change in rainfall will vary spatially, but extremes will increase alike with dry seasons expected to become even drier and wet seasons even wetter. Models project a change in annual precipitation from -7.5% to 23% in 2020 and -9.5% to 27.8% in 2050 (Republic of the Philippines, 2014). In September 2009, typhoon Ketsana poured 455 mm of rainfall over the metropolitan capital Manila in just 24 hours (341 mm of which fell within just 6 hours), equivalent to the average rainfall of a whole month in September (Republic of the Philippines, 2014), causing lasting floods. Then in August 2012, a southwest monsoon surpassed the rainfall dumped by typhoon Ketsana in a 22-hour downpour. Such events greatly affect the economic productivity of the city until several days after.

Satellite observations (AVISO altimetry data) show sea level has risen 5.7-7.00 mm/yr over the Philippine Sea since the early 1900s (PAGASA, 2018). That's double the highest global average rate of 2.8-3.6 mm/yr. Tide gauge observations found rapid level increase in Manila but this may be greatly exacerbated by subsidence of land due to urbanization and excessive groundwater extraction (PAGASA, 2018). Projected sea level rise continues to be larger than global average by almost the same linear increase except in the RCP 8.5 scenario which shows a threatening exponential rise. This sea-level rise will lead to increased storm surges, land loss and human displacement. Mangroves, which protect many coastal communities from strong storm winds and wave action, may possibly not cope with the shift in sea-level. Coastal wetland ecosystems are projected to be affected by a 51% reduction in wetland area under A2 scenario (Cruz et al., 2017). Additionally, saltwater intrusion into groundwater which is already occurring, will bring about water supply issues (Cruz et al., 2017; Licuanan et al., 2019). The Philippine coast will also be affected by rising temperatures in the ocean, leading to coral bleaching, ocean acidification, and species shifts. The Philippine waters have experienced a greater than 0.2°C per decade water temperature increase in the last few decades (Licuanan et al., 2019). Recent coral bleaching events occurred throughout the archipelago in 2010 and 2016 (Licuanan et al., 2019). This bleaching in return will negatively affect the reef fisheries, affecting people's livelihood and one of the most vital domestic products.

The country's geographical characteristics have contributed to making it one of the most biologically diverse countries in the world (Licuanan et al., 2019). Shifting ocean and atmospheric temperatures may potentially affect this biodiversity by changing the suitability of habitat to current species. On the other hand, some conditions may positively favor some species. To illustrate, out of 14 studied threatened forest tree species in the Philippines, half were found to decline in abundance while the other half would benefit from future climate (Cruz et al., 2017). Not much more is known with regards to how tropical forests of the Philippines will be affected due to limited data and studies. In connection to human health, some diseases may become more prominent such as dengue and cholera. In Metro Manila, for every 1°C increase in recorded minimum temperature, an expected 233 cases of dengue is predicted to occur due to increasing number of mosquitoes. Food supply will also be affected due to changes in season and flowering. Rising temperatures may actually accelerate rice production and reduce growth time but risks of heat stress [or flooding] at critical development stages increase (Hijioka et al., 2014).

This section has shown that the country will continuously gain losses due to the effects of climate change. A survey conducted by the Philippine Social Weather Station shows that 85 % of Filipinos claimed to have "personally experienced" climate change in the last three years (2010 – 2013). This confirms the pervasiveness of climate change impacts in the lives of Filipinos. Most Filipino authors state that much support and more research are needed to further understand, predict, and prepare the country in the light of climate change, leaving a large factor of uncertainty for the future of the country. All these potential impacts cannot be tackled to the same degree due to lacking resources and other social problems. My investigation of the public discourse will allow us to see which of these impacts are perceived as most important and become priority for Philippine climate change governance.

4.1.3. Active climate change politics: climate change policies and efforts to increase adaptive capacity

Looking back in time, the earliest direct climate change policies in the Philippines may be the establishment of the Inter-Agency Committee on Climate Change in 1991 and the Philippine Clean Air Act of 1999. The IACCC was led by the Environmental Management Bureau of the Department of Environment and Natural Resources (DENR) and the Department of Science and Technology (DOST) to coordinate various climate change related activities, propose climate change policies and prepare the Philippine positions to the UNFCCC. Philippine Clean Air Act aimed to monitor and set standards for greenhouse gas emissions and established the air quality management fund which was sourced through fines from violators of the set air quality standard. In relation to climate change adaptation, one may also look to sustainable development and disaster management policies. Notably, in 1992, the Philippine Council for

Sustainable Development (PCSD) was created (Lasco et al., 2018). The country also participated in ratifying the UNFCCC in 1994 and the Kyoto Protocol in 2003. In 2004, DENR was designated as the National Authority for managing Clean Development Mechanisms which has recently reached 72 registered projects (Grantham Research Institute on Climate Change and the Environment).

The Philippines put into law a Climate Change Act in 2009. This is Republic Act No. 9729, "an act mainstreaming climate change into government policy formulations, establishing the framework strategy and program on climate change, creating for this purpose the climate change commission, and for other purposes". The law mentions the adaptation of the objectives of the UNFCCC to stabilize greenhouse gas concentrations in the atmosphere and of the Hyogo Framework for Action to build national and local resilience to climate change-related disasters. To highlight is the statement that "the State shall cooperate with the global community in the resolution of climate change issues, including disaster risk reduction" indicating the willingness of the Philippines to global climate change collaborations. This law has been praised among the most progressive climate laws in the world due to reasons of including participation of all relevant departments and agencies, enjoining of national and local adaptation plans across stakeholders, and focus on incorporating gender-sensitive, youth involvement, and pro-poor perspective in all climate change and renewable energy efforts (Smith, 2012; NCCAP). The act created the Climate Change Commission (CCC) and appointed it sole climate policy-making body of the government responsible to coordinate, monitor and evaluate the programs and action plans relating to climate change, abolishing the previous Inter-Agency Committee on Climate Change.

The following year, the Philippine Disaster Risk Reduction and Management Act Republic (Act No. 10121) was enacted. It mandated to strengthen disaster management and shifted from a mere focus of response in the previous PD 1566 to include mitigation, also in relation to climate change adaptation, and replaced NDCC with the National Disaster Risk Reduction and Management Council (NDRRMC) as the focal body. It also established the DRRM fund and requires local government units (LGUs) to set aside 5% of their estimated revenue from regular sources for their disaster councils.

In accordance with the Climate Change Act, the Framework Strategy on Climate Change was formulated. It identified the ff. seven (7) strategic priorities to address the impacts of climate change: food security, water sufficiency, environmental and ecological stability, human security, sustainable energy, climate smart industries and services, and knowledge and capacity development. To be integrated in all the strategic priorities are: gender and development, technology transfer, research and development, information, education and communication, and capacity building. These priorities are meant to be implemented through

financing, valuation of natural resources, multi-stakeholder partnerships, and capacity building (Climate Change Commission). Afterwards, the National Climate Change Action Plan (NCCAP) was published for 2011 to 2028 (spanning three 6-year phases consistent with the terms of government administrations). Weaknesses of this framework are that despite containing a detailed list of outcomes and set of time-bound activities, the activities are not linked to targets and thus do not guide the extent to which activities are expected to be carried out or how to prioritize among them. Indicators have been proposed but have not been finalized to measure results adding to inconsistency in activities and preventing a proper monitoring and evaluation system across the sectors (World Bank, 2013).

To increase convergence and coordination among government agencies and co-operation with civil society, a Cabinet Cluster on Climate Change Adaptation and Mitigation (CCAM) was established in 2011. In 2012, the Climate Change Act was amended and established the People's Survival Fund and Board to provide long-term financing to projects. To allow tracking and monitoring of climate budgets and increase transparency, the Department of Budget and Management issued a Joint Memorandum that mandates government agencies to track their climate change expenditures in budget submissions, using the Climate Change Expenditure Tagging Guidelines (CCETG) starting 2015 (Grantham Research Institute on Climate Change and the Environment). A Greenhouse Gas inventory management and reporting system was institutionalized in 2014.

Internationally, the Philippines has ratified the Paris Agreement and submitted its Intended Nationally Determined Contributions (INDC, 2015) on October 2015. It states a commitment to reduce 70% of emissions relative to its BAU scenario of 2000-2030. This is a positive ambitious commitment; however, the reduction is based on the condition of the extent of financial resources, including technology development and transfer, and capacity building. The INDC states that external assistance and implementation support is required to adapt most appropriate technologies and improve resilience. In the same year, the Philippines was chair of the Climate Vulnerable Forum (CVF) negotiations group, a partnership of countries that are disproportionately affected by the impacts of climate change and pushed for ambitious measures at the Paris Agreement.

The Philippines is among the few countries in the world where renewable energy accounts for the largest share of total energy supply (main contribution is from natural gas) and is the second largest producer of geothermal energy (Esguerra et al., 2010). However, it must be noted that the rapidly urbanizing country relies heavily on importation of oil, coal, and ethanol, to meet its energy demands. The Biofuels Act of 2006, the Renewable Energy Act of 2008, and an Act Granting Incentives to Mini-Hydro Electric Power Developers have led to the increase in the utilization of renewable energy sources and energy self-sufficiency (NCCAP). A National

Environmentally Sustainable Transport Strategy (NESTS) has also been developed by the Department of Transportation and Communications (DOTC) in the last decade to decrease emissions in the transport sector which accounts for 32% of emissions (Esguerra et al., 2010). Most recently, in 2016, the country has also passed the Green Jobs Act which aims to promote the creation of green jobs and transition to a low-carbon economy.

The technical report by the World Bank states that the Philippines has made considerable progress in implementing reforms and that climate appropriations show a significant upward trend across all National Departments and agencies, outpacing the annual average budget increase up to four-fold. However, several operationalization gaps remain and at the local government level, the focus is still primarily on risk recovery and rehabilitation rather than prevention and preparedness, due to these financial as well as technical capacity constraints. Lack in institutional capacity and lack of access to information and localized knowledge management have also been identified as key challenges (World Bank, 2013). Nevertheless, according to a recent evaluation by Climate Action tracker, the Philippines climate action is rated to be on the "2°C compatible" track, among the best ratings of the countries examined, due to its leadership role in the CVF and overall continuity in climate policies and institutions. **Figure 3** intends to summarize what may be the most significant policies to remember from this section.

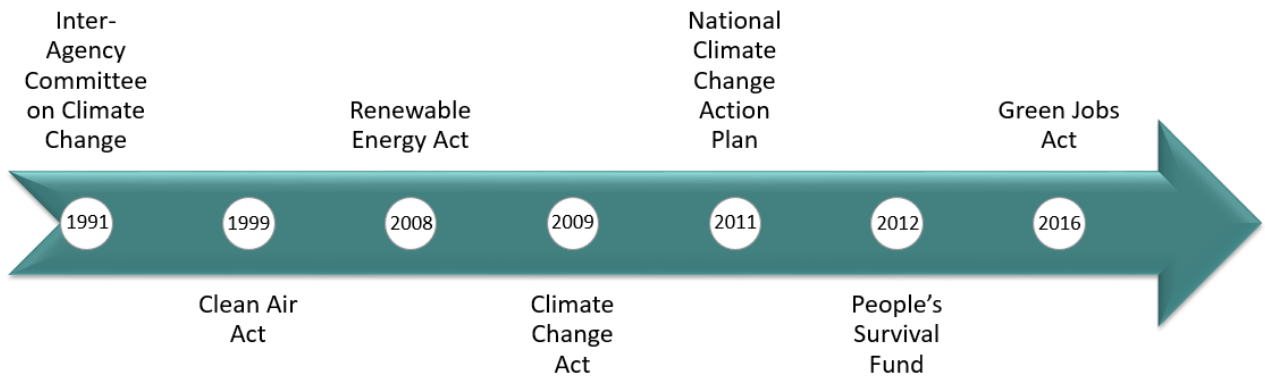

Figure 3. A timeline of most relevant climate change policies in the Philippines (own illustration)

3.1. Analytical Framework and Hypotheses

Level 1: Investigating climate change media coverage

On the first level of this thesis, I investigate the media coverage of climate change. By climate change coverage, I refer to two things. First, the issue-attention that the climate change problem as a whole receives in terms of number of articles published and second, the media depiction of the problem in terms of framing of climate change.

Studies have found regional differences in the volume of printed climate change related articles (Kunelius et al., 2016; Schmidt et al., 2013). Anglosphere countries (Australia, Canada, USA, UK) and a few other countries have the highest coverage of climate change. Schmidt and colleagues (2013), with their review on media attention studies cross 27 countries, find that issue attention is on a higher level in countries with strong projected impacts, however, media coverage of countries with pressure from obligations under the Kyoto Protocol are on the average more extensive. Since the Philippines has been shown to be highly vulnerable as well as involved in international climate change politics, the topic should receive high attention. On the other hand, Painter (2010) found that high political contestation translates into high media coverage of climate change; this is often the case in Anglosphere countries (on the second level of discourse investigation, we shall uncover whether climate change is a politically contested topic in the country).

Frames analysis has been used to examine how complex social and political issues are communicated to audiences by media workers and news sources (Stoddart et al., 2016). We recall that frames provide an interpretative framework that promote a certain definition of a problem and its aspects. A review of COMPON studies that utilize framing has shown that countries that have managed to reduce their emissions are those where newspaper frames support mitigation policies, accept climate science and are oriented to the global level of climate politics and ecological risks (Broadbent et al., 2016). In other climate change framing reviews, concluding differences between countries have also been in the amount of climate change coverage, degree of controversy about climate science, and framing of its risks and policies (Billett, 2010; Broadbent et al., 2016; M. S. Schäfer & Schlichting, 2014). Most often, climate change mitigation has received more coverage than that of adaptation (Billett, 2010). Hence, I particularly search for these frames within the analysis and turn to results of similar studies to formulate expectations. An outstanding but yet unexplained difference in climate change coverage seems to be the global scope or degree of domestication of the issue (Kunelius et al., 2016; Painter & Schäfer, 2018). Painter & Schäfer (2018) state that there are significant gaps in our understanding of the similarities and differences of climate change framing between countries, especially since most findings stem from the global North. Hence, I turn more to the Philippine context in setting expectations (contextual background provided in **section 3.1**)

Due to the Philippines' high vulnerability, often first-hand experiencing climate change related consequences, as well as low contribution to global cumulative CO_2 emissions (approximately 0.2%; Ritchie & Roser, 2020), I make the following expectation:

Expectation 1a: Climate change coverage is focused on a local scope

Expectation 1b: Media framing emphasize the consequences of climate change

Expectation 1c: Adaptation is a more common topic than mitigation

Broadbent and colleagues (2016) have found the frames emphasizing uncertainty and questioning the validity of climate science are most prominent in Anglosphere countries and some other parts of Europe. Among the few studies conducted in developing countries, it was shown that a skeptical frame is less prominent than in more developed countries (Pan et al., 2019; Shanahan, 2009), so, this is also expected here. However, it is important to keep in mind that the Philippines has cultural colonial American roots and is an English-speaking nation, hence, a skeptical frame often found in the Anglo-Saxon countries may persist.

Expectation 1d: Frames and discourse that question the validity of climate change are minimal

Ultimately, this component will allow broader understanding and enable comparative studies for testing of factors that account for differences in global climate change governance by contributing to the growing literature.

Level 2: Mapping discourse content and voices

On the second level, I go from the higher level of framing of the media to a more detailed identification of the specific climate change discourse as well as advocates of ideological and policy positions. I do this by identifying specific concepts within the discourse, which can refer to various beliefs, policy preferences, and issues surrounding climate change and link them to actors attaining a "voice" in the media platform, often a missing link in climate change coverage research (Pan et al., 2019; Steensland, 2008). To reveal these structures, I turn to a method that utilizes qualitative text analysis and quantitative relational analysis called discourse network analysis (Leifeld, 2016b). This allows the investigation of progressive political discourse on one hand, and the linking of elements used in the discourse with actors, on the other.

First, I go from the cognitive level of perception and argumentation to the interests and relationships between political actors that communicate, which we can refer to as a policy network. Recently, consensus has developed that policy networks are now no longer shaped and implemented exclusively by the main state institutions, but rather a variety of heterogenous governmental and nongovernmental organizations and interest groups are involved in the policy process due to interdependence of interests and distribution of resources (Patty & Penn, 2016). Hence, in other words, policy networks consist of a number of interconnected but autonomous actors who, through communication, resource exchange, or negotiation, jointly try to shape discourse and policy output in the direction of their

preferences (Janning et al., 2009). Actors on this level then are individuals, public, or private organizations that contribute to the discourse (in form of statements) and so take part in the interpretation and formulation of strategies to tackle the climate change problem. The BTI states that the Philippines has a very active civil society sector seeking to make their voices heard in the public sphere. Its civil society spectrum encompasses NGOs (highest per capita in Asia), conservative Christian organizations, business associations, civil liberty groups, leftist organizations (Bertelsmann Stiftung, 2020). I assume that these voices will be well captured in the discourse analysis.

Expectation 2a: The policy network contains a wide spectrum of actor groups

The objective in this component is not just to determine prominent actors, but to infer which actors are most powerful in shaping the policy agenda in the Philippines. An actor with high centrality can be regarded as a powerful actor, since his prominent position enables him to steer the communication in the network in his favor (Janning et al., 2009). I use the network concepts of centrality (described in detail in **section 4.4.3**.) as a measure to determine the actors that exhibit most power to shape climate change perceptions and push national policy-making in their preferred direction.

When there is a shared understanding and consensus among actors, there is good prospect for successful policy formation. For novel public policy issues such as climate change, which contains multiple and diverse interest groups and significant empirical, scientific, and procedural uncertainties, policy making may be problematic. Rational problem solving becomes a challenge as the ideas and evidence used by stakeholders to construct policy initiatives are themselves often contested (Dayton, 2000). Hajer (1995) argues that a battle to shape discourse towards a desired conception exists between competing interests. In this process of actors interpreting a phenomenon using similar or opposing ideas, discourse coalitions form. The resulting discourse structuration and dominant discourse becomes important as it can shape the design of public policies.

So I now turn back to the content of discourse. We can think of climate governance not just as a web of actors of various types but also of multiple ideologies and multiple issue areas. Environmental issues cannot be delineated in a box but are rather interconnected in various ways, both ecologically and socially (Dryzek, 2013). Climate change is complex and cuts across various issues and policy sectors (Hulme, 2009) such as forestry, transportation, migration, waste management, etc. I expect to find a multitude of issue areas present within the discourse revolving around climate change. When situations are uncertain and complex, the number of perspectives upon it can be large (Dryzek, 2013). Hence, I also expect to find conflicting ideas and policy preferences. So, additionally, in this component, also through

discourse network analysis and measures of centrality, I identify which ideas and issues dominate the discourse on climate change in the Philippines, which cut across issue areas, and which are the most conflicting ideas.

Expectation 2b: The concepts network covers a multitude of issue areas

Ultimately, this level functions on a more explorative and practical basis. Results are vital as it can contribute to national climate change governance in the Philippines by providing baseline data on actors and issues possibly vital in the national climate change policy arena, information of which is currently lacking in literature. A map of interrelations between organizations and ideas linked to climate change under the lens of social network analysis can provide a better understanding and suggest new ways to coordinate among actors and consolidate ideas and issue areas. The interconnectedness of issues within the network reflect their reconcilability (Schneider and Ollmann, 2013).

Level 3: Verifying policy change

We recall from the previous chapter that although not a sufficient condition, higher public attention on an issue paves the way for it to land on the political agenda (Baumgartner & Jones, 1993) and that such attention can be triggered from so called focusing events. Hence, on a third level, or rather on a different dimension as this cuts across the first and second level (see **Figure 1**), I aim to examine how the policy agenda has changed or evolved over time in light of focusing events. Before a focusing event can lead to policy change, it must affect either the media agenda or the political agenda (in terms of political actors and their preferences) (Weible & Ingold, 2018). Hence, I investigate the changes in media coverage and political discourse outlined therein as an indicator of policy change.

The Punctuated Equilibrium and ACF Theory facet that focusing events or external shocks can change public discourse. When it comes to media or issue-attention, international comparisons are also of considerable interest but not common (Painter & Schäfer, 2018). In many countries, climate change has grown to become a prominent topic within media since the 2000s, with peaks around 2007, 2009, and 2015 which have been linked to the IPCC AR4 report and Al Gore's An Inconvenient Truth release (2007), the Copenhagen COP failure and Climategate controversy (2009), and Paris Agreement (2015) (Barkemeyer et al., 2017; Boykoff, 2011; Painter & Schäfer, 2018; Schmidt et al., 2013). Schäfer et al. (2014) attempt to explain such issue attention and conclude that weather and climate characteristics are not strong drivers while international socio-political events are stronger drivers. Nevertheless, peaks may still be triggered by disasters or national policies as such was the case in Bangladesh (Miah et al., 2011).

I choose as focusing events, the two vital UNFCCC Conference of the Parties events, COP15 and COP21. The Copenhagen COP15 was to be a turning point in the international response to climate change by reaching a new ambitious agreement but turned out to be unsuccessful. On the other hand, the Paris COP21 started a new era of climate change governance, with a legally binding agreement. Under the Paris Agreement, 195 countries, developed and developing countries alike, agreed to reduce their GHG emissions with the aim of limiting a global temperature increase to 2 degrees Celsius (1.5 °C at best) above pre-industrial levels. The assumption is that these two international focusing events created a "punctuation" or change in the national climate politics as reflected in a change of media attention and policy discourse.

Expectation 3a: Climate change media attention rises most significantly with the external focusing events of vital climate change negotiations/COP 15 and COP21

The evolution of the close-up public discourse is to be investigated through the comparison of the two time periods which contain the COP focusing events (details on time periods are discussed in the next **section 3.3**). A shift in discourse salient concepts and actor as well as network structure would suggest such change. Considering the issue-attention cycle (Downs, 1972) and the multitude of sub-issues overlapping in the climate change problem sphere together with policy-oriented learning (Sabatier & Jenkins-Smith, 1993), we can expect that:

Expectation 3b: New concepts enter the discourse while major actors stay but learn, slightly changing the policy network structure

3.2. Data selection and Philippine press

I particularly investigate and limit the study to broadsheet media (hereafter simply referred to as newspapers), just as most climate change media and agenda-setting studies have (Schäfer & Schlichting, 2014). While it is recognized that traditional newspaper readership has declined among the general public through the years due to the emerging popularity of social media, newspapers continue to be important as agenda-setting and content sources for other mass media outlets (Ylä-Anttila et al., 2018). Politicians, academics, and various leaders of organizations and businesses continue to consume newspapers, many articles of which are nowadays also accessible online (Tindall et al., 2018). Studies have also shown that while new forms of communication are embraced, they are rather complementary and not substitute to traditional forms of media such as newspapers (Hansen, 2014). Additionally, various archives of newspaper articles exist, making it the most reliable and accessible data source. Hence, the medium of analysis is Philippine newspaper articles.

We recall that journalists do not operate as neutral conveyors of scientific knowledge to a passive audience but rather both consciously and unconsciously filter and reframe reality, affecting what people think about (McCombs & Shaw, 1972). While it is recognized that reasons for content selection are influenced by several factors such as journalistic norms of balance, the ideological stance of editorial board, perceived appeal and newsworthiness (Tindall et al., 2018), these factors will not be investigated.

The Philippine media has been described to be among the freest in Asia and is guaranteed in its constitution (Coronel, 2003). However, currently, the Philippine press ranks 134th in the World Press Freedom Index (fluctuating around the 140 mark from 2010 onwards; Reporters Without Borders, 2019), strongly attributed to the high number of journalist killings annually. Philippine newspapers are privately owned, profit-oriented enterprises; in fact, there is no tradition of state or party-owned presses or broadcasting entities in the Philippines. Americans trained early generations of Filipino journalists and introduced the idea of free media operated as private enterprise. According to Coronel (2003), this has led to tendencies of sensational and sometimes irresponsible journalism due to media market competition. Philippine media can be described as turbulent, molded by ideals of its colonial regimes, aspirations of Filipino elites, and periods of freedom but also periods of media repression (Martial law under the Marcos regime from 1972 to 1986).

Three newspaper sources were selected after initial screening of outlets. As the current top Philippine newspapers are all privately-owned and cannot be designated to a particular political ideology, the criteria for their selection included: circulation, readership, age of newspaper, sector orientation, records availability, and amount of climate change coverage. These selected newspapers are: Manila Bulletin, Philippine Daily Inquirer, and Business Mirror with specific information provided in **Table 1**.

Table 1. Information on selected Philippine newspaper sources

	Manila Bulletin	**Philippine Daily Inquirer**	**Business World**
Year founded	1906	1985	1967
Ownership	Private	Private	Private
Additional vital information	Oldest newspaper, highest circulation	Most awarded; highest online readership	Business-oriented; Southeast Asia's first daily business newspaper
Link	http://www.mb.com.ph	http://www.inquirer.net	http://www.bworldonline.com
Year available on archive	16 Jan 1999	5 Aug 2004	31 Aug 1995
Frequency	daily	daily	Mon-Fri
"CC" articles 2014 - 2019	3,906	1,718	1,009

3.3. Period information

In order to answer the question pertaining to change in time and focusing events, I analyze media analysis in the last two decades and select two study periods for the discourse network construction. The periods of investigation satisfy theoretical, practical, and analytical criteria.

On a practical basis, after analyzing the climate change coverage over the years, the years 2009 and 2015, and the years directly thereafter (2010 and 2016) had the highest count of climate change related articles. These high attention years increases the possibility to detect a wide array of climate change related issues and vital ideas. Consequently, these two years cover the preparation and post-discussion relating to the two major international events: The UNFCCC Conference of the Parties in Copenhagen (COP15) and in Paris (COP21), the influence of which I expect to lead to significant policy change (as discussed in **section 3.1**).

On the analytical side, these two periods are also great for comparison as their conditions, besides the difference in time and occurrence of major negotiation events, are quite similar. Both periods, contain: major local climate change related policy events i.e. enactment of laws; experience climate change related disasters i.e. typhoons, droughts, and coral bleaching; and have visits of prominent environmental figures such as Al Gore and Pope Francis. **Table 2**

shows these major political, ecological, and cultural events during or shortly prior to these years.

The study periods chosen specifically are: 1 September 2009 to 31 August 2010 (Period 1) and 1 September 2015 to 31 August 2016 (Period 2). The periods start in September because devastating typhoons hit the country at the end of this month and might serve as a relevant focusing event. Practically, these time periods are also vital because period 1 will be ideal for comparison with existing studies (most similar studies conducted their research around this time) and period 2 fills a missing gap of a more current understanding of the frames and discourse around climate change.

Table 2. Major events that occurred within or close to the selected study periods: Period 1 (September 2009 to August 2010); Period 2 (September 2015 to August 2016).

	Period 1		**Period 2**	
International negotiations	COP 15 - Copenhagen	2009 Dec. 7 - 18	COP 21 - Paris	2015 Nov. 30 – Dec. 12
Laws	Renewable Energy Act	2008 July	1st GHG inventory, INDC submission	2015 Oct.
	Climate Change Act	2009 July	Green Jobs Act	2015 July
	Disaster Risk Reduction Act	2010 July		
CC Disasters	Typhoon Ketsana	2009 Sept. 24 - 30	Typhoon Koppu	2015 Oct. 11 - 23
	Typhoon Parma	2009 Sept.27 – Oct. 14		
	Coral bleaching	2010 June – Aug.	Coral bleaching	2016 June-Aug.
			Strong El Nino event (drought)	2015-2016
	2nd warmest year on record	2010	2nd and 3rd warmest year on record	2015 and 2016
Others	Pope Encyclical – Caritas in Varitate	2009 June	Pope Encyclical – Laudato Si	2015 May
			Pope visit	2015 Jan. 15 - 19
	Al Gore visit	2010 June	Al Gore visit	2016 March
	Elections	2010 June	Elections	2016 June

4. Methodology

In this section, I discuss the specific steps involved in the data gathering and analysis processes.

Before moving on, I return back to the COMPON network (see first mention in **chapter 1**). The COMPON network holds biannual workshops where researchers discuss plans, challenges, and standardize their approaches. From these workshops, COMPON has developed a guidebook on DNA coding, which the analysis methodology, covered in the next chapter, was guided by. I provide input for the improvement of some strategies, such as sample selection and intercoder reliability. Additionally, as the guidebook was created in light of mostly western cases, I also further develop the methodology by providing conceptual categorizations that better fit developing and vulnerable country cases.

4.1. Data gathering and sampling

I used the global news archive tool called Factiva to obtain digital records of newspaper articles from the three selected newspaper sources: Manila Bulletin, Philippine Daily Inquirer, and BusinessWorld (see **section 3.3** for selection and source details). On the Factiva website, articles can be filtered to contain specific keywords, to be published within a given timeframe, and come from specific sources.

In order to analyze the media-attention development of climate change, the number of published articles per year containing at least once either the keyword “climate change” or “global warming” from these sources was obtained (as far back as possible in the Factiva archive). The numbers were then put into context by contrast to the total number of news articles published.

For the framing and discourse network analysis, two datasets were produced from the search result (keywords “climate change” or “global warming”), one for each of the previously described periods. Period 1 (1 September 2009 to 31 August 2010) returned 2,008 articles and Period 2 (1 September 2015 to 31 August 2016) returned a total of 1,764 articles. The articles were downloaded in HTML form in batches of 100, sorted from oldest to newest, excluding duplicates. As the datasets produced were too large for analysis and probably contained some irrelevant articles, a method to sort out relevant articles and obtain a random sample is described in the next paragraph.

Most published studies manually screened the articles obtained from the two terms “climate change” and “global warming” to determine the sample of relevant articles. To screen the extent of climate change and policy relevant articles efficiently and systematically, a search

using popular climate change related concepts fitting the Philippine context was done using R. software (R Core team, 2020). In R., test runs were made by counting the appearance of various keywords within the articles such as: climate crisis, climate justice, sea-level rise, carbon emissions, fossil fuels, renewable energy, clean development mechanism, COP, Clean Air Act, People's Survival Fund, climate-smart, etc. After comparison of results, it was determined that the keywords: Climate, climate, warming, emission, and Act were the most appropriate keywords to filter out relevant articles in the Philippine context. These keywords were chosen because they are neutral and are often part of a concept. For example, emission could be carbon emissions, CO2 emission, greenhouse gas emissions; climate could form climate change, climate justice, climate action, etc. Only capitalized Act was included so it would not refer to the verb act but rather the various laws such as Clean Air Act, climate Change Act, Renewable Energy Act, Disaster Risk Reduction Act, etc. Note that R. is sensitive to capital letters; hence, climate was used in both capitalized and small letter form. This was not the case for warming and emission as they are usually have a word preceding it and never start a sentence.

After skimming through a batch of articles, to make sure that enough irrelevant articles were discarded but relevant articles were still included, it was determined best to keep articles that contain at least three of any of the above-mentioned keywords. For efficiency, while still allowing proper statistical inferencing (i.e. producing valid results that represent Philippine climate change newspaper coverage as a whole), a random sample of articles was drawn from the population of relevant articles with an appropriate confidence interval, which was found to be 300 articles per period (see **Table 3** for search and sample information).

Table 3. Summary table of articles that contain the words "climate change" or "global warming" from September 2009 to August 2010 and from September 2015 to August 2016 with results of relevance filtering and sampling.

	Search result (population)	Off-topic	On-topic	Sample	Confidence interval	Ave. length
2009-2010	2008	1054	954	300	+- 4.48 %	598
2015-2016	1764	904	860	300	+- 3.94 %	709

The confidence interval was calculated based on the sample size of 300 extracted articles from the total article population per period with a confidence level of 95%. The confidence interval is also known as the margin of error and indicates the interval within which you can be 95% certain the results generated from the sample reflect the whole population.

Out of the generated sample of 600, 560 articles discussed climate change as a main issue in the article or at least had one full paragraph with climate change as its focus. That made

93.33% of the sample relevant for analyis, making the sampling procedure highly efficient. Specifically, 283 articles were retained from Period 1 and 278 articles from Period 2. Articles from Manila Bulletin made up majority of the sample (55%), followed by Philippine Daily Inquirer (30%), with the least coming from Business World (15%). Nevertheless, this is representative of the absolute number of climate change-related articles of these three newspapers.

4.2. Frames Analysis

The literature review has shown that framing studies of climate change in the media have been plenty but also have not used consistent framing categories. In order to allow for cross-regional comparisons, framing analysis was guided by studies part of the COMPON Network (Broadbent et al., 2016; Horta et al., 2017; Kammerer et al., 2020; Stoddart et al., 2016; Wagner & Payne, 2017) which derived their framing categories deductively from previous academic literature. These are rhetoric frames as drawn from Entman's typology of four different roles of framing (Entman, 1993) and adapted from Ben and Snowford's generic type of frames, and geographical scales. COMPON studies also include thematic frames, and these were originally also to be included in the study. However, they were found to often be multiple within one article and evolve through time with different emerging themes within the Philippine context, so thematic framing was dropped. Additionally, thematic issues can already be derived from the in-depth discourse network analysis (described in next section). Additionally, I took into consideration the focus of article titles. **Table 4** provides a list of the article framing categories, with explanation and examples. The rhetoric frames were each further categorized by attitude towards the problem which would capture skeptical or opposing frames (illustrated through examples in the table denoted by + for positive and – for negative).

Table 4. List and description of frame categories. Climate change is abbreviated as CC.

	Headline Focus	
CC-GW explicit	When title contains either the word climate change or global warming	Gov't leads info drive on climate change; Climate change map to help farmers adapt
CC- related	CC is not stated explicitly in title but some other related term was used	Tan firm, Mitsubishi inaugurate emission reduction project; DA eyes grant for climate program
Environment-related	Title contains general environmental but not necessarily CC-related term	Scarcity fueling mass migration; Greening the Philippine labor sector

Not related	No related words in the title	Arroyo approves extreme Metro Manila makeover; Ear to the ground
	Geographical Frame	
Subnational	The article discusses CC on the local scale, either provincial, municipal, or community level	An article about climate-induced drought effects on farmers from a particular province and their response
National	CC discussed on the national level	An article about the need of expanding renewable energy in the country
Multinational	CC discussed in the context of regions or a combination of countries	An article about ASEAN countries needing to cooperate to adapt to CC
Global	CC discussed in a collective global perspective	An article a global energy forum and how energy efficiency is key to address global warming
Foreign	CC is reported in a foreign setting	An article about a climate change march in the USA
	Rhetoric Frames	
Diagnostic	The article assesses the problem and its potential causes	An article that discusses the causes of CC (+) or dismisses that CC is happening (-)
Symptomatic	Identifies the effects or consequences resulting from the problem	An article that identifies negative (+) or positive (-) consequences of CC
Prognostic - mitigation	The article describes possible solutions to the problem	An article that discusses strategies or technology to address and mitigate CC (+)
Prognostic - adaptation	The article describes possible solutions to the problem	An article that focuses on ways to adapt to climate change (+)
Motivational	Discusses the problem in a moral light or provides reasons for a certain attitude towards it	An article that provides motivation for (+) or against (-) climate change action
Treatment	Describes events or actions that occurred in relation to the problem	An article that recalls events or enacted decisions in the climate change arena
Outlook	Describes perspective on how the problem potentially develops	An article that shares outlook on whether negotiation will be successful
Other	The frame does not fit the categories	

The sample articles were carefully read, first to confirm relevance and to determine frames, and then systematically coded for the construction of the discourse network (described in the next section). Additionally, to identify which focusing events most strongly influence the public discourse, whenever vital items or events were referred to in the articles (e.g. laws, COPs, climate change induced disasters, climate change related events or projects), these were annotated.

4.3. Discourse Network Analysis

Empirical discourse network analysis uses a combination of content analysis and network analysis based on graph theory to reveal the structure and dynamics of policy debates (Leifeld et al., 2019). To conduct this method, a software was developed by Leifeld and colleagues (2019) called Discourse Network Analyzer (DNA). The software allows the annotation of statements in text sources along with various variables of interest (explained in section 4.4.1.) and exportation of resulting data in various network data forms (see section 4.4.2.). These results can then be analyzed through the existing toolbox of social network analysis (section 4.4.3).

4.3.1. The DNA interface

The sample sets of articles were loaded into the DNA software. In the DNA tool, articles were read carefully and relevant text was annotated. Text was coded as a statement when there were direct quotes or indirect (but clear) expressions from an actor linked in some aspect to climate change. Statements that discussed an issue explicitly in only a foreign and not global or Philippine context, were not included.

These statements could then be annotated with variables. For efficient coding and eventual network construction, I set up the following variables: *actor name, actor organization, actor type, concept 1, concept 2, agree? (Boolean variable), and nationality.* The *actor name* refers to the person that made the statement and *actor organization* to the organization that the person represents as stated in the article. If no specific person was mentioned, actor name remained NA and if the person did not belong to any organization, the actor name was either retained or assigned to a descriptive organization (e.g. youth). The actor type refers to the group which an organization can be categorized under. These were later aggregated into the following actor categories: government, politician, business, research, civil society, association, IO, religious org, and other (see **Table 5** for description). The actor was also classified by nationality as either *Filipino*, *international*, or *foreign* actor. The difference between international and foreign actors are that the international actors are organizations active across various nations including the Philippines while foreign actors are not present in

the Philippines. Statements were then categorized into concepts. Concepts are policy preferences or ideas, which we define as shared believes that can be a common aim, accumulated knowledge, or ideologies (Fischer, 2003) related to the climate change phenomenon and its governance. A boolean variable then defines the concept by either agreement or disagreement of the actor with the concept.

Table 5. Actor types, categorization, and description.

Organization category	Actor type	Description
Government agencies	Gov't departments	government agencies and assigned (non-elected) officials that head them
	Government committee	Committees or other government groups
Politicians	Politician	Any elected official such as congressmen or senators
	President	President of the Philippines
Business	Company	Various private corporations
	Energy corporation	Companies in the energy industry
	Environmental or social business	Companies in the environmental, social, or data field
	Business association	Association of business interests
Research	Academe	Universities and their institutes
	Research center	Research centers not affiliated to universities (independent or government)
Civil Society Organizations	NGO	Non-governmental organizations
	NPO	Non-profit organizations
	People's Organization	Environment networks or local groups
	Association	Alliances or networks of society groups
Association	Association	Any rofessional alliances, associations, or networks
	Regional associations	Country alliances
International and Intergovernmental Organizations	IO	United Nations and other development organizations like the World Bank
	IGO	Regional and alliances or group of sovereign states
Religious org		includes religious institutions or personalities
Others	Artists	Celebrities or people in various fields of the arts

	Lawyer	Attorneys
	Youth	Youth leaders
	Environmentalist	Individual environmental advocates
	Others	Any other entity

Concepts were noted deductively but still largely guided by COMPON (see **Appendix 9.1** for a table that matches my concepts to equivalent COMPON concepts). Concepts were modified or extended whenever a new concept arose which was not on the list. This process was the most challenging and required going back and forth between articles, as country-specific discourse becomes revealed only after going through several articles. Hence, two concept variables were created: *Concept 1* and *Concept 2*. The first was for a rough first concept categorization, and the second for the final concept assignment after reviewing and cleaning up the data (includes splitting up concepts into repeatedly stated vital aspects within the concept, aggregating similar concepts, renaming, or reassigning concepts). **Table 6** shows a list of 75 final concepts with description. For analysis, only concepts mentioned at least two times were included to ensure relevance and reliability of deduced concepts.

Table 6. List of concept categories and description

Concept	**Description**
70% INDC promise achievable	when INDC is seen as good and achievable, disagree if they promote 40% reduction instead
a strong , binding international agreement is necessary	mention of international climate agreement need
adapt agricultural methods and technology	includes promotion of various alternative agricultural methods and technology (e.g. resilient seeds)
build resilient infrastructure	includes sustainable architecture, energy efficient housing, strong infrastructure
business sector big contributor but also among most vulnerable to CC	statements that acknowledge business impact but also emphasize its vulnerability
CC a threat to agriculture and food security	statements about CC impact on agriculture or food security
CC a threat to economy	statements about CC impacting economy
CC action to protect World Heritage sites	CC impact on World Heritage sites
CC as a moral/spiritual issue	statements that relate to CC in a spiritual way or state a moral aspect to it
CC global threat/threat to survival	when CC is referred to as a problem on the global scale and impact on humanity/earth
CC impact on health	CC as a health issue
CC is a development issue/linked to poverty	when CC is related to poverty and development
CC leads to migration/refugees	when displacement/refugees mentioned resulting from CC

CC regulation will limit economic development	any climate change intervention mentioned with regards to affecting economic development of the country
CC threat to biodiversity/marine ecology	CC as threat to ecology
CC threat to economy	emphasize on CC economic impacts
CC threat to energy security due to water shortage	CC impact on water shortage and hence energy security
CC threat to water resources	CC a threat to freshwater sources (without electricity link)
CC to blame for weather anomalies/disasters	CC blamed for typhoons or stating CC will lead to more storms/droughts
Change lifestyle and mentality	change in lifestyle/mindset promoted
Climate Change Act positive	Climate Change Act seen as positive
climate justice/ CC threat to human rights	CC discussed in relation to human rights
combine CC measures and sustainable development strategies	mention of link to sustainable development goals
common but differentiated responsibility	when common but differentiated responsibility concept is mentioned
companies should contribute to CC mitigation/adaptation	statements of companies stating importance of their business contributing to CC action
conserve/sustainably manage forests	also includes reforestation or avoiding deforestation
consider impact of trade and investments	trade as major contributor to CC
development of nuclear power	exploring of nuclear power
each and everyone should participate and contribute	when importance of every individual/org to act is emphasized
empower local communities/community level is key	when it talks about how important working with and capacitating community is
empower the youth	importance of youth in climate action and leadership
explore geoengineering	carbon capture technology etc.
finance aid should come in the form of grants, not loans	desirability of finance aid as grants
government should include stakeholders in planning	saying to include consultation with stakeholders such as business
greening operations can bring economic opportunities	when sustainable business operations are mentioned to lead to business benefits in long-term
have agreement for international transport	includes aviation and shipping
have proper waste management	refers to keeping agriculture resilient through proper irrigation , drainage, or forecasting
improve/invest in R&D (research&development)	when pushing for research and development
increase budget for CC and environment action	discussions of increasing governmental budgets towards climate action
increase energy efficiency	focuses on energy efficiency or includes cleaner coal technology
industrialized countries bear main responsibility	when industrial countries are mentioned to be main contributor to CC

integrate CC into development planning and decision-making	consider CC in decision-making, includes also land-use planning
intergenerational justice	any mention of CC action needed for future generations/children
limit temp rise to 1.5 degrees	the need to limit CC below 1.5 mentioned
make PH energy resilient and indepenent	
move to/invest in renewable energy	when promoting any form of renewable energy (except biofuel has own category)
need coal to meet energy demands	when coal or any fossil fuel is promoted
need cooperation across sectors	
need political will/right people	statements that talk about having the right people in government to push CC action
need to act now	when urgency of acting as soon as possible is mentioned
need to consider local context/reframe climate change	reframing climate change to local context
Paris Agreement is not ambitious enough	includes statements that say 2 degree temp rise too much, reduction commitments not sufficient
Participate in climate march	explicit promotion of the climate march
PH among most at risk	when the PH or developing countries are mentioned to be most affected by climate change
PH government is well prepared to respond to CC disasters	includes also acknowledging commitment to pursue solutions
PH has great potential for CDM projects	promotion of clean development mechanism
PH responsible for small % emissions	PH releases minimal GHG/contributes little to CC
PH should prepare and adapt/focus on resiliency	when it emphasizes need to focus on adaptation/resilience to future CC impacts (rather than mitigation/just reducing emissions)
PH should ratify Paris Agreement	should ratify Paris Agreement
politicians should take protests/civ soc action seriously	promotion of any civil society action, includes statements that politicians/companies should take protests seriously or join climate march for example
Promote biofuels	promoting specifically biofuels
Promote green jobs/Green Jobs Act positive	promoting establishment of green jobs
promote sustainable mobility	e.g. electric vehicles, better roads
provide financial/tech/capacity aid to developing countries	when mentioned that industrial countries should provide aid to PH or developing countries
Push carbon pricing/emissions trade	promotion of carbon trading
Push for regional cooperation	push for regional or also global cooperation and coordination
Renewable Energy Act positive	Philippine Renewable Energy Act importance
review and clarify energy policy	need for review of the national energy policy
science-based decision-making/discourse	emphasize on science consultation and science-based decision-making
sea-level rise is a key risk	when sea-level rise consequences mentioned without link to displacement
spread CC awareness	anything about importance of CC awareness or promoting CC education

strengthen disaster risk management	need to strengthen disaster risk management to adapt to CC
strictly implement laws and reduce corruption	need of strictly implement laws and reduce corruption to fight CC
supply chain of meat a large CC contributor	meat consumption greatly contributes to CC
we have underestimated the CC crisis	the CC crisis is greater than expected

4.3.2. From DNA to network data

The network perspective puts a focus on the relational links between entities that make up a system (Borgatti et al., 2013). The entities are called nodes and may have various attributes while their relationship with other nodes are represented in the form of ties, also called edges. The coded data allows for the construction of different network types. Concepts receive a link to actors that have mentioned them (affiliation network), indirectly creating ties among actors connected to the same concepts (actor network) and vice-versa (concept network). **Figure 4** demonstrates how the relations within the respective quantities, but also the connections between both levels, become measurable and emulate the interdependence between discourse content and actors.

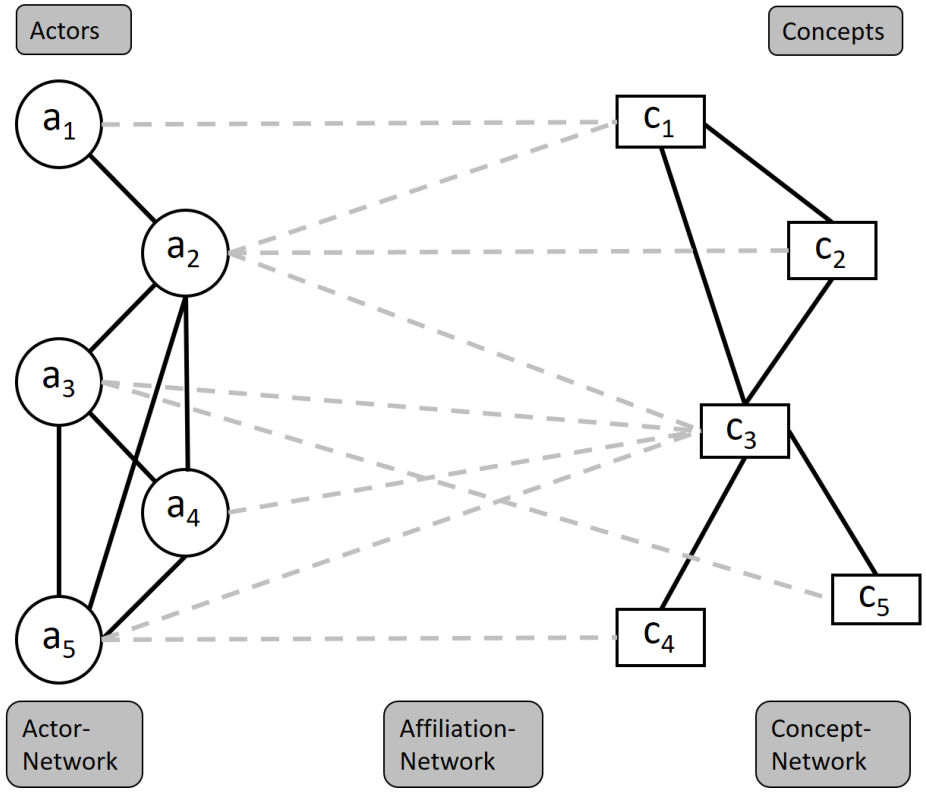

Figure 4. Visualization of the discourse network model (Adapted from: Leifeld, 2016)

When data is exported from DNA as an affiliation network, also called a two-mode network, it creates a matrix with different sets of nodes in the rows and columns. The edge weights here will then be simple counts of all co-references of Variable 1 and Variable 2. Through this process, frequency and controversiality of concepts and which actors support or reject them can be determined for example.

In order to best visualize which actors share similar ideas, determine which are most embedded in the discourse, and find whether discourse is fragmented or not, a one-mode network was constructed out of the two-mode network (i.e. actor network and concept network in **Figure 4**). The exported matrix from DNA using this mode contains the same nodes in the rows and columns and contains edge weights as values which refer to the sum of all products of co-references. In this matrix, variable 1 is the node class for the rows and columns while variable 2 is the basis of which edges are aggregated. I do this once with actors as variable 1 and concepts as variable 2 to construct the actor congruence network and once with concepts as variable 1 and actors as variable 2 to construct the concept network.

When exporting the data, there are several settings that need to be considered as seen in **Table 7**. Normalization was used to extract a clear network structure based on similarity of node profiles and not similarity of activity (i.e. actors cited often connect more with other actors cited often) as the effect of node activity is corrected. I chose *Jaccard* normalization which combines both node independent activities and joint activity. The qualifier and aggregation mode determines the algorithm for the edge weights (in addition to the network type). For the construction of my actor network, *congruence* was the option selected. This results in statements not just counted on the basis of a common concept mentioned but on a boolean variable which specifies whether actors co-support or co-reject a concept, a vital feature offered by the DNA tool (Leifeld et al., 2019). For the concepts network, the qualifier was ignored as I wanted to show the overall dominance of appearing issues. Then, to determine which of the issues are contested, the agreement qualifier was separately used to construct a concepts agreement/disagreement bar plot. As an actor may have multiple statements in an article, resulting in a possibility that the same concept is coded more than once for the same actor, the *ignore per document* option is used. This ensures that repetitive relations between an actor and concept are only counted once per newspaper article. The default settings to exclude isolates and no time moving window function was left as is. I attempted to code press statements and took note of other minor concepts that only appeared once (labelled as *other*); however, these were later excluded from the analysis.

Table 7. One-mode network settings when exporting from DNA.

Type of network	One-mode
Normalization	Jaccard
Qualifier	Agreement (actor network) Ignore (concept network)
Qualifier Aggregation	Congruence
Duplicates	Ignore per document
Isolates	Only current nodes
Moving time window	No time window
Exclude	Actor type – press Concepts - other

4.3.3. Social Network Analysis

Once the articles were coded, cleaned, and finalized, the discourse network was analyzed using principles and tools from social network analysis. The discourse was initially visualized and network statistics retrieved in R. using the following packages: rDNA (Leifeld et al., 2019), statnet (Hancock et l., 2018), igraph (Csardi & Nepusz, 2006). For more sophisticated analysis and visualization, UCINET (Borgatti et al., 2002) and NETDraw (Borgatti, 2002) were eventually used.

I determined the structural importance of nodes (actors and concepts) by calculating centrality. One way to think about node centrality is in terms of the contribution the node makes to the structure of the network (Borgatti et al., 2013). I used the measures of degree centrality and betweenness centrality in this thesis (**Figures 5**). High degree nodes are highly visible and can relate to the number of people the node is in a position to influence directly. The degree centrality can be normalized by dividing the raw score by the maximum possible in a network of the same size expressed as percentage. In the context of this thesis, an actor of high degree centrality is an actor prominent in the climate change discourse, possibly reflecting power to push climate change depiction and policies into a desired direction. I used betweenness centrality on the other hand to because it controls flows through the network like some sort of toll-taking role. It is computed by how often the selected node falls along the shortest path between two other nodes (Borgatti et al., 2013). This means that concepts with a high betweenness centrality are concepts often mentioned in tie to other concepts; in other words, they are the bridges that link issue areas. On the other hand, actors with high

betweenness centrality may pinpoint to key actors that are active in and connect different issue areas.

$$d_i = \sum_j x_{ij} \qquad b_j = \sum_{i<k} \frac{g_{ijk}}{g_{ik}}$$

(a) (b)

Figure 5. (a) degree centrality formula; (b) betweenness centrality formula, where g_{ijk} is the number of geodesic paths connecting i and k through j, and g_ik is the total number of geodesic paths connecting I and k. (source: Borgatti et al., 2013)

Whole network statistics were calculated to receive insights into the overall network structure and indications of how the discourse has changed between the two periods. I turn to the concept of cohesion which represents the 'knittedness' of a network system. The simplest measure of cohesion is the average degree centrality or the average number of ties of all nodes. This measure depends on the size of the network hence for comparative purposes, I use its normalized form, the network density. It is "the number of ties in the network, expressed as a proportion of the number of possible ties". In other words, it is the probability that a tie is established between pairs of randomly selected nodes (Borgatti et al., 2013). However, this measure is typically larger the bigger the main component of the network and does not consider the number of components within a network. A measure I use to account for the varying densities between components within a network is the measure of connectedness. It is the "proportion of pairs of nodes that can reach each other by a path of any length" while fragmentation is the opposite, the measure of nodes that cannot reach each other by any means (Borgatti et al., 2013). An additional measure that can further indicate how the discourse has changed between the two periods is degree centralization. It defines how much variation there is in the centrality scores between nodes; in other words, how equal nodes are. A score of 1 would mean that there is a central power, one node interacting with all nodes while a value closer to 0 means activity is more evenly distributed.

4.3.4. Reliability Check

As content analysis methods are often exposed to unconscious subjectivity by human coders, there is a need to conduct reliability checks to ensure internal consistency. Since the method follows a mix of inductive and deductive approach, during the whole process, I had to keep on going back and forth between articles to ensure best fitting categorization of statements and actors. To some degree, this process already contributes to intra-coder reliability (the reproducibility of the data when repeated by the same coder). On the other hand, inter-coder reliability (intercoder agreement) is more complex and refers to the level of agreement among two or more independent coders when using the same evaluation scheme, the process of

which I discuss in this section. Intercoder reliability checks ensure reproducibility of the results and approve application of the coding method to similar samples (Lombard et al., 2017).

To test for intercoder reliability, a colleague coded the first 20% of the random sample of articles analyzed in Period 2; i.e. 60 articles out of 300 articles. The coder was shortly briefed and given a written guide, and then coded away. Results were then compared to my coding on the same dataset of articles descriptively and through a statistical intercoder reliability measurement. Intercoder reliability is typically determined by calculating reliability coefficients; various forms of which exist. A coefficient increasingly used by researchers, Krippendorff's alpha, was selected for this study. Krippendorff's alpha is powerful because it is: applicable to any number of coders; can handle any class of data; accepts incomplete or missing data; and can handle small sample sizes (Krippendorff, 2017). This calculation also already corrects for agreement by chance.

Two-mode matrices were first exported from the DNA coding of the two datasets (the same 60 articles) and matrices were edited to match in terms of size to enable intercoder computation. This means that if one coder did not code one concept, a column was added with the concept but cells filled with a value of 0. In the analysis, 0s were replaced by NAs to eliminate chance agreement (only Krippendorff measure allows for calculation with such missing values). One matrix was created to contain coders in the column and the frequency of appearance of the specific actor groups or concepts in the rows. It is important to note that intercoder reliability had to be calculated in different dimensions, one for concepts and actors separately. Currently, no appropriate intercoder tests have been developed that can be applied to the three-dimensional network data. The Krippendorff's alpha could then be calculated using a simple command in using the package "irr (Gamer et al., 2019). As the matrices include counts of the concepts/actors, the method set in the function was "interval".

On a descriptive level, coders identified 96 and 102 statements respectively. Three out of five most frequently identified organizations were the same while the top three actor types were identical. The number of concepts used were both 41; however, 8 of these were not identical. Two of the top three concepts were the same. On the intercoder reliability coefficient side, the result was an alpha of 0.715 for concepts, and an alpha of 0.927 for actor groups. The typical threshold for a good alpha value is 0.8 (Lombard et al., 2017); so, 0.7 is acceptable considering that time with the coder was limited and did not allow for in-depth familiarization of the method and concepts. The actor reliability coefficient on the other hand is high, as actor groups are only eight categories and less complex, producing agreement more easily.

As no perfect reliability check measure has been discovered to account for the interconnections in discourse network data, this part still has various potential for

improvement. Additionally, if engagement of the additional coder is increased through regular meetings and involvement in the concepts production, then intercoder reliability scores would increase.

5. Results & Discussion

5.1. Media-attention and frames: How Philippine newspapers depict climate change

5.1.1. Media-attention and focusing events

Looking at how climate change has been covered by the newspaper press in the Philippines, **Table 8** shows the number of articles and percentage of articles relative to total number of articles per newspaper source from 2005 to 2019. On the average, 1.5% of total published newspaper articles contained the words climate change or global warming. Manila Bulletin had the highest number of articles from 2005 to 2019 with 1.85% of its total articles containing the climate change topic. Notably, despite being a business-oriented newspaper, Business World had a comparable share of articles to Philippine Daily Inquirer. **Figure 6** shows the coverage development from 1999-2019 to see how the climate change issue has gained or lost attention over time. The difference in the starting year of the trendlines is due to the availability of archive records of Factiva. The coverage trend through time is relatively similar among newspaper sources.

Table 8. Number of articles that contain the keyword "climate change" or "global warming" per newspaper source from 2005 to 2019 and the ratio to total number of articles released by the source

Newspaper Source	CC keyword articles	CC articles relative to total published articles
Manila Bulletin	8591	1.85 %
Philippine Daily Inquirer	4923	1.39 %
BusinessWorld	2802	1.27 %
AVERAGE		**1.50 %**

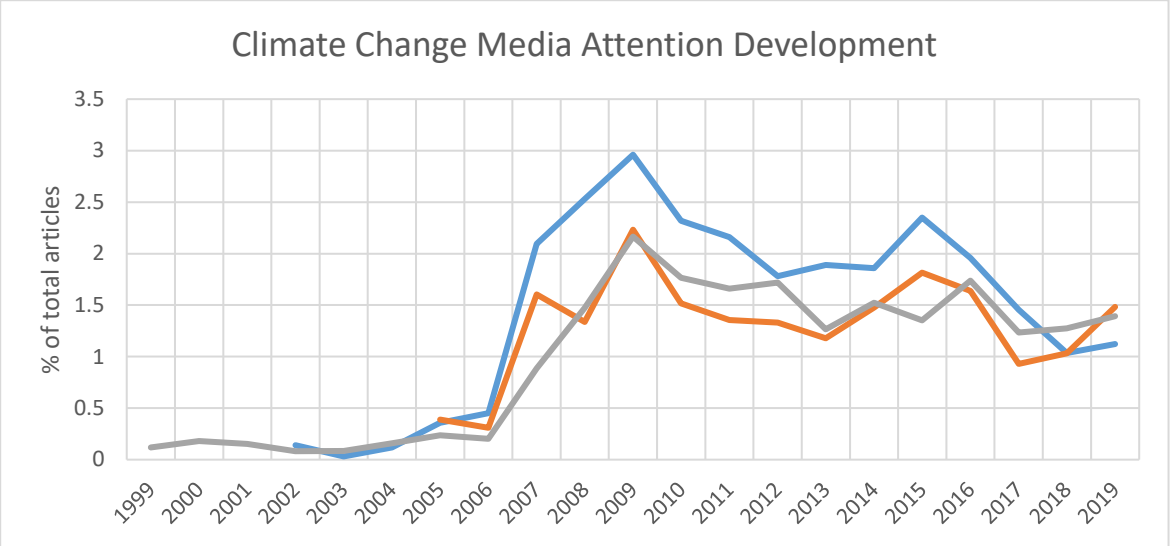

Figure 6. The development of the number of climate change related articles from the year 1999 to 2019 from the largest circulation source: Manila Bulletin.

The term climate change and/or global warming seemed to appear only minimally until suddenly receiving attention starting 2007. Attention seemed to rise until it peaked in 2009 (more than 2% coverage) and lost prominence again until another peak in 2015 and decreasing attention again thereafter with only 1% coverage in 2018. This confirms our expectation that the COP15 and COP21 were major focusing events that lead to increase in the climate change problem attention (**expectation 3a**). The trigger in the start of attention in 2007 may be attributed to the Bali Agreement, which set the stage to come up with a new agreement and include developing countries as well as the AR4 Report released by the IPCC that year. The year 2009's high coverage may not just be attributed to the Copenhagen COP but also the enacting of the Philippine Climate Change Act in July that year. Additionally, the Philippine capital incurred great losses due to flooding from precipitation record-breaking typhoon Ketsana in 2009. In the years that follow, despite some UNFCCC related events such as the Doha Amendment (2012) and release of IPCC AR5 Report (2013), grand national climate change induced disaster events (Typhoon Haiyan making international headlines as one of the strongest typhoons recorded on Earth in 2013) as well as climate change related policies such as the National Climate Change Action Plan (2011) and People's Survival Fund (2012), the media-attention on climate change sunk and only peaked again between 2015 and 2016 when the Paris Agreement was agreed upon. In 2016, the national Green Jobs Act was also enacted. The years thereafter, attention decreased again despite the finalization of the Paris Rulebook and start of the Fridays for Future movement.

In order to deepen the understanding of the influence of focusing events on media attention, coverage across months was analyzed from the samples of the two selected study periods. Out of these articles, the coverage across months was analyzed. As seen in **Figure 7**, November and December had almost twice the number of articles as compared to other months. These

two months coincide with when the COPs and its related preparatory meetings are held, confirming once again that these international events trigger issue attention. Most devastating typhoons occurred in September and October while coral bleaching events and enactment of laws in June and July, and visits of influential persons in Jan and March (refer to **Table 2** in **section 3.3**). The peak in second period of March may be attributed to a massive drought (El Nino) event which occurs less often than typhoons, making it a more "shocking" event. Indeed, the COPs were also among the most mentioned climate change concepts within the articles, especially in Period 2 (**Figure 8**). On the other hand, in Period 1, the mention of national climate change-related disaster events (typhoons, droughts, coral bleaching) and also the mention of climate change related policies (see **Appendix 9.2** for specific policies and events mentioned in the articles) outnumbered the mention of COPs per article. However, as we saw, in the months when these events occur, article number remained low. This may lead us to say that, significant external or international events do trigger issue attention more than internal events in terms of numbers of articles published on the topic but internal events do strongly determine the content of the articles and influence discourse.

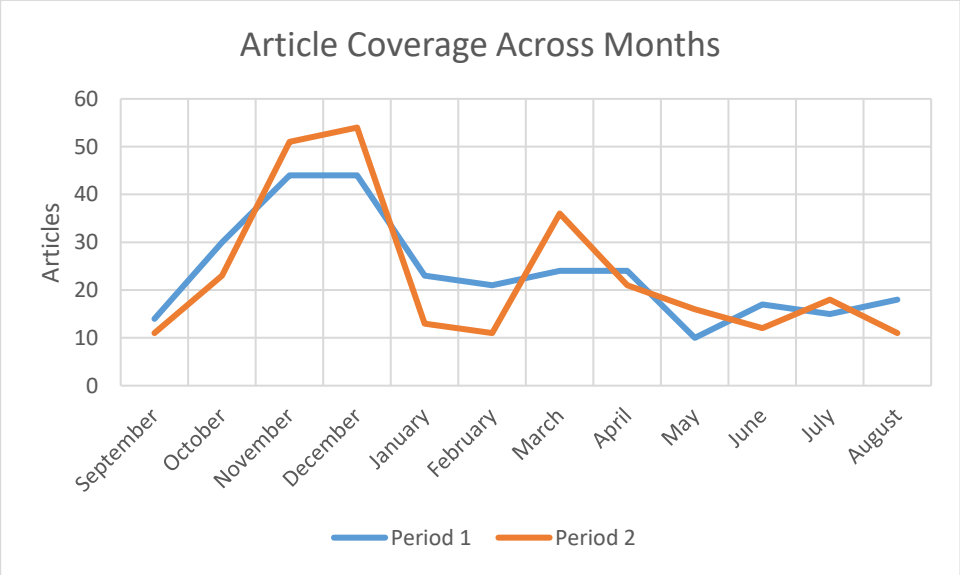

Figure 7. the number of climate change relevant articles released across the months, by period.

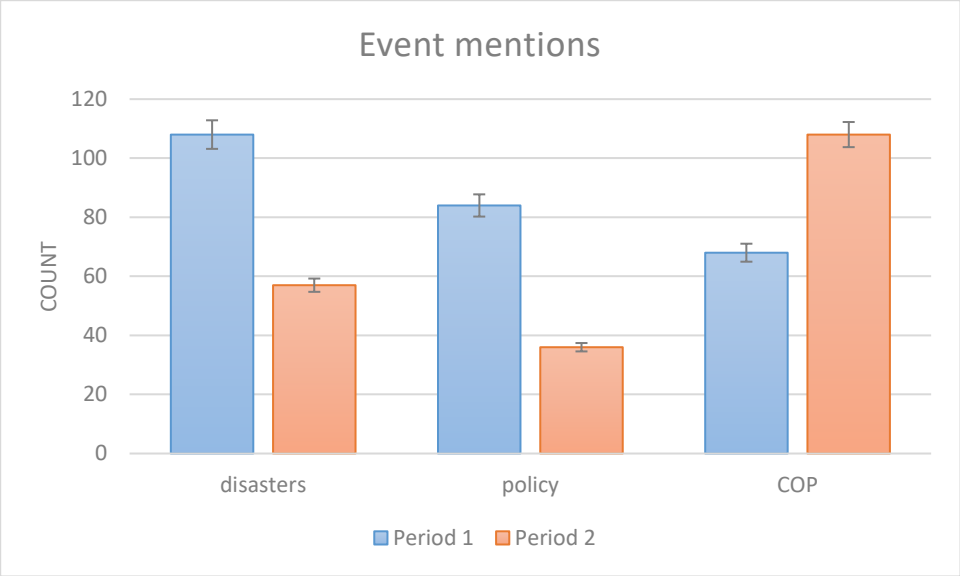

Figure 8. The number of focusing event mentions categorized as either disasters (typhoon or drought event referenced), policy (climate change related laws or policy mentioned), and COP (climate change negotiation events referenced) by period.

5.1.2. How Philippine newspapers cover climate change – rhetoric and geographical framing

What we can see in the next figure (**Figure 9**) is the prominence of climate change in the article titles. The graph shows us an increase in the use of climate change related terms as compared to the first period. It suggests that in the early period, climate change may have been as an issue part of the environmental domain. But in period 2, it has grown into its own domain, shown by an increase in the use of more climate change specific terms.

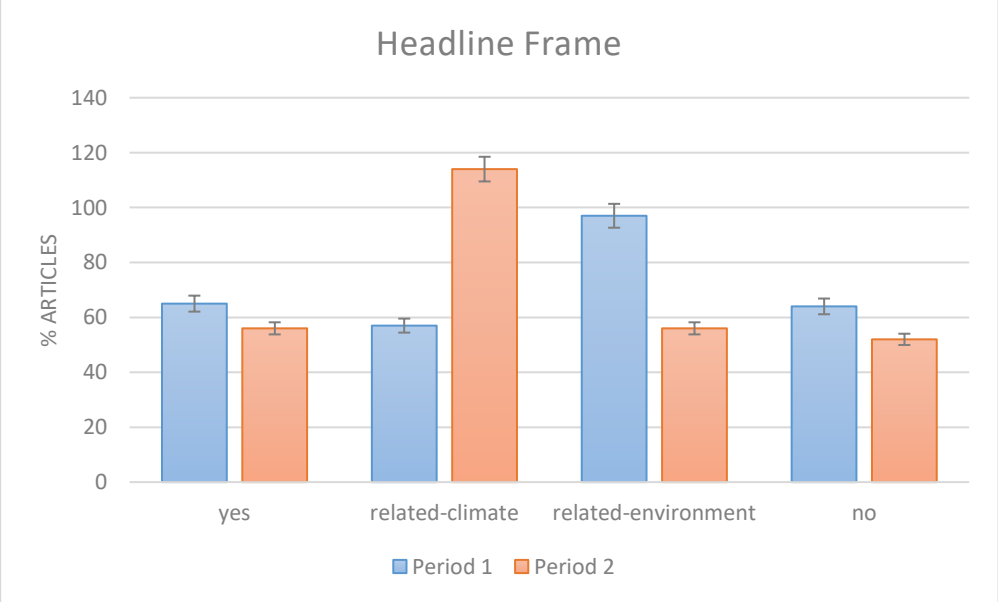

Figure 9. Articles categorized by headline focus per period. Yes/no respectively mean climate change term present/absent. Refer to methods in section 4.2 for full description.

The next figure (**Figure 10**) shows the geographical scope of the articles. In the first period, climate change related news were mostly of national scope in nature, fulfilling the **expectation 1a**. On the other hand, in the second period, climate change has grown to be discussed in a more global and even foreign setting, while decreasing in domestic scope (national and subnational). This is opposite to what Cronin et al. (2016) have found in Indonesian discourse on the REDD+ topic, where there was a shift from a global to a more national scope (this although are earlier years: 2007 and 2012).

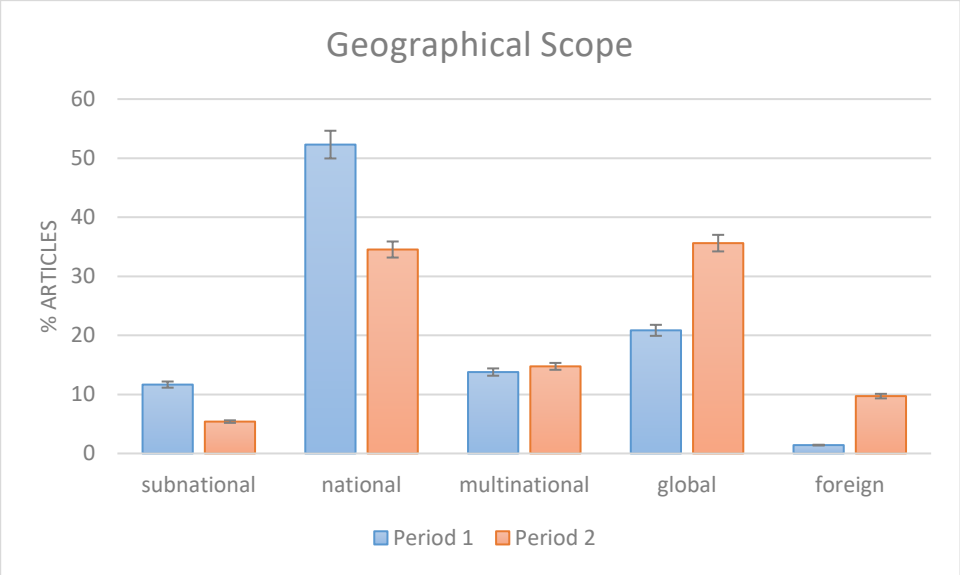

Figure 10. Articles categorized by the geographical focus and scope of the articles per period.

Figure 11 shows the rhetoric frames per period. In both periods, most articles contained the prognostic frame. Rarely was an article merely focused on the consequences (symptomatic frame). This means that articles mainly focused on discussions on how to address climate change and tackle its consequences (prognostic frame) rather than dwelling on the effects it brings, contrary to my expectation (**expectation 1b**). It is notable that in the second period, this rhetoric frame greatly decreased, while all other frames gained more share.

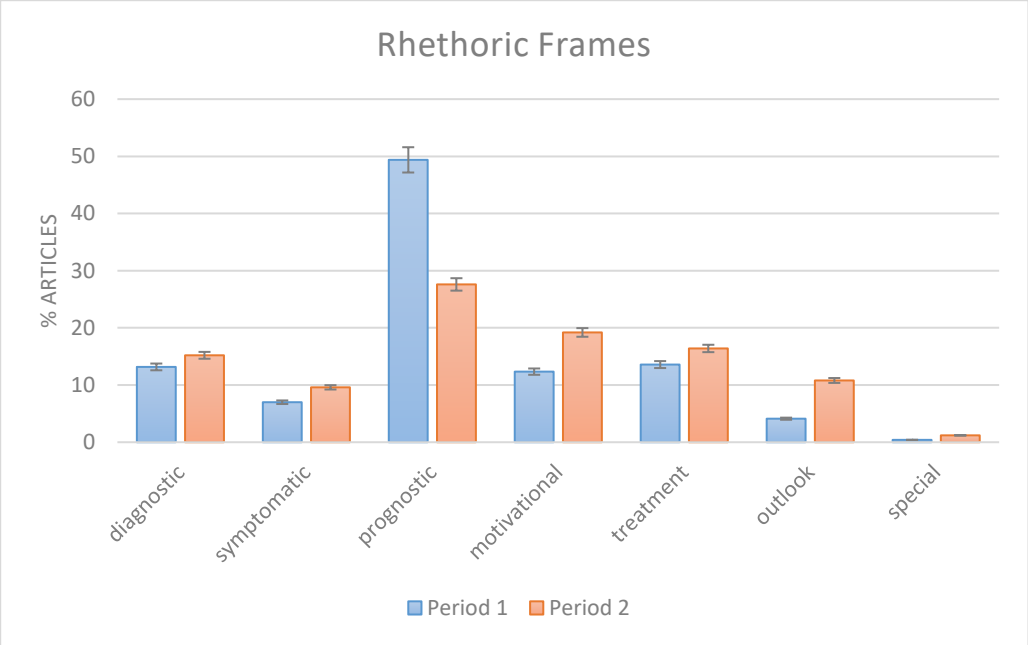

Figure 11. This bar chart shows the percentage share of the various framing categories.

Generally, the articles are always acknowledging the anthropogenic climate change or supporting climate change actions. When a dissenting voice was showcased, it always occurred with the mention of a supportive perspective. Only four of the articles did not present climate change in this manner (listed under special category in **Figure 11**). These are one skeptical diagnostic frame, one positive symptomatic frame, two negative motivational frames. The single skeptic frame (negative diagnostic) came from an article that reported the contents of a news article in the American Press. The negative motivational frames did acknowledge climate change, but did not encourage action from the Philippines reasoning that the country's contribution to greenhouse gas emissions is so low that there would be little influence on mitigating global climate change. The single positive symptomatic frame on the other hand is the only article that discussed the consequences of climate change in a positive light, such as its positive effects on rice species. Treatment frame articles were most often neutral and merely described an event or actions that occurred. These articles, besides stating the occurrence of conferences, interestingly often contained content on the publication of Laudato Si by Pope Francis (in this encyclical the pope calls people to care for our common home and climate action) as well as the visit of Al Gore and his climate change training seminar.

Out of the prognostic frames, **Figure 12** shows the articles that were focused on mitigation versus those that were focused on adaptation. In both periods, mitigation topics receive a greater share of attention than adaptation, with the difference in ratio growing larger in the second period. This result also goes against my expectation (**expectation 1c**) that due to its vulnerability and low GHG contribution, frames would be more adaptation oriented.

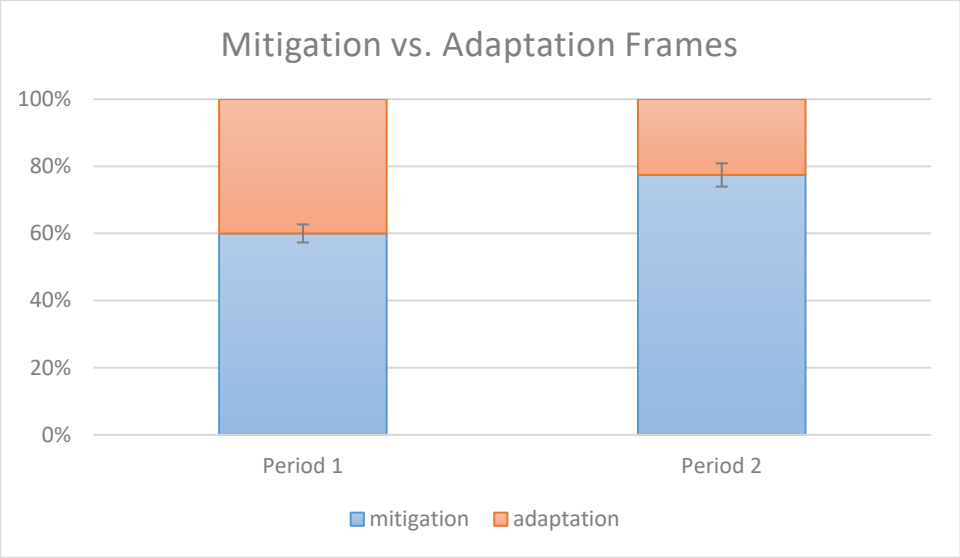

Figure 12. Bar graph representing the composition of mitigation vs. adaptation focused prognostic frames across the two periods.

Considering that changes in frames are significantly large, it further strengthens the theory of focusing events as drivers for change. The shift to a more global framing orientation can perhaps be attributed on one hand to globalization and on the other hand to a new climate change regime with the signing of the Paris Agreement. Developing countries like the Philippines are now for the first time included, with binding agreements, in the global fight of UN-member countries against climate change. This would also explain the growth in mitigation frame.

5.2. Discourse network analysis: powerful actors and salient concepts in Philippine climate change discourse

This subsection focuses on the results of the discourse network analysis. Among the sample articles, 391 articles contained statements relevant for DNA coding. Among these articles, there were a total of 923 coded statements (this number excludes statements of opinion from the press which would otherwise result in 990 statements). Statements came from numerous organizations, only 42 of which were common across both periods (See **Appendix 9.3** for a list of actor organizations, their acronym, actor type category, and period appearance). Only concepts that appeared more than once were included in the network analysis, this is a total of 75 concepts with 60 appearing in both periods (see **Appendix 9.1** for the list of concepts with period appearance). **Table 9** provides a summary of the overall data produced from the analysis.

Table 9. Summary counts of articles analyzed, statements coded, actors identified, and concept categories.

	Overall	Period 1	Period 2
No. of statements	921	433	488
No. of articles with statements	390	196	194
% articles with statements	69.64%	69.01%	70.04%
No. of organizations	270	158	154
No. of unique organizations	42 common	116	112
No. of concepts	75	66	68
No. of unique concepts	60 common	6	8

5.2.1. Discourse network – salient concepts

Resulting from the concept congruence network analysis, **Figure 14** visualizes the overall central concepts (**See Appendix 9.4.1 & 9.4.2** for concept networks of Period 1 and Period 2 respectively). The figure shows only the concepts with highest degree centrality (cut off was made at the median degree centrality score). The node sizes on the other hand, show betweenness centrality relative to the total network. Concepts with a high betweenness centrality are concepts often mentioned in tie to other concepts; in other words, they are the bridges that link issue areas. Hence, this result helps us identify issue-linkages which "may be a way to bring clarity to the climate change problem, identify new opportunities for solutions, and gain necessary social support for the issue" (Downing et al., 1999). For the network result with all concepts without a threshold, see **Appendix 9.4.3.** In **appendix 9.6,** a table can be seen of COMPON project concepts part of the COMPON guideline which are not applicable to the Philippine discourse. Out of the 28 main concepts, 6 were not applicable while 9 were partly covered and rephrased or adjusted. In **appendix 9.1**, COMPON concepts with their matching Philippine counterpart can be seen and concepts without a counterpart from existing COMPON projects.

Despite the Philippines little to global GHG emissions, the clearly most salient concept was *move to or invest in renewable energy sources*, with, interestingly, only one dissenting voice. This is because, the actors who did push for coal to meet the energy demands of the country (most controversial issue and also in the top 20) at the same time also supported a shift towards renewable energy to reach this demand (hence two separate concepts). Second most salient was the *need to act now*, emphasizing on the urgency for global and national climate

change action. These two top central concepts, once again go against the expectation that adaptation would be a more common frame, or in this case larger issue category, than mitigation. However, given the Philippines being among the most vulnerable countries, the concept *the Philippines being among the most at risk* did make it to third rank in salience. Surprisingly, without a disagreeing stance, actors, including the business sector (at least those that choose to speak to media), believe *companies should contribute to CC mitigation/adaptation*, putting the concept into the top five across both periods. *Adapt agricultural methods and technology* shows that the Philippines is a highly agriculture dependent country. The Philippines has lost a large amount of its original forest cover and currently averages on a 2% annual deforestation rate (Mongabay, 2011); hence, it makes sense that *sustainably manage forests* also makes it unto the top. Unique to other countries, *intergenerational justice* is a top concept. This may stem from the fact that the Philippines has such a statement in its constitution/climate change law. Due to the high occurrence of disaster risks such as typhoons, strengthening disaster risk management also becomes a salient issue in the domain of climate change. Findings of Schäfer, Scheffran, & Penniket (2016) show that Western countries strongly emphasize national and energy security while developing countries focus more on food and water security. This is somewhat reflected in the discourse (besides energy security also being salient) as plenty of salient concepts state the need to strengthen disaster risk management, agricultural food security, and the link to poverty and development. Generally, the discourse does not show a polarized but rather well connected structure (see **Figure 14**). This is likely because only a few concepts have conflicting stances (**see Figure 13**) and actors engage across multiple issue-areas, supporting **expectations 1d and 2b**.

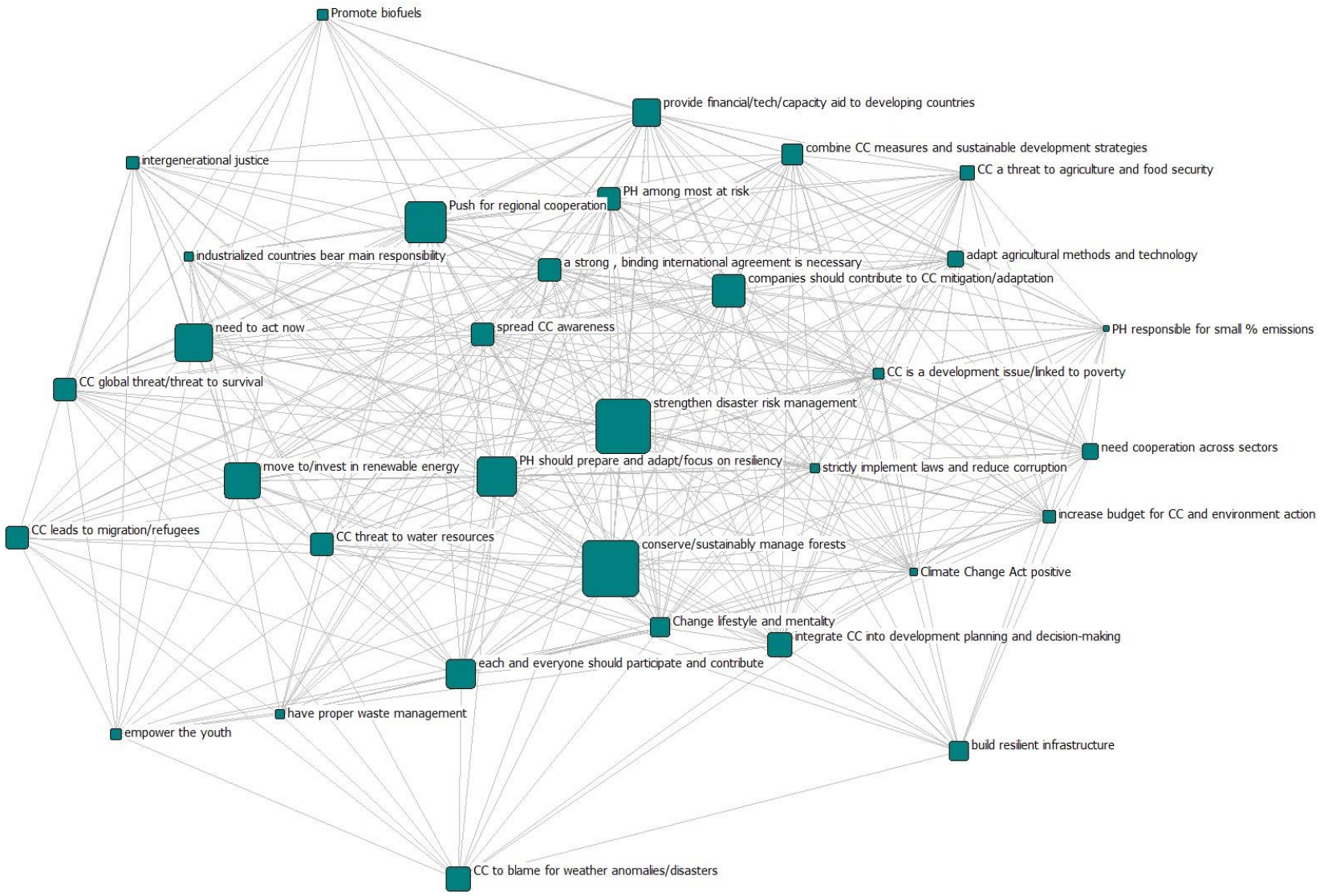

Figure 13. Overall concepts congruence network (Period 1 & 2 combined) with threshold at above median degree centrality. Nodes are concepts and lines indicate common mentions by actors. Closer nodes have stronger ties with each other. Node size represents betweenness centrality.

To better identify change and compare the most central concepts by period, **Table 10** shows the centrality scores of the top concepts per period. In both periods, the moving to or investing in renewable energy is the most embedded topic. Nevertheless, the concepts to follow start to differ by period, one third of which less central in period 1 now become central topics in period 2.

*Table 10. Centralization scores of most salient concepts (top 20 degree centrality normalized but sorted from highest to lowest betweenness centrality). A * signifies that the concept is in the top 20 in both periods.*

Period 1			**Period 2**		
Concept	**Degree**	**Betweenness**	**Concept**	**Degree**	**Betweenness**
move to/invest in renewable energy*	0.569	0.292	move to/invest in renewable energy*	0.627	0.207
companies should contribute to CC mitigation/adaptation	0.538	0.179	intergenerational justice	0.552	0.101
need to act now*	0.477	0.096	industrialized countries bear main responsibility	0.373	0.085
conserve/sustainably manage forests	0.585	0.086	CC regulation will limit economic development	0.478	0.075
spread CC awareness*	0.569	0.086	PH among most at risk*	0.642	0.073
strengthen disaster risk management	0.677	0.057	need to act now*	0.642	0.057
adapt agricultural methods and technology*	0.431	0.052	need coal to meet energy demands	0.627	0.051
CC global threat/threat to survival*	0.415	0.038	CC global threat/threat to survival	0.522	0.038
PH should prepare and adapt/focus on resiliency*	0.677	0.029	CC to blame for weather anomalies/disasters	0.552	0.024
a strong , binding international agreement is necessary*	0.554	0.028	PH responsible for small % emissions	0.493	0.021
Push for regional cooperation	0.585	0.027	CC is a development issue/linked to poverty*	0.433	0.017
provide financial/tech/capacity aid to developing countries*	0.523	0.025	a strong , binding international agreement is necessary*	0.507	0.013
each and everyone should participate and contribute	0.538	0.023	PH should prepare and adapt/focus on resiliency*	0.537	0.011
Change lifestyle and mentality	0.508	0.022	integrate CC into development planning and decision-making*	0.493	0.006
increase budget for CC and environment action	0.415	0.017	climate justice/ CC threat to human rights	0.478	0.005

integrate CC into development planning and decision-making*	0.523	0.016	provide financial/tech/capacity aid to developing countries*	0.507	0.003
PH among most at risk*	0.569	0.009	spread CC awareness*	0.373	0.002
combine CC measures and sustainable development strategies	0.446	0.000	adapt agricultural methods and technology*	0.448	0.000
CC is a development issue/linked to poverty*	0.431	0.000	CC as a moral/spiritual issue	0.388	0.000
CC threat to water resources	0.431	0.000	CC threat to economy	0.478	0.000

Among these, the only contested concepts that are among the 20 most salient are that the *Philippine government is well prepared to respond to climate change consequences* in Period 1, and *need coal to meet energy demands* and *climate regulation will limit economic development* in Period 2. The list of concepts is presented in the form of a bar graph in **Figure 13** showing the number appearance and attitude (agreement or disagreement) towards the issue. The conflicting issues are: the need for coal power plants to meet energy demand, climate change regulations limiting economic development, the government being well prepared to respond to climate change disasters, the ratification of the Paris Agreement, and the 70% INDC being achievable. The *need for coal power plants* was pushed by some energy industries but in the second period largely by the new Department of Energy head and opposed by civil society and international organizations. Notably, the concept of *climate change regulation limiting economic development of the country* and the concept of the *ratification of the Paris Agreement* only received opposition once President Duterte entered the presidential race in the last few months of Period 2 (refer to n the periods).

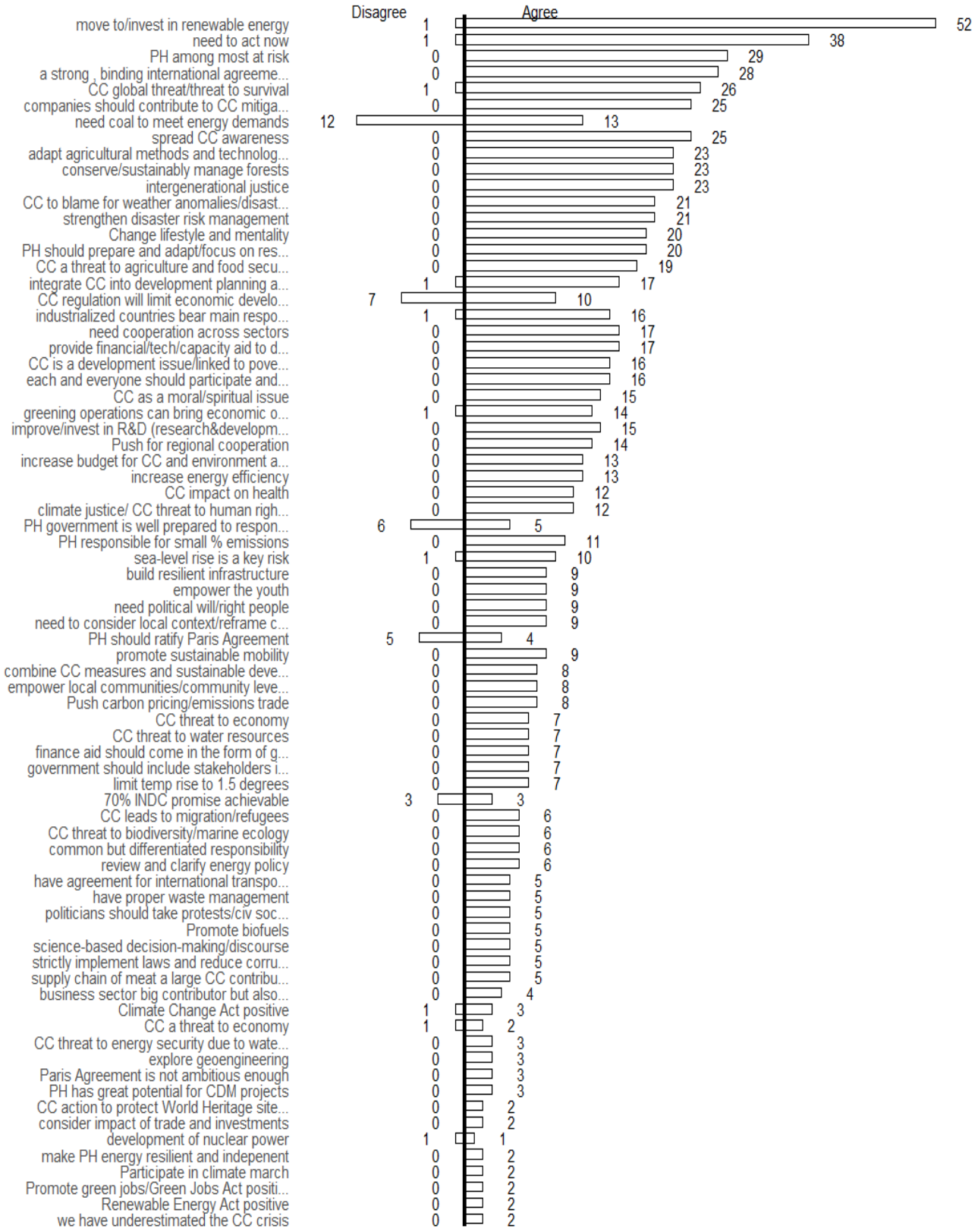

Figure 14. Bar plot showing the number of times a concept appeared, and whether actors agreed or disagreed with it.

5.2.2. Policy network – powerful actors

Figures 20, 21, & 22 show the actor congruence networks, which we may also refer to as policy networks, of both periods combined, of Period 1, and of Period 2 respectively (see **Appendix 9.4.4. & 9.4.5.** for actor congruence networks without thresholds). Ties between actors are established when they both refer to and agree or both disagree on the concepts listed in the previous sub-section and the stronger their ties, the closer the distance between nodes. **Appendix 9.4.6 & 9.4.7** show the same networks, but with thresholds of centrality and filter of actor nationality to only Filipino. See **Appendix 9.3** for complete organization names from the acronym within the figures. **Table 11** on the other hand, shows the centralization scores of the 30 most central actors per period from the discourse network analysis. As the network graphs may be complex to comprehend by eye, we refer to this table for the discussion of influential actors. High degree centrality nodes are highly visible actors in the media and in the larger context, can reflect actors with strong say across climate change issues and power to push climate change depiction and policies into a desired direction. Actors with high betweenness centrality on the other hand, are needed to enable effective collaboration among actors towards climate action as they serve as a mediators to connect clusters of actors to clusters of actors with other ideologies or activity in other issue-areas.

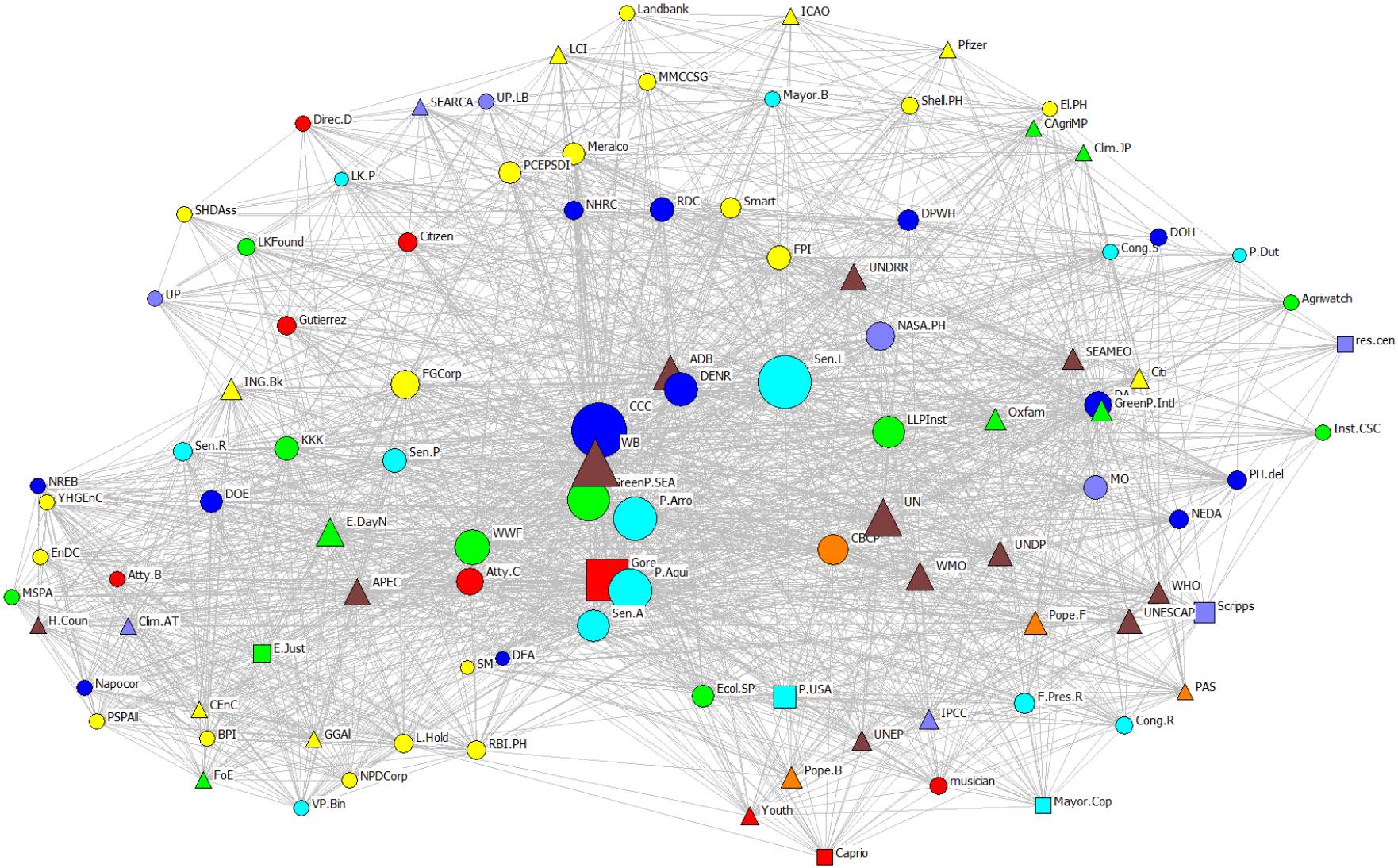

Figure 15. Actor congruence network combining both periods with threshold of centrality values above the median value Nodes are shaped by nationality: circle – Filipino, triangle – international, square – foreign. Colors represent actor categories: yellow: business, green: civil society, blue: government agencies, brown: IO/IGOs, red: other, cyan: politician, orange: religious institution, lavender: research institutions. Larger nodes reflect higher actor degree centrality and node proximity reflects stronger ties between nodes.

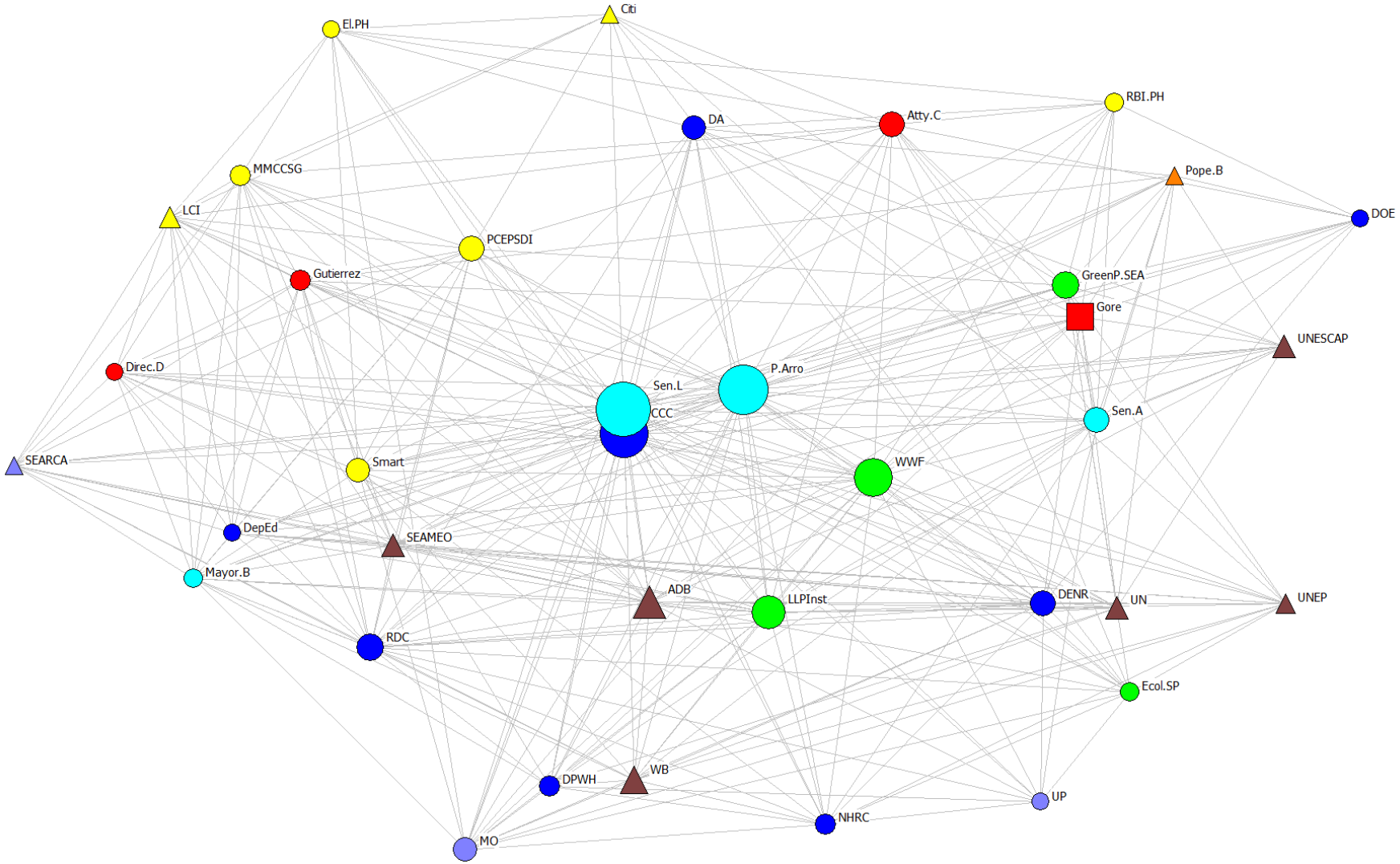

Figure 16.Actor congruence network of period 1 with threshold of centrality values above the median value. Nodes are shaped by nationality: circle – Filipino, triangle – international, square – foreign. Colors represent actor categories: yellow: business, green: civil society, blue: government agencies, brown: IO/IGOs, red: other, cyan: politician, orange: religious institution, lavender: research institutions. Larger nodes reflect higher actor degree centrality and node proximity reflects stronger ties between nodes.

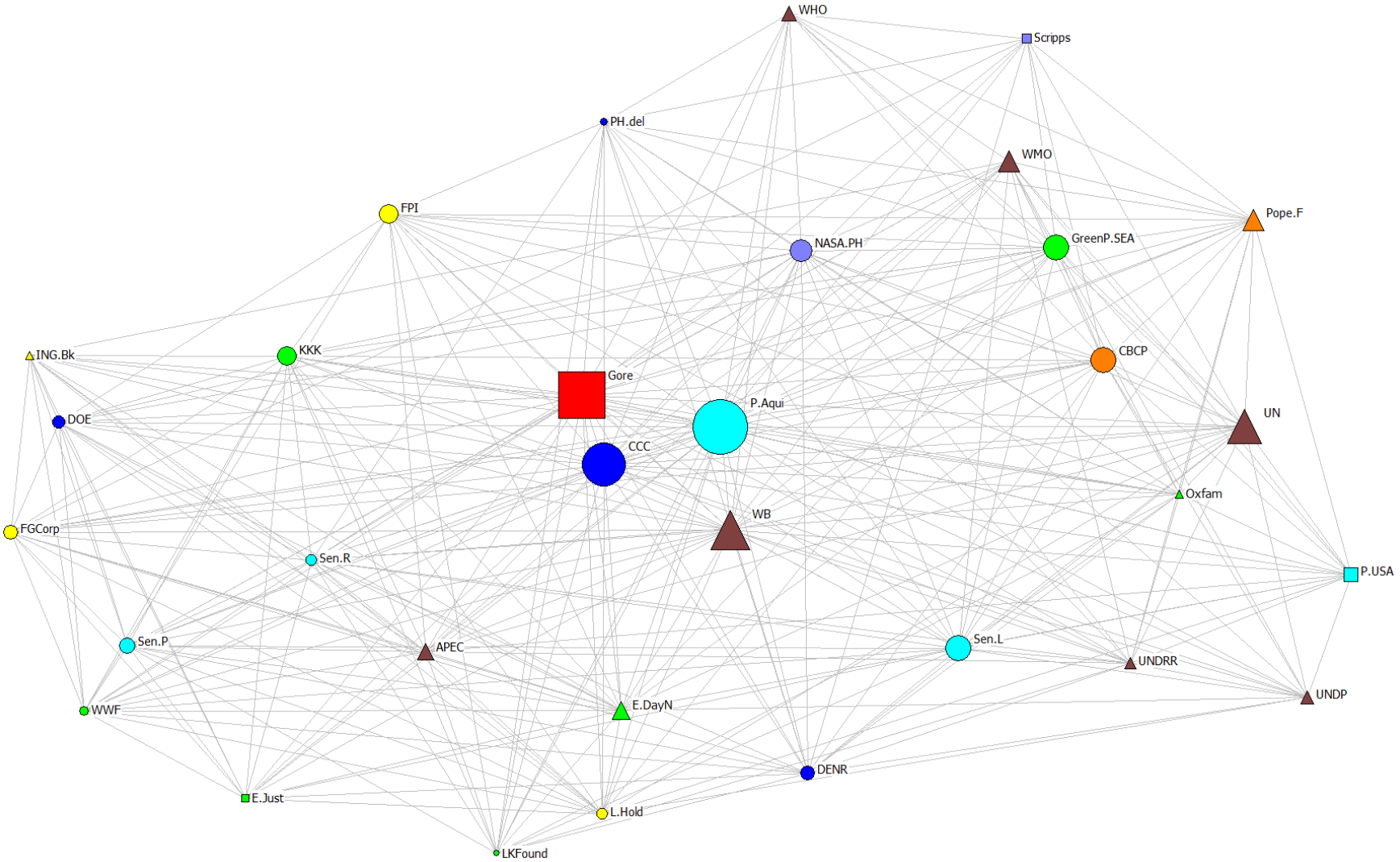

Figure 17. Actor congruence network of period 2 with threshold of centrality values above the median value. Nodes are shaped by nationality: circle – Filipino, triangle – international, square – foreign. Colors represent actor categories: yellow: business, green: civil society, blue: government agencies, brown: IO/IGOs, red: other, cyan: politician, orange: religious institution, lavender: research institutions. Larger nodes reflect higher actor degree centrality and node proximity reflects stronger ties between nodes.

*Table 11. Centrality scores (degree centrality normalized and betweenness centrality) of the 30 most central actors per period. A * signifies that the actor is in the top 30 in both periods (ordered according to degree centrality) and a ** signifies actors that appear only in the network of one period but made it to the top 30*

Period 1			**Period 2**		
Actor	**Degree_norm**	**Betweenness**	**Actor**	**Degree_norm**	**Betweenness**
Senator Legarda*	0.603	0.292	**President Aquino****	0.539	0.234
President Arroyo	0.538	0.328	**Al Gore***	0.474	0.149
CCC*	0.519	0.239	**CCC***	0.447	0.138
WWF*	0.397	0.093	**World Bank***	0.408	0.052
La Liga Policy Institute**	0.346	0.087	**UN***	0.368	0.064
ADB	0.327	0.013	**CBCP****	0.309	0.028
RDC**	0.269	0.003	**Greenpeace SEA***	0.309	0.115
World Bank*	0.269	0.026	**Senator Legarda***	0.309	0.065
Al Gore*	0.263	0.016	**NASA PH scientist****	0.283	0.104
Greenpeace SEA*	0.263	0.102	**WMO**	0.270	0.001
Atty. Cabrido**	0.250	0.000	**Pope Francis****	0.263	0.001
PCEPSDI**	0.244	0.000	**FPI****	0.250	0.114
DENR*	0.237	0.084	**KKK****	0.250	0.000
Senator Angara	0.237	0.006	**Earth Day Network**	0.243	0.000
DA	0.231	0.082	**APEC**	0.230	0.000
Manila Observatory**	0.218	0.002	**Senator Poe****	0.230	0.003
Smart Comm.**	0.218	0.000	**DENR***	0.224	0.015
SEAMO **	0.199	0.000	**WHO****	0.217	0.007
UN*	0.199	0.000	**First Gen Corp**	0.211	0.000
UN ESCAP	0.192	0.000	**President of USA**	0.211	0.001
DPWH**	0.186	0.017	**UNDP**	0.211	0.136
Actress Gutierrez**	0.173	0.000	**DOE**	0.204	0.011
Lions Clubs International	0.173	0.000	**Lopez Holdings****	0.191	0.000
Multi-media Cultural Comm. **	0.173	0.000	**Senator Roxas****	0.191	0.000
National Hydraulics Research Center**	0.173	0.032	**UNDRR**	0.191	0.000

Ecological Society of the Philippines**	0.167	0.048	**WWF***	0.178	0.000
Mayor Belmonte - Quezon City**	0.167	0.000	**Scripps Institute of Oceanography**	0.171	0.003
Robert Bosch Inc. - PH	0.160	0.000	**ING Bank****	0.164	0.000
UNEP**	0.154	0.000	**Oxfam**	0.164	0.000
Citi**	0.147	0.000	**EarthJustice****	0.158	0.000

We may see actors that appear in the top 30 within both periods as the most vital in shaping Philippine climate change governance. The presidents within the respective periods, Senator Loren Legarda, and the Climate Change Comission (CCC) are the most central actors across the periods. Commonly central actors that follow are the local chapter of the international NGO, WWF; the World Bank; former American politician and now dedicated climate change activist, Al Gore; Greenpeace Southeast Asia; the department of the Environment and Natural Resources; and the United Nations. Actors that were highly active in Period 1 but no longer appeared in Period 2 were the La Liga Policy Institute (a local NGO), the Regional Development Council (RDC; the administrative institution that coordinates and sets the direction of all economic and social development efforts in respective regions), and the Philippine Center for Environmental Protection and Sustainable Development (PCEPSDI; another NGO). New powerful actors that appeared in Period 2 were the Catholic Bishops' Conference of the Philippines, a Filipino scientist that works for NASA, Pope Francis, and the Federation of Philippine Industries. The top NGOs worldwide, WWF and Greenpeace also made its way to the top voices. Vital is also the Asian Development Bank (ADB) whose headquarters are in Manila. Only 42 actors organizations were present in both periods, out of a total of 270. Additionally, only a handful of these were central (in the top 30) in both periods (8 actors). Besides the respective administration's president and the Climate Change Commission, there seems to be no consistent political elite actors when it comes to the climate change subsystem in the Philippines.

Figure 16 shows the origin or nationality of the actors with statements in the newspaper articles. Filipino voices were predominantly present in the news. However, when looking at period 2, foreign and international organizations combined make up a larger component of actors than local organizations. This is in line with the trend found in the frames where there was also a shift towards a more international scope.

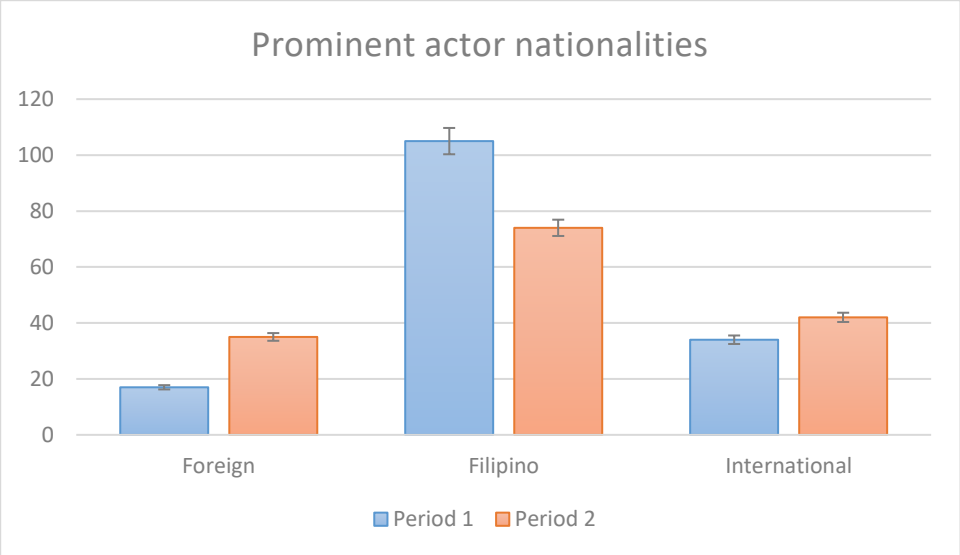

Figure 18. Nationalities of actors with climate change discourse relevant statements classified into either foreign, Filipino, or international.

When it comes to actor groups, there were also significant changes across the periods (**Figure 17**). In period 1, business organizations most frequently were cited in the articles. This is interesting because despite business sector often having less regard for the environment, the discourse remained quite positive towards climate change action. Combining government agencies and politicians together though, would make government actors the dominant voice in the media, similar to results of most studies. Interestingly, business voices decreased in the second period and civil society organizations gained matching attention. This may be in line with Hansen's (2014) statement that environmental NGOs in the recent decades have become more sophisticated in developing strategies towards gaining media attention. Additionally, and unique to the Philippines, religious organizations are much involved in the climate change discourse in the Philippines. In this category as well, there was a large increase in the second period.

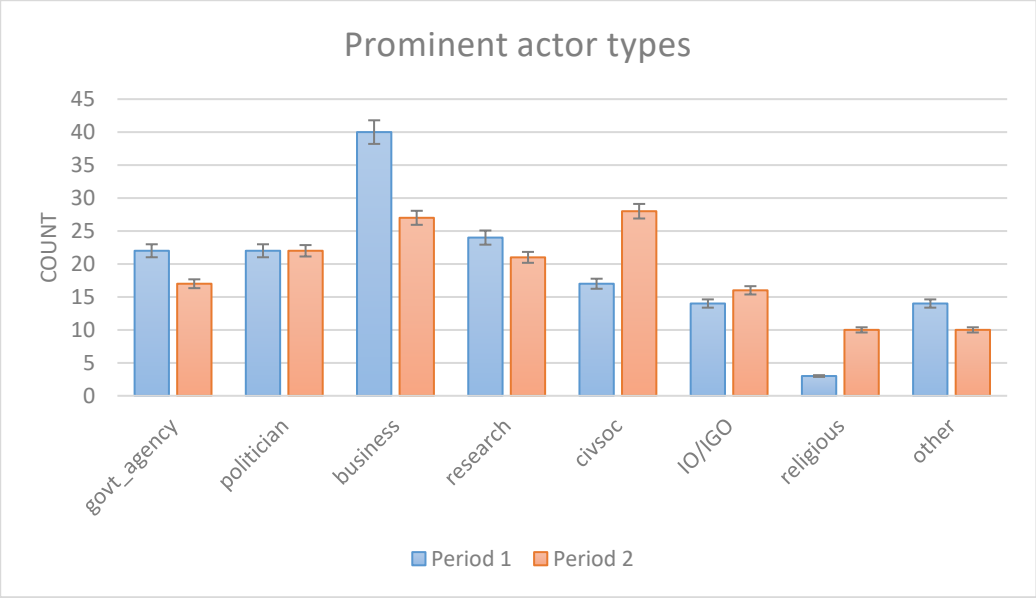

Figure 19. Actors with climate change discourse relevant statements classified into 8 actor categories

I note that a separate category has been made for religious organizations, contrary to COMPON guidelines. This actor group showed to be very prominent in the climate change discourse in the Philippines, both from local churches and the international Vatican. This confirms the strong role of religion in the Philippines and its ability to influence public policy. Contrary to COMPON as well, parties are not relevant to climate change reporting, or to issue stances in general. The Philippines rather reports on individual politicians rather than the parties they are associated in, stemming from the political culture in the Philippines. Overall, we have seen that actors involved in discourse come from plenty of organizations representing various sectoral groups. Even a variety of government departments are involved (refer to **Appendix 9.4.6 & 9.4.5** for visualization of active Filipino organizations). These results confirm **expectation 2a**.

Table 12 shows whole network measures per period, reflecting the average degree, centralization, density, components, connectedness, and fragmentation. On a general note, from the average degree, we can infer that actors are involved in multiple issues surrounding the climate change subsystem and thus form ties with various actors (on the average, an actor had an average of 16 ties with other actors). We can see from the density and connectedness that the actor congruence network in Period 2 has become more fragmented, meaning that actors possibly engaged less across other concepts and more likely to forming discourse clusters. On the other hand, the decreasing degree centralization indicates that there are less dominating actors and rather more distributed power among actors in period 2. These results go along with an increase in components which to some degree may indicate discourse clusters (although overall network is tightly connected and does not indicate clear cut coalitions). Various approaches exist for cluster analysis (blocks and cutpoints, k-cores, block

based, hierarchical clustering of geodesic distances, Newman-Girvan) which carefully need to be selected and fitted to the data in a complex process to detect valid and meaningful clusters. This is out of the bounds of my study but may be of interest for future investigation.

Table 12. Whole network structure statistics

	Period 1	**Period 2**
Avg Degree	16.808	15.629
Density	0.108	0.104
Components	6	10
Connectedness	0.937	0.836
Fragmentation	0.063	0.164
Deg. Centralization	0.504	0.448

With these measures I attempt to capture whether there has been a change in the overall discourse network structure, resulting from the focusing COP events. As matrices/networks are not of the same size, these results must be interpreted carefully and are reason why no t-test could be conducted to test for if changes in network structure between the periods are significant. Hence, it is difficult to make conclusions of whether these changes are empirical proof to support that the COP events were significant drivers in changing the overall policy network structure or confirm policy change. Nevertheless, we have found that plenty new actors have entered the network with only a handful of prominent core actors and that concepts largely remain the same and just shift in salience. The results do not exactly follow **expectation 3b.**

6. Conclusion & Recommendations

In this section, I conclude the study by providing a summary of the relevant findings, discussing limitations and providing recommendations for improvement of the study and future research, and end with vital contributions of the study and a personal outlook.

6.1. Summary

Before I summarize the relevant findings of the study, let us recall that I asked: *How has climate change coverage evolved in Philippine broadsheet media and what issues and actors dominate the policy discourse on climate change?* And I aimed to answer this three levels from

1) focusing on the media coverage in terms of issue-attention and frames; 2) using discourse network analysis to uncover powerful actors and salient concepts (in the form of issues, ideologies, policy preferences) and; 3) identifying changes in coverage and discourse networks in light of the COP15 and COP21 as focusing events.

In terms of the climate coverage, the thesis successfully shows trends in the media-attention as well as frames that media depict climate change in. I confirm **expectation 3a**, that climate change media-attention peaks coincide with the major COP events, both from resulting trends of articles published across the years as well as within the year during months that the COPs are held. Nevertheless, analysis of the article contents has shown that while the COP focusing events triggered climate change attention, content of the articles themselves did not actually mention them. Internal events such as local climate change-induced disasters and national climate change policies determined article content more. **Expectations 1b and 1c** were not met. Articles, both in 2009-2010 as well as 2015-2016, dominantly exhibited a prognostic and mitigation frame, despite the Philippine vulnerability and low GHG contributor condition. Nevertheless, the expectation that articles framed the problem in a majority domestic context was fulfilled (**expectation 1a)**. However, in 2015-2016, there was a shift to the international frame as well as increasing foreign actor voices, possibly attributed to the shifting UNFCCC regime in light of the Paris Agreement (contributing to **expectation 3a**). Analysis of the frames as well as close up discourse confirm the expectation that the Philippines does not question the validity of climate science and generally supports the need for climate action (**expectation 1d**) as well as covers a multitude of concepts that remain stable but shift in salience across periods (**expectation 2b & expectation 3b (against)**). The discourse network analysis successfully identified which issues and actors are most salient and potentially powerful in the climate change political arena in the Philippines. It only has a small but well connected (rather than polarized) group of core actors (**expectation 3b (against)**) and stands out in its diversity of overall actors and strong civil society representation (**expectation 2a**).

Considering that media frames focus on portraying climate change as a national issue as well as discussions of solutions to tackle it, plus not having skeptic frames as well as having a variety of actor voices, and despite this, not having many conflicting concepts (and differing concepts from COMPON) within discourse nor obvious coalition divisions due to a well connected network, the Philippines can be said to have a positive attitude towards climate change action, offering quite a different picture compared to the “global North”. However, whether this positive discourse leads to equivalent policy output and positive climate change governance is not determined here. This brings us to additional limitations as well as recommendations of the study in the next section.

6.2. Limitations and recommendations

The limitation of the study is mainly in its method. As the framing and discourse data is coded manually, it does involve subjectivity or simple measurement errors of human nature. Nevertheless, to minimize these, best effort was put into determining most appropriate coding categories by going back and forth within articles, conducting reliability checks, and implementing representative sampling. The discourse network analysis procedure is quite time consuming and would require a handful of human resources and training if to be conducted on the large scale. Looking into automated methods may be a promising option to increase efficiency. In terms of increasing reliability, however, automated coding may not necessarily be the answer. General framing may easily be automated (see Vu et al., 2019 for sample), but for discourse network production, it would need a highly sophisticated system to be able to identify also indirect actor statements and categorize statements into various complex and sometimes closely related concepts. Additionally, the determination of the algorithm would still expose the system to subjectivity of the coder.

We must also keep in mind that media, although a reflection of reality, also filters and paints an incomplete picture of reality; hence, has limitations as a data source. News media can be influenced by journalist's opinion, norms of balance, contact to sources, ideological stance of the editorial board, perceived appeal of newsworthiness (Tindall et al., 2018). Additionally, although reflecting policy discourse, a complete picture may not be captured as not all actors decide to use media as a platform to voice their true preferences and exert policy influence. There are possibly invisible actors influencing decision-makers directly through various means. Additionally, with the rise of social media and accessibility of new media platforms, it may make sense to expand media sources to paint a more complete picture of climate change discourse.

We must note that not every political agenda has the same impact in terms of actual policy output. Agendas become symbolic rather than substantial when the word utterance of policy actors are not pursued to become tangible (Van Aelst, 2014). Future investigation should include policy output to empirically show if the policy discourse has actually lead to matching policy output and confirm its ability to reflect policy change.

It would be interesting to code the time period 2021-2022 and determine the discourse change after once again six years (Period 1 and 2 are six years apart). The discourse might have changed significantly due to various occurrences, which qualify as focusing events, since the last period such as the Fridays for Future Movement, the burning of various large forests (e.g. Amazon, Australia, Indonesia, and USA), and the Corona pandemic. The Fridays for Future movement has not been as strong in Southeast Asia as in Europe and it would be interesting

to see whether media discourse reflects this. Internally, as already to some extent reflected in the result, the new Philippine president Rodrigo Duterte may have triggered a discourse shift. As shown by the results, despite Duterte not yet being president, he was already highly visible in the media in Period 2 and strongly voiced disagreement with the Paris Agreement and move away from coal concepts. It would be interesting to investigate to what extent this new (and internationally controversial) administration has significantly shifted climate change discourse.

6.3. Vital contributions and outlook

This study has expanded the global picture on the social construction of climate change, and provided insight into the perspective of more vulnerable countries through analysis of its media and discourse. The results indeed showcase that climate change discourse is highly dependent on socio-cultural context. Understanding how societies interpret the common problem of climate change may aid in tackling the global problem by identifying belief barriers or common ground for collaboration both in international climate change negotiations and in local policy formation (Broadbent et al., 2016). I encourage researchers to conduct research adapting my methods, especially in most vulnerable countries, to determine if discourse is comparable with countries of similar socio-cultural contexts or if other circumstances and factors make a difference. As part of the COMPON network, in the bigger picture, I hope the results will be part of a future comparative study with expanded country cases. I also hope to contribute to further developing the guidebook with the intercoder reliability check procedure as well as creation concepts categorizations and actor types applicable to a more non-western setting.

A big contribution of this thesis lies in its exploratory nature of the discourse network component. The large amount of data generated has potential to answer more questions and test hypotheses of interest to other researchers. One can dig deeper into the data on a qualitative level, understanding why certain concepts emerge in a more historical context. On the other hand, one can dig deeper on a quantitative level by conducting inferential research by running the data through network models and testing influence of variables.

This thesis also makes a vital contribution through its focus on the Philippine case as studies and information on climate change communication as well as governance are lacking in the country. Hence, the results of this study can serve as baseline information on Philippine media development and climate change policy discourse network and serve as groundwork for more extensive studies. The resulting network of actors can be used as vital information to identifying key actors and guide strategies for policy development to strengthen climate change governance.

7. References

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9. Appendices

9.1. Concept list with matching COMPON concepts and appearance by period

Policy concept from CH or COMPON	**Policy concept PH**	**Both Periods**	**Period 1 only**	**Period 2 only**
Switzerland's ambition/ measures sufficient	70% INDC promise achievable			X
Strong international agreement/institutions	a strong , binding international agreement is necessary	X		
	adapt agricultural methods and technology	X		
	build resilient infrastructure	X		
	business sector big contributor but also among most vulnerable to CC	X		
CC as threat to agriculture	CC a threat to agriculture and food security	X		
CC as threat to domestic economy	CC a threat to economy	X		
	CC action to protect World Heritage sites			X
	CC as a moral/spiritual issue	X		

CC as a moral issue	CC global threat/threat to survival	X		
CC is one of the biggest challenges of humanity	CC impact on health	X		
CC increases health risks (especially in developing countries)	CC is a development issue/linked to poverty	X		
CC is (also) a development issue	CC leads to migration/refugees	X		
CC as security/migration issue	CC regulation will limit economic development	X		
CC regulation as threat to economy	CC threat to biodiversity/marine ecology	X		
	CC threat to economy			X
Drastic reduction in energy consumption needed	CC threat to energy security due to water shortage	X		
	CC threat to water resources	X		
	CC to blame for weather anomalies/disasters	X		
Changing individual lifestyle feasible	Change lifestyle and mentality	X		
	Climate Change Act positive	X		
	climate justice/ CC threat to human rights	X		
	combine CC measures and sustainable development strategies	X		
Common but Differentiated Responsibility	common but differentiated responsibility	X		
Companies important for climate protection	companies should contribute to CC mitigation/adaptation	X		
Stop deforestation	conserve/sustainably manage forests	X		
	consider impact of trade and investments		X	
	development of nuclear power		X	
Individual responsibility	each and everyone should participate and contribute	X		
Municipals/cities important for CC	empower local communities/community level is key	X		
	empower the youth	X		
	explore geoengineering	X		
	finance aid should come in the form of grants, not loans	X		
	government should include stakeholders in planning	X		
CC as business opportunity	greening operations can bring economic opportunities	X		
	have agreement for international transport	X		
	have proper waste management		X	
Promotion of technical solutions	improve/invest in R&D (research&development)	X		

	increase budget for CC and environment action	X		
Promotion of energy efficiency	increase energy efficiency	X		
Historical responsibility of industrialized countries to act	industrialized countries bear main responsibility	X		
	integrate CC into development planning and decision-making	X		
Intergenerational justice	intergenerational justice	X		
	limit temp rise to 1.5 degrees	X		
	make PH energy resilient and independent	X		
Promotion of alternative energies	move to/invest in renewable energy	X		
Promotion of fossil energy	need coal to meet energy demands	X		
	need cooperation across sectors	X		
CC action politically feasible	need political will/right people	X		
Urge for immediate action (no wait-and-see strategy)	need to act now	X		
	need to consider local context/reframe climate change	X		
2 degrees	Paris Agreement is not ambitious enough			X
	Participate in climate march			X
Switzerland is particularly vulnerable to CC	PH among most at risk	X		
	PH government is well prepared to respond to CC disasters	X		
Switzerland responsible for small % emissions	PH has great potential for CDM projects		X	
	PH responsible for small % emissions	X		
Swiss ratification of PA	PH should prepare and adapt/focus on resiliency	X		
Activism is a legitimate way to tackle climate change	PH should ratify Paris Agreement			X
Promotion of biofuels as alternative energy	politicians should take protests/civ soc action seriously	X		
	Promote biofuels	X		
	Promote green jobs/Green Jobs Act positive	X		
Financial transfer to developing countries	promote sustainable mobility	X		
	provide financial/tech/capacity aid to developing countries	X		
	Push carbon pricing/emissions trade	X		
	Push for regional cooperation	X		
	Renewable Energy Act positive		X	
	review and clarify energy policy			X
	science-based decision-making/discourse	X		

	sea-level rise is a key risk	X		
Lack of CC information/knowledge	spread CC awareness	X		
	strengthen disaster risk management	X		
	strictly implement laws and reduce corruption		X	
	supply chain of meat a large CC contributor			X
	we have underestimated the CC crisis		X	

9.2. Consistently appearing events, policies, and concepts in the newspaper articles (mentioned more than once)

International climate change conferences	**appearances**
COP21-Paris	97
COP15-Copenhagen	72
COP13-Bali	4
Bonn meeting	3
COP16-Mexico	2
National policies	
Climate Change Act	29
Renewable Energy Act	18
Solid Waste Management Act	15
Clean Air Act	13
National Framework Strategy and Program on Climate Change	7
Clean Water Act	6
Manila Declaration	6
Biofuels Act	5
Disaster Risk Reduction Act	5
People's Survival Fund	4
Philippine Energy Efficiency Project	4
RA9512 - Environmental Awareness and Education Law	3
National Climate Change Action Plan	3
Agriculture and Fisheries Modernisation Act	2
National climate induced-disaster events	
Typhoon Ondoy/Ketsana	58
Typhoon Pepeng/Parma	37
Typhoon Yolanda/Haiyan	27
El Nino event	23
Typhoon Lando/Koppu	4
La Nina event	3
Typhoon Pablo/Bopha	2
Typhoon Nona	2

Typhoon Ramil	2
Typhoon Santi	2
Other often appeared items	
Climate Vulnerable Forum	14
An Inconvenient Truth	9
INDC	8
UNFCCC	8
Laudato Si	7
Earth Day	6
Kyoto Protocol	6
Tck Tck Tck Campaign	3
National Climate Change Adaptation Conference	3
REDD+	2
Climate Change Leadership Conference Series	2
The Age of Stupid	2
10 Million Movement Campaign	2
Our Choice: A Plan to Solve the Climate Crisis	2

9.3. List of actor organizations, acronyms, and actor type category

Acronym	**Organization name**	**Actor type**	**Actor category**	**Nationality**	**Both periods**	**Period 1 only**	**Period 2 only**
Maersk	A.P. Moller-Maersk	company	business	int'l			X
ACInc	Absolut Chemicals, Inc.	company	business	Fil.		X	
AccraLaw	AccraLaw	other - lawyer	other	Fil.			X
Caprio	Actor di Caprio	artist	other	foreign			X
Diaz	Actor Diaz	artist	other	Fil.		X	
Gutierrez	Actress Gutierrez	artist	other	Fil.		X	
ADB	ADB	IO	IO/IGO	int'l	X		
Agriwatch	Agriwatch	association	civsoc	Fil.	X		
Gore	Al Gore	environmentalist	other	foreign	X		
Tiamzon	Alvin Tiamzon	artist	other	Fil.		X	
A.Agri	Alyansa Agrikultura	association	civsoc	Fil.			X
AP.P	Anakpawis Party	politician	politician	Fil.		X	
APC	APC - PH	company	business	Fil.		X	
APEC	APEC	regional countries association	IO/IGO	int'l	X		
Arb.C	Archbishop of Canterburry	religious org	religious	foreign			X

AMAP	Arctic Monitoring and Assessment Programme	research center	research	foreign			X
APMDD	Asian Peoples Movement on Debt and Development	association	civsoc	int'l			X
ADMU	Ateneo de Manila University	academe	research	Fil.		X	
Atty.B	Atty. Barcenas	lawyer	other	Fil.		X	
Atty.C	Atty. Cabrido	lawyer	other	Fil.		X	
Atty.R	Atty. Ramos	lawyer	other	Fil.		X	
AC	Automatic Centre	company	business	Fil.		X	
Bayan	Bayan	association	civsoc	Fil.			X
Gates	Bill Gates	other	other	foreign			X
BC	Boston Common	company	business	foreign			X
BPI	BPI	bank	business	Fil.		X	
BFPN	Break Free Pacific Northwest	association	civsoc	foreign			X
B.Govt	British Govt Scientists	research center	research	foreign		X	
Bro.Taize	Brother Taize	religious org	religious	int'l			X
BTCFound	Buddhist Tzu Chi Foundation	NGO	civsoc	int'l			X
F.Cong.B	Bukidnon congressman (former)	politician	politician	Fil.		X	
BAR	Bureau of Agricultural Research	research center	research	Fil.		X	
BHRRC	Business and Human Rights Resource Center	research center	research	int'l			X
CAutoMP	Chamber of Automotive Manufacturers of the PH	association	business	Fil.		X	
CaDP	Carbon Disclosure Project	association	civsoc	int'l		X	
CaFS	Carbon Finance Solutions	envi/soc business	business	Fil.		X	
CBCP	Catholic Bishops' Conference of the Philippines	religious org	religious	Fil.			X
CCC	CCC	gov't agency	govt_agency	Fil.	X		
CEnDC	Cebu Energy Development Corporation	energy corp	business	Fil.		X	
Ceb.H	Cebu Holdings	company	business	Fil.		X	

C.Perm	Cebu Permaculture Initiatives	envi/soc business	business	Fil.		X	
Delevigne	Celebrity Delevigne	artist	other	foreign			X
CEMEX	CEMEX	company	business	int'l			X
CEED	CEnter for Energy. Ecology, and Devt.	research center	research	Fil.			X
C.Aid	Christian Aid	NGO	civsoc	foreign			X
Citi	Citi	bank	business	int'l		X	
Citizen	Citizen	other	other	Fil.	X		
Clim.AT	Climate Action Tracker	research center	research	int'l			X
Clim.C	Climate Central	research center	research	int'l			X
Clim.JP	Climate Justice Program	NGO	civsoc	int'l			X
CVF	Climate Vulnerable Forum	regional countries association	IO/IGO	int'l			X
CAgriMP	Coalition for Agriculture Modernization in the Philippines	association	civsoc	int'l			X
COCAFM	COCAFM	government	govt_agency	Fil.		X	
CHR	Commission on Human Rights	government	govt_agency	Fil.			X
Con.H	Conal Holdings	energy corp	business	Fil.		X	
Cong.B	Congressman Batocabe - Bicol	politician	politician	Fil.			X
Cong.V	Congressman de Venecia - Pangasinan	politician	politician	Fil.		X	
Cong.G	Congressman Gatchalian - Valenzuela	politician	politician	Fil.			X
Cong.R	Congressman Romualdez - Leyte	politician	politician	Fil.			X
Cong.S	Congressman Salceda - Albay	politician	politician	Fil.			X
Hedegaard	Connie Hedegaard	politician	govt_agency	foreign		X	
CEnC	Constellation Energy Corp.	energy corp	business	int'l		X	
Counc.D	Councilor - Davao	politician	politician	Fil.	X		
Counc.QC	Councilor - QC	politician	politician	Fil.		X	
DA	DA	gov't agency	govt_agency	Fil.	X		
Lama	Dalai Lama	religious org	religious	foreign			X
DATEM	DATEM Water, Inc.	envi/soc business	business	Fil.			X

DENR	DENR	gov't agency	govt_agency	Fil.	X		
DepEd	DepEd	gov't agency	govt_agency	Fil.		X	
DFA	DFA	gov't agency	govt_agency	Fil.	X		
Dioc.M	Diocese of Marbel	religious org	religious	Fil.		X	
Direc.D	Director Diokno	other - artist	other	Fil.		X	
DND	DND	gov't agency	govt_agency	Fil.		X	
DOE	DOE	gov't agency	govt_agency	Fil.	X		
DOF	DOF	gov't agency	govt_agency	Fil.		X	
DOH	DOH	gov't agency	govt_agency	Fil.		X	
DOLE	DOLE	gov't agency	govt_agency	Fil.		X	
Trump	Donald Trump	politician	politician	foreign			X
DOT	DOT	gov't agency	govt_agency	Fil.	X	X	
DPWH	DPWH	gov't agency	govt_agency	Fil.		X	
DB.PH	Dunham Bush - PH	company	business	Fil.		X	
DICDC	Durian Industry Council of Davao City	association	business	Fil.			X
E.DayN	Earth Day Network	association	civsoc	int'l	X		
E.HourPH	Earth Hour Philippines	association	civsoc	Fil.			X
E.Just	EarthJustice	NPO	civsoc	foreign			X
EO.Church	Eastern Orthodox Church	religious org	religious	foreign			X
Ecol.JIM	Ecological Justice Interfaith Movement	religious org	religious	Fil.			X
Ecol.SP	Ecological Society of the Philippines	association	civsoc	Fil.		X	
EcoWC	Eco-waste Coalition	association	civsoc	Fil.		X	
EnDC	EDC	energy corp	business	Fil.			X
El.PH	Electrolux - PH	company	business	Fil.		X	
Ep.PH	Epson - PH	company	business	Fil.		X	
E.Univ	Essex University	academe	research	foreign		X	
EU.P	European Parliament	regional countries association	IO/IGO	int'l	X		
FAO.PH	FAO - Philippines	IO	IO/IGO	Fil.			X
FPI	Federation of Philippine Industries	association	business	Fil.			X

FGCorp	First Gen Corp	company	business	Fil.	X		
F.Pres.R	Former President Ramos	politician	politician	Fil.	X		
F.Govt	French Govt Institution	government	govt_agency	foreign			X
FoE	Friends of the Earth	NGO	civsoc	int'l		X	
G77	G77	regional countries association	IO/IGO	int'l		X	
GC	Gaisano Capital	company	business	Fil.			X
GDI	German Development Institute	research center	research	foreign		X	
GIZ	GIZ - PH	IO	IO/IGO	Fil.			X
G.Univ	Glasgow University	academe	research	foreign			X
GGAll	Global Geothermal Alliance	association	business	int'l			X
Gov.A	Governor of Albay	politician	politician	Fil.		X	
GreenP.Intl	Greenpeace Intl.	NGO	civsoc	int'l	X		
GreenP.SEA	Greenpeace SEA	NGO	civsoc	Fil.	X		
H.Coun	Hapua Council	regional countries association	IO/IGO	int'l		X	
Harvard	Harvard University	academe	research	foreign		X	
HP	Hewlett Packard	company	business	int'l		X	
Holcim	Holcim	company	business	int'l		X	
Honda	Honda Cars - PH	company	business	Fil.			X
HComCC	House Committee on Climate Change	government	govt_agency	Fil.			X
HSBC	HSBC	company	business	int'l		X	
ICAO	ICAO	association	business	int'l		X	
IIER	Ifo Institute for Economic Research	academe	research	foreign			X
HIS.M	IHS Markit	envi/soc business	business	int'l			X
ING.Bk	ING Bank	bank	business	int'l			X
Inst.CSC	Institute for Climate and Sustainable Cities	NGO	civsoc	Fil.	X		
IDI	Interface Development Intervention	NGO	civsoc	Fil.			X
IATAss	International Air Transport Association	association	business	int'l	X		
IEA	International Energy Agency	IO	IO/IGO	int'l			X

IFC	International Finance Corporation	IO	IO/IGO	int'l			X
IASA	International Institute for Applied Systems Analysis	research center	research	int'l			X
IIRR	International Institute for Rural Reconstruction	NPO	civsoc	int'l			X
IMAss	International Maritime Association	association	business	int'l			X
IPCC	IPCC	research center	research	int'l	X		
KKK	Kaibigan ng Kaunlaran at Kalikasan	NGO	civsoc	Fil.			X
K.PNE	Kalikasan PNE	NGO	civsoc	Fil.	X		
K.Inc	Kasama Inc.	other - youth	other	Fil.		X	
LLPInst	La Liga Policy Institute	NGO	civsoc	Fil.		X	
LK.P	Lakas-Kampi party	politician	politician	Fil.		X	
Landbank	Landbank	bank	business	Fil.		X	
LKFound	Lingkod Kapamilya Foundation	NGO	civsoc	Fil.			X
LCI	Lions Clubs International	association	business	int'l		X	
LSE	London School of Economics	academe	research	foreign		X	
L.Hold	Lopez Holdings	company	business	Fil.			X
MPC.CC	Maasim Peoples Coalition on CC	association	civsoc	Fil.		X	
MSPA	Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura	association	civsoc	Fil.			X
Arb.Tagle	Manila Archbishop Tagle	religious org	religious	Fil.			X
MO	Manila Observatory	research center	research	Fil.		X	
Robinson	Mary Robinson	politician	other	foreign			X
Mayor.B	Mayor Belmonte - Quezon City	politician	politician	Fil.		X	
Mayor.L	Mayor Lobregat - Zamboanga	politician	politician	Fil.		X	
Mayor.Cop	Mayor of Copenhagen	politician	politician	foreign			X
Mayor.Rio	Mayor of Rio de Janeiro	politician	politician	foreign			X

Mayor.Y	Mayor Ynares - Antipolo	politician	politician	Fil.			X
Meralco	Meralco	energy corp	business	Fil.	X		
Model.Z	Model Zubiri	artist	other	Fil.		X	
MMCCSG	Multi-media Cultural Communications Summit group	association	business	Fil.		X	
musician	Musician	artist	other	Fil.		X	
res.cen	NA	research center	research	foreign		X	
Sano	Naderev Sano	environmentalist	other	Fil.			X
Napocor	Napocor	government corp.	govt_agency	Fil.			X
NASA.PH	NASA PH scientist	research center	research	Fil.			X
NGCorp	National Grid Corp.	energy corp	business	Fil.			X
NHRC	National Hydraulics Research Center	gov't agency	govt_agency	Fil.		X	
NREB	National Renewable Energy Board	government	govt_agency	Fil.		X	
NRC	National Research Council	research center	research	Fil.		X	
NYC	National Youth Commission	youth	other	Fil.			X
Nat.G	Nature Geoscience study	research center	research	foreign			X
NLEInc	Natures Legacy Eximport Inc.	envi/soc business	business	Fil.			X
NEDA	NEDA	gov't agency	govt_agency	Fil.	X		
NOCoal	NO to Coal	association	civsoc	Fil.			X
NOAA	NOAA	research center	research	foreign			X
NPDCorp	Northwind Power Dev. Corp.	energy corp	business	Fil.		X	
Oxfam	Oxfam	NGO	civsoc	int'l	X		
Oxford	Oxford University	academe	research	foreign	X		
PP.PH	Pacific Paints PH	company	business	Fil.		X	
PRDC	Panay Rural Development Center	envi/soc business	business	Fil.		X	
Parafund	Parfund	association	civsoc	Fil.		X	
PCEPSDI	PCEPSDI	envi/soc business	business	Fil.		X	
PEFound	Peace and Equity Foundation	NPO	civsoc	Fil.			X
Pfizer	Pfizer	company	business	int'l		X	

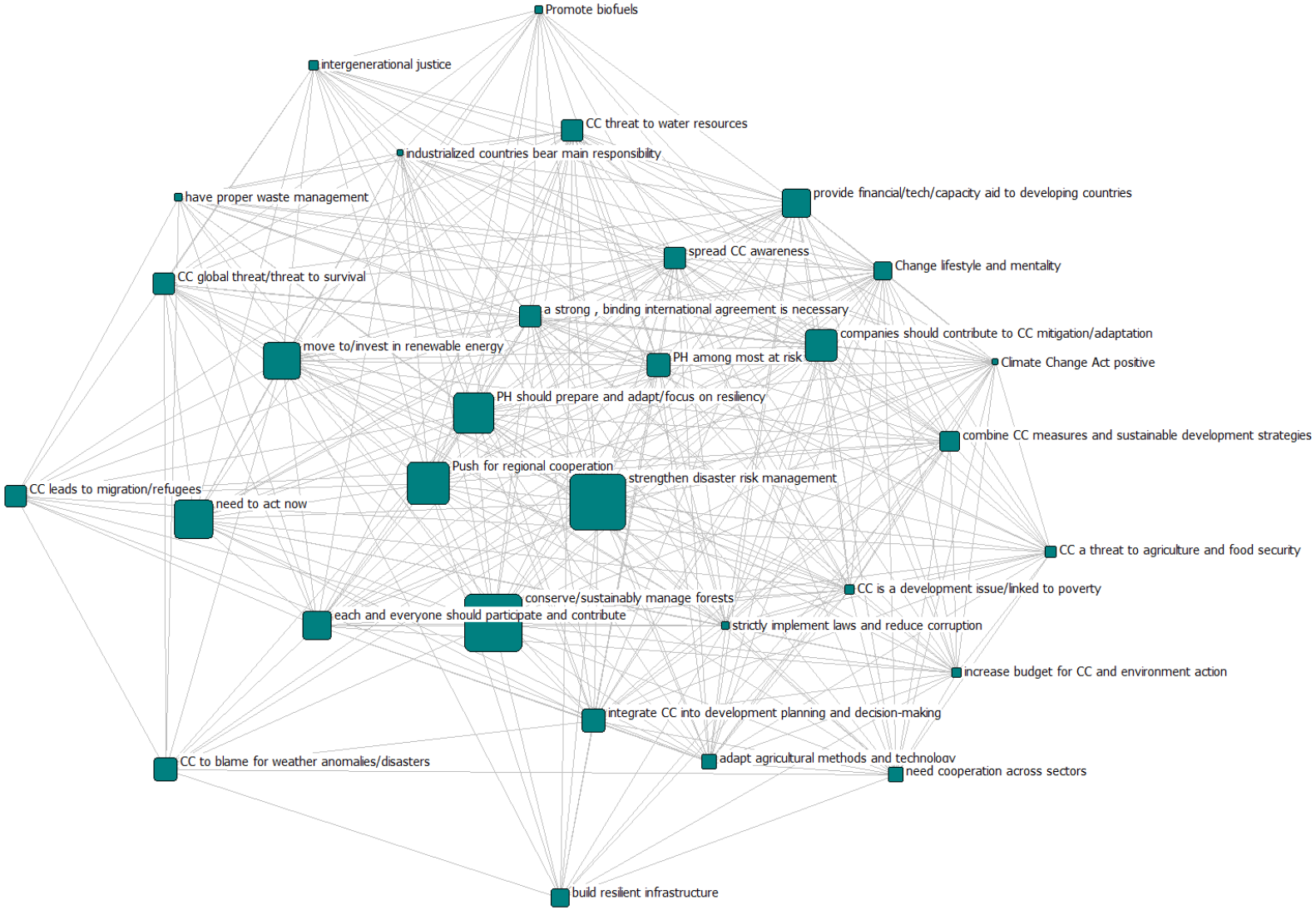
PH.Amb	PH Ambassador	government	govt_agency	Fil.			X
Navy	PH Navy	military	other	Fil.		X	
PCCI	Philippine Chamber of Commerce and Industry	gov't agency	govt_agency	Fil.			X
PClimWA	Philippine Climate Watch Alliance	association	civsoc	Fil.		X	
PH.del	Philippine COP delegation	government	govt_agency	Fil.	X		
PIA	Philippine Information Agency	gov't agency	govt_agency	Fil.		X	
PMPInc	Philippine Misereor Partnership, Inc.	association	business	Fil.			X
PSPAll	Philippine Solar Power Alliance	association	business	Fil.			X
PUVInc	Philippine Utility Vehicles Inc.	association	business	Fil.		X	
Philrice	Philrice	government	govt_agency	Fil.		X	
Shell.PH	Pilipinas Shell	energy corp	business	Fil.	X		
PAS	Pontificial Academy of Sciences	religious org	religious	int'l			X
Pope.B	Pope Benedict	religious org	religious	int'l		X	
Pope.F	Pope Francis	religious org	religious	int'l			X
Potsdam	Potsdam Institute	academe	research	foreign	X		
Teodoro	Pres. cand. Gilbert Teodoro	politician	politician	Fil.		X	
P.Aqui	President Aquino	president	politician	Fil.	X		
P.Arro	President Arroyo	president	politician	Fil.		X	
P.Dut	President Duterte	president	politician	Fil.			X
P.Ch	President of China	politician	politician	foreign		X	
P.Fr	President of France	politician	politician	foreign			X
P.USA	President of USA	politician	politician	foreign	X		
PCO	Presidential Communications Operations	government	govt_agency	Fil.			X
PM.Ind	Prime Minister of India	politician	politician	foreign			X
P.Mon	Prince of Monaco	government	govt_agency	foreign			X
Q.Jor	Queen of Jordan	government	govt_agency	foreign			X
RDC	Regional Development Council	government	govt_agency	Fil.		X	
RDCC	Regional Disaster Coordinating Council	government	govt_agency	Fil.		X	

rel.lead	Religious leaders	religious org	religious	int'l			X
RBI.PH	Robert Bosch Inc. - PH	company	business	Fil.		X	
RL	Robinson Land	company	business	Fil.			X
SCBioEn	San Carlos Bioenergy Inc.	energy corp	business	Fil.		X	
Scripps	Scripps Institute of Oceanography	academe	research	foreign	X		
SEAMEO	SEA Ministers of Education Organization	regional countries association	IO/IGO	int'l		X	
SEARCA	SEARCA	research center	research	int'l		X	
Alunan	Sen. cand. Alunan	politician	politician	Fil.			X
Kapunan	Sen. cand. Kapunan	politician	politician	Fil.			X
Tolent	Sen. cand. Tolentino	politician	politician	Fil.			X
Sen.A	Senator Angara	politician	politician	Fil.	X		
Sen.E	Senator Enrile	politician	politician	Fil.		X	
Sen.L	Senator Legarda	politician	politician	Fil.	X		
Sen.C	Senator P. Cayetano	politician	politician	Fil.		X	
Sen.P	Senator Poe	politician	politician	Fil.			X
Sen.R	Senator Roxas	politician	politician	Fil.			X
Sen.V	Senator Villar	politician	politician	Fil.		X	
Siliman	Siliman University	academe	research	Fil.		X	
SM	SM	company	business	Fil.		X	
Smart	Smart Communications Inc.	company	business	Fil.		X	
SFF	Society of Fil. Foresters Inc.	association	civsoc	Fil.			X
Stanford	Stanford University	academe	research	foreign		X	
SHDAss	Subdivision and Housing and Developers Association	association	business	Fil.			X
Suzuki	Suzuki Motor - PH	company	business	Fil.		X	
TouchO	Touch of Organic	envi/soc business	business	Fil.		X	
TLFound	Trees for Life Foundation - PH	NPO	civsoc	Fil.		X	
UN	UN	IO	IO/IGO	int'l	X		
UNDP	UNDP	IO	IO/IGO	int'l	X		
UNDRR	UNDRR	IO	IO/IGO	int'l	X		
UNEP	UNEP	IO	IO/IGO	int'l		X	
UNESCAP	UNESCAP	IO	IO/IGO	int'l	X		
UNESCO	UNESCO	IO	IO/IGO	int'l			X
UNFCCC	UNFCCC	IO	IO/IGO	int'l		X	

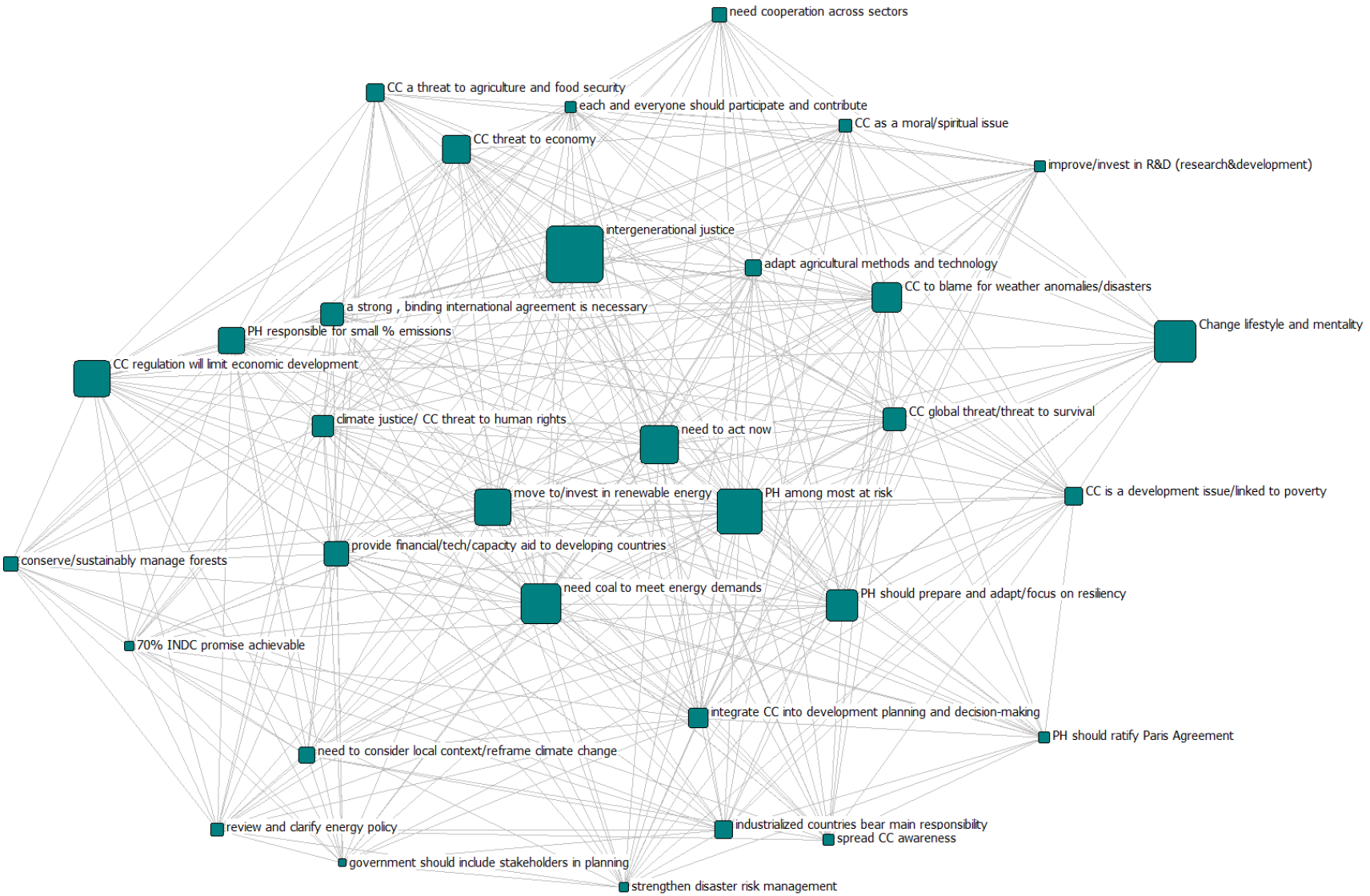
Unilev	Unilever - PH	company	business	Fil.		X	
UCS	Union of Concerned Scientists	association	civsoc	foreign			X
UAP	UnIted Architects of the Philippines	association	business	Fil.			X
Univ.C	University of California	academe	research	foreign			X
Univ.L	University of Leeds	academe	research	foreign			X
Univ.NSW	University of NSW	academe	research	foreign		X	
Univ.S	University of Seattle	academe	research	foreign		X	
USM	University of Southern Mindanao	academe	research	Fil.		X	
UP	University of the Philippines	academe	research	Fil.		X	
UP.LB	UP-LB	academe	research	Fil.		X	
UPS	UPS	company	business	int'l		X	
US.NAS	US-NAS	research center	research	foreign			X
US.NCAR	US-NCAR	research center	research	foreign			X
VM	Verisk Maplecroft	company	business	int'l			X
VP.Bin	VP Binay	politician	politician	Fil.		X	
VP.dC	VP de Castro	politician	politician	Fil.		X	
WSBCh	Washington Street Baptist Church	religious org	religious	foreign		X	
WMSU	Western Mindanao State University	academe	research	Fil.		X	
WHO	WHO	IO	IO/IGO	int'l			X
WMO	WMO	IO	IO/IGO	int'l	X		
WB	World Bank	IO	IO/IGO	int'l	X		
WCAss	World Coal Association	association	business	int'l			X
W.Fish	WorldFish Center	research center	research	int'l		X	
W.Watch	WorldWatch Insitute	research center	research	int'l			X
WWF	WWF	NGO	civsoc	Fil.	X		
Yale	Yale	academe	research	foreign			X
YHGEnC	YH Green Energy Corporation	energy corp	business	Fil.			X
Youth	Youth leader	youth	other	int'l	X		

9.4. Additional network visualization graphs

9.4.1. Concept network of Period 1 (2015-2016) with median centrality as cut-off

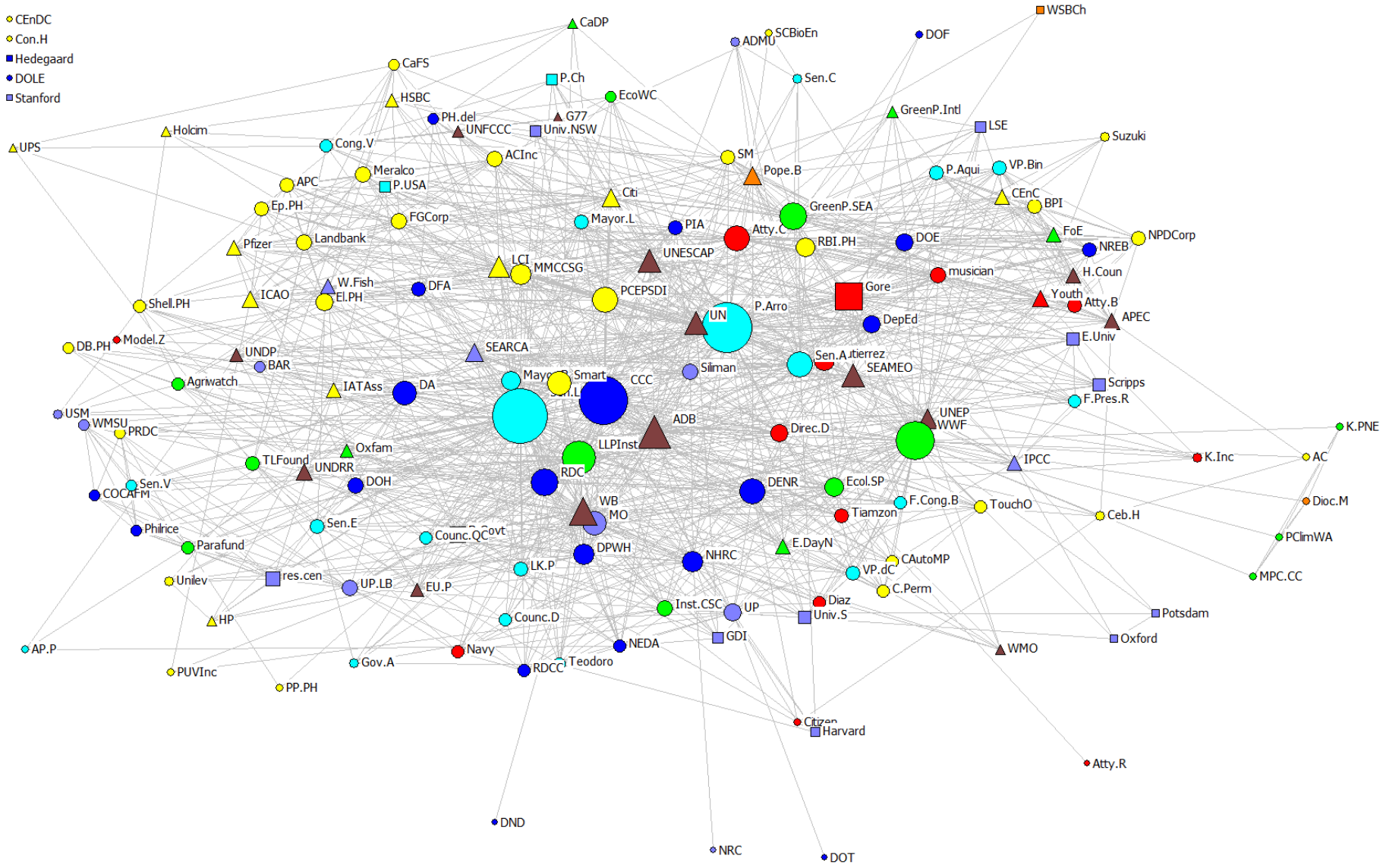


9.4.2. Concept network of Period 2 (2009-2010) with median centrality as cut-off

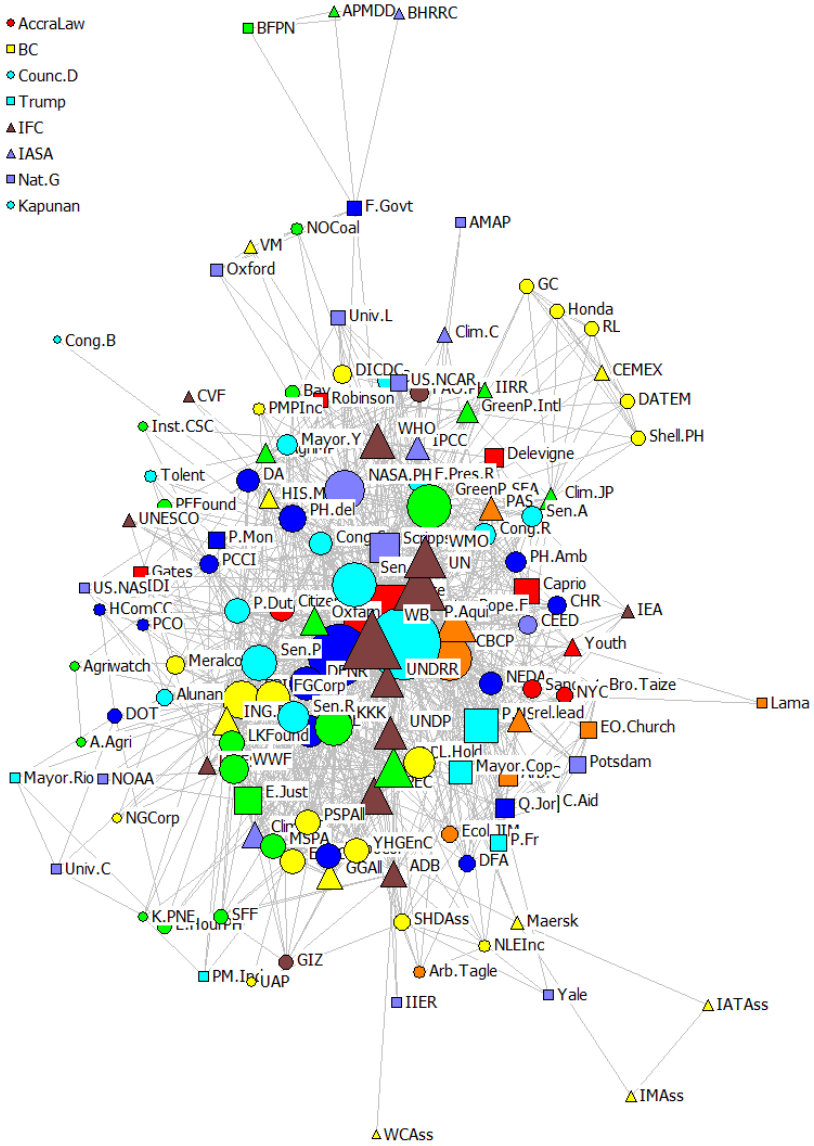


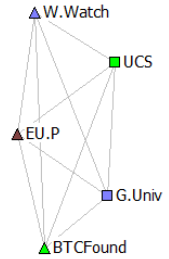
9.4.3. Overall concept network (no filters)

9.4.4. Actor congruence network of Period 1 (2009-2010) without filter

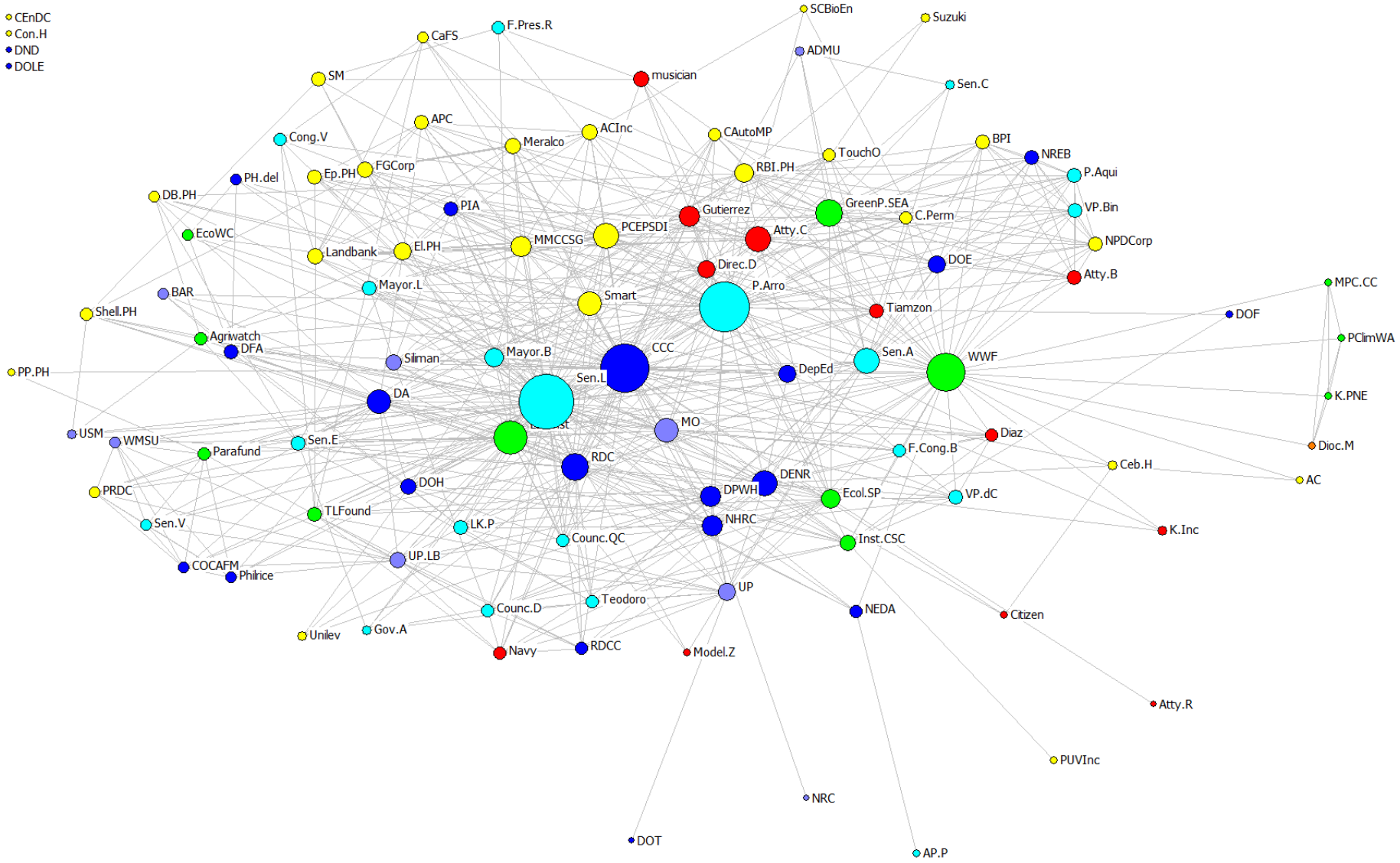


9.4.5. Actor congruence network of Period 2 (2015-2016) without filter

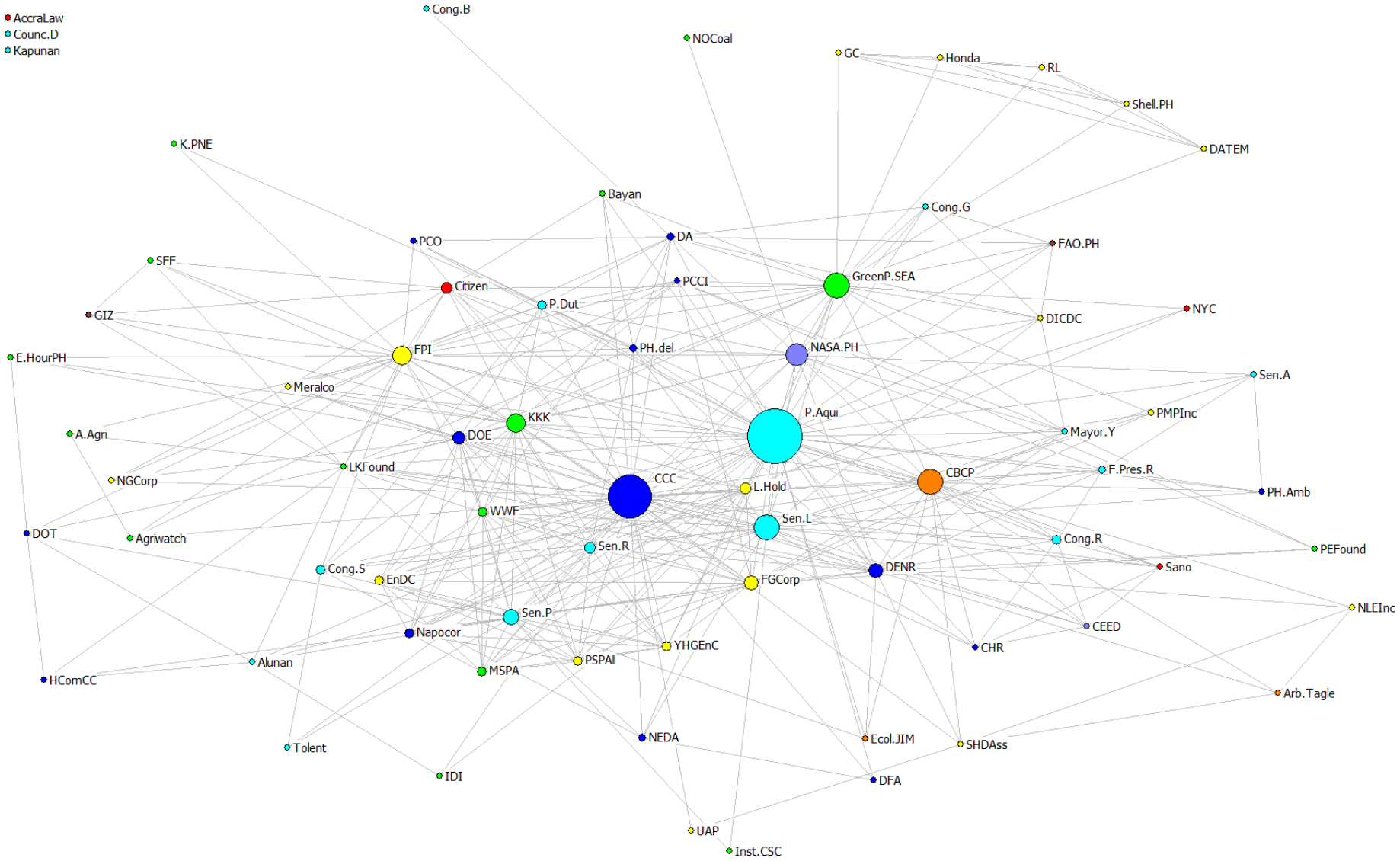




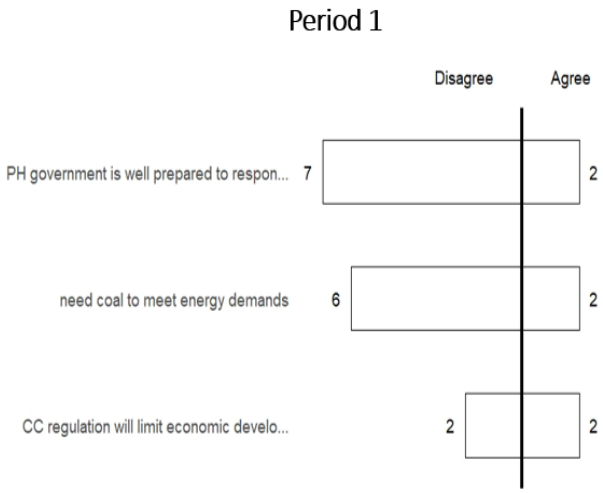
9.4.6. Network of Filipino actors of Period 1 (2009-2010)

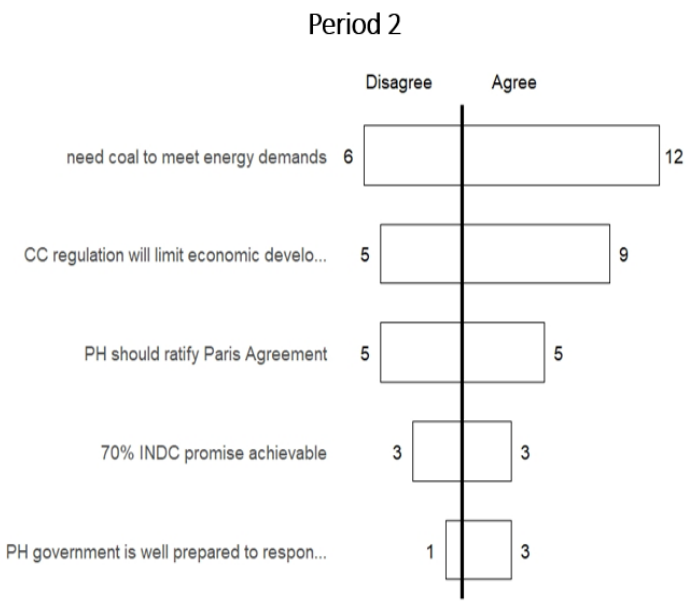


9.4.7. Network of Filipino actors of Period 2 (2015-2016)



9.5. Filtered out contested issues in Period 1 and Period 2 with counts of agreements/disagreements





9.6. List of COMPON concepts from guidebook with indications of whether they could be applied to the Philippine context or not

COMPON concepts	**Same**	**partly covered**	**not applicable**
International GCC agreement needs to include all major emitters		X	
Each country should be able to decide own reduction target [NEW]			X
Ways of consumption should be changed to mitigate climate change	X		
Climate change is currently occurring		X	
Human activities are an important driver of current Climate change			X
Climate change science is still too uncertain to be a basis for policy			X
Climate change as risk		X	
My country should take a leading international role in GHG reduction			X
A strong, binding international agreement is necessary	X		
Voluntary action by businesses	X		
Expanding nuclear energy	X		
Sustaining nuclear energy [NEW]			X

CCS technology	X		
Clean Development Mechanism	X		
GHG reduction creates jobs and opportunities for economic growth		X	
Expansion of renewable energies [NEW]	X		
Coal phase-out [NEW]		X	
The transition to renewable energy supply is too costly		X	
Increasing energy efficiency	X		
Tax on CO2			X
Energy supply can be secured exclusively by renewable energies		X	
Emission trading	X		
Climate change mitigation should not endanger economic competitiveness		X	
Reforestation and avoided deforestation strategies	X		
Low-emission cars (e.g. electric or hybrid) [NEW]		X	
Developed countries should bear the main responsibility in Greenhouse Gas reductions	X		
Intergenerational justice: The older generations bear the responsibility for climate change	X		
Activism is a legitimate way to tackle climate change	X		

9.7. Statement of Independence

Declaration of consent

on the basis of Article 30 of the RSL Phil.-nat. 18

Name/First Name: Maria Rachelle Gallmann

Registration Number: 18-106-203

Study program: Master in Climate Sciences, with special qualifications in social sciences

Bachelor ☐ Master ✔ Dissertation ☐

Title of the thesis: Depicting climate change in a vulnerable country: Agenda-setting and a discourse network approach on Philippine broadsheet media

Supervisor: Prof. Dr. Karin Ingold

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