UNDERSTANDING CLIMATE CHANGE DISCOURSE IN CHINA

By

JUAN DU

Master of Law in Sociology of Ethnicity
Minzu University of China
Beijing
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Dissertation Approved:

Tamara Mix

Dissertation Adviser

Riley Dunlap

Michael Long

Chung-En Liu

Jacqueline Vadjunec

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Name: JUAN DU

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Abstract: China plays a significant role in the international climate regime. Past studies focus on analysis of climate change policies and examine micro-level climate change concerns quantitatively. Using 1736 reports from four different official newspapers, I focus on climate change discourse in two types of newspapers in China: politically-oriented and industry-oriented. I employ framing theory from social movement and communication studies to examine strategies employed by the official media to gain support for climate change-related policies and industry structural shifts. The responsibility frame is employed the most by politically-oriented newspapers. This frame helps fulfill tasks of defining the reality and causes of climate change and legitimize the possible solutions to climate change. Industry-oriented media adopt the frame of economic consequences to rationalize solutions to climate change and gain support from traditional energy interest groups. Using 1613 posts on climate change from an online social Q&A community, I obtain nuanced understandings of climate change concerns on the micro-level in China. Four types of climate change skepticism are identified: reality skepticism, which doubts the facts of climate change; causality skepticism, which questions the relationship between human activities and climate change; epistemic impact skepticism, which challenges the impacts of climate change; and mitigation skepticism, which focuses on the specific solutions to climate change. Compared to unified frames in the official media, the frames identified in online posts are diverse. The existence of climate change skepticism reflects inconsistencies between macro-level and micro-level discourses on climate change. In addition, the underlying ideologies are essential factors contributing to the discrepancies. Nationalist ideologies, which permeate the official media to enhance social cohesion and group affection, produce discordant attitudes toward climate change in online forums. The present study connects and compares macro- and micro-level discourses on climate change to provide implications for climate change communication. In addition, this project is significant in outlining how political and cultural contexts in China influence coverage of climate change in official media and individual perceptions of climate change.

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER I

INTRODUCTION

Climate change policies have evolved over time in China. The nation formulated its national climate change strategies soon after the United Nations Conference on Environment and Development (UNCED) in 1992. China's central government hesitated to conduct activities related to climate change mitigation, concerned that the changes would impede economic development levels through the 1990s. In 2007, the central government formulated a National Climate Change Program to form its objectives, basic principles, and critical areas of action on climate change. In this document, the government stated that "China's annual average temperature had risen 0.5 ~ 0.8°C in the past century" (Liu 2015:284), recognizing the scientific consensus that climate change is influenced by human behavior (Liu 2015). In April 2009, China, for the first time, included lowering carbon emissions into the country's five-year plan. Later in November of the same year, the government announced China's carbon emissions target, with plans to cut emissions by 40-45 percent from 2005 levels of emissions per unit of gross domestic product by 2020 (He 2010, Liu 2015). In 2013, China established a pilot carbon trading scheme, limiting carbon emissions in some regions (Liu 2015:284). Since efforts in 2007, the Chinese government has shifted to a more proactive attitude toward climate change mitigation, incorporating changes in the nation's domestic development strategy.

Official climate change related rhetoric, included anti-pollution, reached a high point in 2014 (Flatø 2021).

The attitude shift in domestic policies also influenced China's performance in international negotiations, and notably, China's climate-change policies have been incorporated into its global strategy (He 2010). From Kyoto, to Copenhagen, to Paris, China is now a significant player in global climate change conference negotiations. The Paris Agreement would not have come into being without China, now the most significant greenhouse gas emitter (Schreurs 2016). The power and influence that China represents in international negotiations reflects the central government's dedication to addressing GHG emissions, catalyzed by severe air pollution influencing almost every province in China as well as growing public dissatisfaction with environmental degradation. "Given the interaction of climate change and sustainable development and given the various social and environmental problems facing China, the nation's only option is to set its action on climate change in a sustainable development framework, balancing the social, economic, and environmental dimensions" (Zhang 2008:82).

Ecological civilization[1] and climate change mitigation are connected in China's official development plan. In May 2018, Chinese President Xi Jingping spoke in a tone-setting meeting on environmental protection. His speech represents prioritization of national environmental protection and ecological recovery. He notes that building an ecological

[1] The Chinese central government issued a national document stating that China would be shifted from the industrial capital-oriented economic mode to a new era of "Ecological Civilization." According to the 18th Party Congress Report, "we must raise our ecological awareness of the need to respect, accommodate to and protect nature. We must give high priority to making ecological progress and incorporate it into all aspects and the whole process of advancing economic, political, cultural, and social progress, work hard to build a beautiful country, and achieve lasting and sustainable development of the Chinese nation." This term is different than the term "ecological modernization," which I will discuss in Chapter II.

civilization is of fundamental importance for the sustainable development of the Chinese nation. Among the six disciplines of ecological civilization construction he outlines, the last one requires collaboration towards global ecological civilization and deep engagement in global environmental governance to devise a global solution for environmental protection and sustainable development, while guiding international cooperation to confront climate change. The Chinese government's stance on climate change is influenced by its domestic demands and international ambitions (He 2010, Zhang and Orbie 2021) and the official climate change rhetoric is worthy of sociological study. Chinese official media is always viewed as the mouthpiece which transmits the political authorities' ideology and it has significant influence on the public directly and indirectly (Yao 2007). In the context of the central government's vigorous promotion of environmental protection, climate change mitigation, and ecological civilization, the public's perceptions of related issues deserve further exploration.

I employ qualitative methods to offer analysis of content from two types of state-controlled newspapers and an online forum to compare and contrast the macro- and micro-level understandings of climate change in China. I ask: 1) How do different state-controlled newspapers transmit climate change ideology to the public and in what ways? 2) How do individuals frame climate change in cyberspace? 3) What are the differences between newspapers' frames and individual's frames of climate change?

Due to the development of environmental sociology as an important subfield, and the pioneers' hard work, climate change has attracted more scholarly attention, with particular interest in climate change deniers, counter-movements, and the politicization of climate change especially in the United States and Europe. More studies have been done, and main

themes have arisen in the existing literature, including: climate justice, political ideology, movements and counter-movements, public assessments of climate change and their mitigation/adaptation strategies (Dunlap and Brulle 2015). In general, climate change is connected to neo-liberalism, overconsumption, waste production, development of transportation, and over-dependence on some energy forms. Climate change is linked to significant social change, is produced by the development of capitalism and associated disorders, and is a social issue deserving the attention of sociologists (Dunlap and Brulle 2015, Urry 2009).

While climate change has become a topic of interest to sociologists globally, sociologists in China have not focused on climate change as a central topic of research interest (Hong 2017). Several factors have limited existing research on themes prevalent in Western countries. First, China has a single-party leadership system. Even though political ideology or political affiliation are prominent predictors of climate change concern in democratic countries (Dunlap and McCright 2008, McCright and Dunlap 2011, Shwom et al. 2015), they are not an appropriate predictor of climate change concern in China. Second, unlike a democratic or capitalist country, protests, sit-ins, strikes and other forms of collective action are treated as unrest factors which threaten the governments' authority in China. Citizens face higher risks of arrest or sentencing due to involvement in collective action. Unless the issue/policy threatens the Chinese public's benefits or life, it is unlikely the public will participate in collective resistance. Individuals who attend actions are generally unwilling to talk about their experiences. It is challenging for scholars to collect individual level data related to social movement or counter-movement activities in China. Third, the Chinese public has witnessed dramatic environmental degradation in China. The public pays greater

attention to environmental issues in their daily lives and locales, rather than to global environmental issues (Xiao, Dunlap and Hong 2013). As a result, sociologists have emphasized the study of local environmental issues and environmental protests against the construction of hazardous facilities in China. Finally, sociology in China is not as mature as in industrialized countries, especially with regard to the subfield of environmental sociology. By far, existing sociological studies on climate change in China primarily focus on patterns of individual's climate change concern in general, and adaptation strategies employed by certain populations. It is important to fill existing gaps by conducting intensive and meticulous research considering the unique social context and cultural background in China.

Including China in research on climate change is essential for sociological understanding, given the global nature of the issue. Previous studies illustrate the differences of climate change coverage between developed countries and developing countries (Zamith, Pinto and Villar 2013). From an analytical perspective, China - as a developing country and an essential player in tackling climate change - offers an ideal study setting. Scholars with a desire to move beyond work in developed countries can enrich their understanding of climate change through inclusion of diverse social settings. Research in the Chinese context offers an opportunity for scholars to move beyond a focus on climate skepticism and denialism in developed countries to develop and enrich a sociology of climate change 'knowledge' (Liu 2015).

For this project, I draw on framing from the communications field to organize information addressed by the news media. Also, I conduct thematic analysis of newspaper articles by employing framing theory from social movement studies. Use of social movement frame analysis prevalent in the sociological field offers a lens through which to understand

how the Chinese government communicates climate change--a scientific consensus--with the public and mobilizes the public to support climate change related policies via newspaper sources.

Media, and particularly newspaper articles on climate change from state-controlled outlets reflect the central government's ideology. Media in China plays a pivotal role in sustaining social stability and contributes to regime legitimacy (Stockmann and Gallagher 2011). Thus, analyzing how newspaper articles frame climate change allows scholars to understand what information the central government wants the public know. A unique aspect of this project is analysis of newspaper articles as tools employed by the government to mobilize public support for the development of a strategy shift from economic-growth to ecological civilization. Even though China is characterized by authoritarian environmentalism (Eaton and Kostka 2014), which means that climate change policies are crafted by national leaders rather than going through a public voting process as in democratic countries, the actual implementation of policies is reliant on local governments and public support. Therefore, convincing and mobilizing the public is one of the most essential tasks fulfilled by newspaper media, especially in party-controlled venues.

Although the central government admits that climate change is anthropogenic and adjusts industry structures accordingly to meet emission reduction goals, it is less likely to recognize contradictory claims challenging these main goals. Tensions between traditional energy and new green energy persists (Hong 2017). To fully understand climate change coverage and its social and political implications, this research offers insight into how politically-oriented newspapers and industry-oriented newspapers portray climate change differently.

In this project, I also attend to how the social context is reflected in newspaper reporting. In an era of information explosion, many issues compete for media attention and climate change coverage ebbs and flows over time (Anderson 2009). It is essential to know the factors influencing climate change coverage in influential newspapers because climate change mitigation requires continuous public support. Even though media coverage of climate change does not determine public engagement, it shapes possibilities for engagement (Boykoff 2011). Determining factors that drive attention to climate change provides clues for how to maintain and gain continuous responsiveness to climate change policies from the public.

Ideally, information and ideologies as presented in newspaper articles help the public reach consensus on contentious issues. Furthermore, media stories can raise awareness of the relevance and urgency of the development strategy shift. However, media is just one of the major factors influencing climate change concern. Extreme weather events, access to accurate scientific information, elite cues, and movement/countermovement advocacy influence individual's perceptions of climate change. Previous studies identify the existence of climate change skepticism in China (Liu 2015, Zhang, Si and Li 2017). Hence, it is likely that there are differences in the ways that both newspaper articles and the public may frame issues of climate change and associated mitigation.

I also employ frame analysis as the lens through which to analyze a group of Chinese internet users' perceptions of climate change. Descriptive analysis of individual-level frames of climate change facts, causes, impacts, as well as solutions offer a detailed picture of public climate change concern. Additionally, individual's concerns over climate change do not form in a vacuum. Dietz et al.'s Value-Belief-Norm (VBN) theory indicates that an individual's

altruistic and traditional values influence their world view, trust in science and institutions, and understandings of climate change consequences, impacting the likelihood of support for climate change policies and regulations (Dietz, Fitzgerald and Shwom 2005). Employing frame analysis at the individual level also provides clues to how the public organizes, interprets, and makes sense of climate change, offering insight into values and beliefs that assist in frame formation.

This qualitative study of climate change discourse in official media and in online forum will enrich understandings of climate change concern. First, qualitative analysis of internet user's framing of climate change fills a gap left by most quantitative climate change perception studies. Analysis of general trends helps delineate the contours of climate change concern among the public, but leaves out valuable and detailed information regarding why individuals have doubts about climate change and what factors stop them from taking action. Second, differences between ideologies as presented in official newspapers and how people talk and act with respect to climate change in cyberspace also offer insight into existing disconnects in public behavior and willingness to change daily activities to facilitate a greener society. Effective environmental policy is impossible without the public's support. Finding existing gaps in understanding may help policy-makers and official media develop effective ways of framing and communicating climate change, and gain more support for climate change related policies. Differences in ideologies persist by venue. Climate change responses on the individual level vary from those presented in Chinese official media. Ideology gaps offer clues for how to improve framing strategies at multiple levels. Third, this project contributes to sociological studies of climate change by including macro-level, meso-level, and micro-level analysis. The unique social context in China features macro-

level party-controlled newspapers as the embodiment of the central government; while the industry-controlled newspapers represent ideas transmitted by the traditional energy sector. Online discussions reflect micro-level perspectives. By comparing different frames in various sources, I provide a more comprehensive understanding of climate change discourse in China. Lastly, China, as a fast-growing country, holds a leading position among developing countries. Its stance influences the effectiveness of global cooperation on climate change mitigation and impacts other developing countries' attitudes, willingness to take actions, and even climate change related policies. By analyzing Chinese official media's framing strategies, this project will offer implications for other developing countries in terms of ways of communicating climate change with the public.

Taking a frame analysis approach to the study of Chinese official newspapers and internet forum, this dissertation is composed of five chapters in addition to the introduction. In Chapter II, I trace literatures about framing theory, its application in climate change media analysis, and climate change concern among the public globally and domestically. In Chapter III I offer discussion of my methodology and research design, including data sources, collection, and analysis guidelines. The first analysis chapter, Chapter IV incorporates my first set of analysis, offering descriptive findings related to the four official newspapers, addressing what kinds of knowledge and ideology the media communicates, and framing strategies identified from the data. In Chapter V, I articulate the most significant arguments present in the online forums, and identify values and beliefs embedded in the discussions. Chapter VI offers a comparison and contrast of macro- of and micro-level framing, considering patterns and premises of nationalism discovered in my analysis processes.

Finally, in Chapter VII I elaborate the main findings, contributions, and limitations of this project, noting suggestions for future work.

CHAPTER II

LITERATURE REVIEW

Climate change is one of the most crucial issues of this era, sparking contentious debates among scholars. In recent years, sociologists in Western countries have made huge progress in climate change studies, developing analytic frameworks and methodologies from the micro- to macro-level (Dietz, Shwom and Whitley 2020). Sociologists trace studies of climate change to Marx's theory of capitalism, noting how capitalist societies produce conflicts between energy and natural resource exploitation and the development of human societies (Benton et al. 2001), and examine climate change drivers across countries (Jorgenson et al. 2019, Rosa et al. 2015). The uneven distribution of power sustains global inequality in the process of international climate change mitigation and negotiation (Goodman 2009, Schlosberg and Collins 2014). At the meso-level, sociologists (Brulle, Aronczyk and Carmichael 2020, Perrow and Pulver 2015) have examined interest groups and corporate groups' influences regarding policy-making and response to climate change. On the micro-level, scholars focus on differentiating individuals' climate change concern and activities by considering their demographic features, political ideology, identity, social and cultural context, and personal experiences (Dietz, Shwom and Whitley 2020, Dunlap and McCright 2008, Shwom et al. 2015). Researchers also analyze general types of climate change skepticism

(Hobson and Niemeyer 2013), and develop analytical frameworks represented by VBN. Scholars (Dietz, Shwom and Whitley 2020, Dunlap and Brulle 2015) also point out a lack of studies articulating information across the three VBN scales.

Alternative theoretical frameworks have developed to understand climate change in the fields of politics, sociology, and communication. The first is authoritarian environmentalism, sometimes constructed as the opposite of neoliberal environmentalism. Beeson (2010) identifies two significant features: first, the authoritarian government dominates the policy-making process; second, the government and related social institutions carry the main responsibility. In other words, the general public and grassroot activist agencies are absent or accentuated in the process. Many scholars contend that China's environmental governance practices are a good model of authoritarian environmentalism (Eaton and Kostka 2014, Gilley 2012, Zhu et al. 2015). Lo (2015) challenges this conclusion, arguing that dynamics between the central government and local governments are overlooked. Lo notes that the powerful central government makes regulation-based policies and promulgates guidelines; local governments implement the policies. Due to local interests, it is usual for local governments to mispresent and disregard the central government's efforts, particularly in environmental governance. Despite overt authoritarian control over GHG emissions, local governments and energy-intensive businesses enjoy a considerable level of independence and flexibility in managing their energy consumption. By considering governance hierarchies and transparency and information disclosure in China's environmental governance (Zhang, Mol and He 2016), some scholars argue that China is less likely to be an exemplar of authoritarian environmentalism. In addition, public

engagement in an environmental agenda is higher than for other issues in China (Liu 2016, Steinhardt and Wu 2016). Even though the significance of grassroot environmental protests and campaigns in China is uncertain, it is unwise to fully ignore possible public impact on policies and regulations.

A second popular strand of theoretical frameworks includes reflexive modernization (hereafter RM) and ecological modernization (hereafter EM). Beck proposes the theory of risk society and argues that the production of social wealth also produces side effects in modernized societies (Beck 1992, Elliott 2002). People who benefit from modernization are also the victims of unexpected social risks. Therefore, Beck advocates reflexive modernization, in which society recognizes and reacts to social risks (Zinn 2008). Actions and policies must be reviewed and altered as required in a reflective society to handle undesirable side effects. Individual awareness and acts, and the formation of reflexive social movements that push forward new worldviews and political agendas are all ways to achieve this. Reflexivity can happen at the both micro- and macro-level; in other words, personal and social self-critique and self-confrontation are required to alter social practices and institutions (Stuart, Schewe and McDermott 2012).

The core assumption of EM is that environmental degradation can be addressed through foresight, planning, and economic regulation. In particular, new technologies can be developed and utilized to enhance economic growth while simultaneously curtailing waste (Hajer 1996, Schlosberg and Rinfret 2008). The core players in EM theorist's eyes are states, policy, and technology (Buttel 2000). Based on Beck and Giddens's reflexive modernization theory, EM scholarship argues that ecological rationalization, which

externalizes as green technology and green policies, will lead us to overcome the environmental crisis (Mol, Spaargaren and Sonnenfeld 2014). Ecological rationalization and political modernization, catalyzed via inclusion of the public in the decision-making process, is an essential issue in attaining a more industrialized or super-industrialized society. Due to the hierarchical structure of governments and the potential conflict of interest between the central government and local governments, it is less accurate to say that China's environmental governance fits in the framework of EM and RM. Additionally, according to Beck's theory, RM happens after the state is modernized; China is still a developing country. Instead of RM, China's constitution includes Ecological Civilization as the ideological foundation for the country's environmental policies, legislation, as well as education. It is also being promoted as a future vision for all human beings. Ecological civilization arose from the government leadership's understanding of the enormity of China's environmental and climate-related issues. It is a development framework that builds upon unique interpretations of China's intellectual history to construct a worldwide future vision anchored in national identity (Hansen, Li and Svarverud 2018). Briefly speaking, ecological civilization represents a socialist-ecological development path with Chinese characteristics. By evoking China's more than 2000 years of ancient philosophical legacy as a component of the answer for the planet's future, the eco-civilization imagination attempts to create a feeling of cultural and national continuity, as well as to position China at the center of the globe (Hansen, Li and Svarverud 2018). Based on the discussion above, considering China's unique social, cultural, and political context, it is inappropriate to apply EM and RM into the analysis of China's environmental governance.

Keeping authoritarian environmentalism, EM, and RM, in mind, and focusing on answering the three research questions, I draw from prior media studies of climate change using framing theory as discussed in media studies research (mainly conducted in Western countries), outlining the development of essential analysis tools as well as main themes. Then I review climate change studies in the Chinese context to provide evidence for existing research gaps. I turn back to framing theory employed by social movement theorists and illustrate the applicability of this theoretical perspective for my project. I close with a brief analytical framework combining the main themes found in previous media studies of climate change and framing theory of social movements, situating my research questions in the extant literature.

Framing Theory and Its Application in Media Studies of Climate Change

Since Goffman first presented the concept of framing in his work *The Presentation of Self in Everyday Life*, framing theory has developed in various fields, including sociology, communication, and political science. A frame is a tool that can help individuals organize and understand the things that happen around them (Goffman 1974). Other scholars (Entman 1993; Reese 2001) also provide their understandings of frames. Entman (1993) defines frames by clarifying two critical elements in framing an issue—selection and salience. By selecting parts of the reality and making them more salient, news reports transmit the definition of the problem, the interpretation of cause, the evaluation of morality, and a solution to the issue to the public. Reese (2001) defines frames as organizing principles which use verbal and visual symbolic resources to construct the social world in meaningful ways.

Consensus among scholars is that frames represent ways of organizing ideas into meaningful categories, with emphasis of some aspects over others (Anderson 2009). Frames can be employed by individuals (opinion-leaders), media, organizations, and governments to convey and communicate ideologies (Fletcher 2009). Therefore, one essential purpose of frame analysis is to understand how social actors use language to mobilize key stakeholders and build consensus around controversial policies or actions (Fletcher 2009). In addition, audience understandings are influenced by how issues are presented and the resulting choice people make about how to digest and process information they receive.

In the field of climate change communication studies[2] , scholars also focus on two camps: studies on media frames and studies on audience frames. The first emphasizes how issues are presented, and the latter is primarily concerned with "how individuals perceive, organize, and interpret events and issues" (H. De Vreese 2001:18). The majority of existing studies of climate change applying framing theory belong to the first camp. Studies of media frames focus on coverage of climate change by examining 1) the frames used in media's portrayal of climate change, 2) how political, cultural and social contexts interact and influence the coverage of climate change, and 3) the debate over climate change which includes studies of climate change denial and skepticism.

[2] Anderson (2009) provides a comprehensive review of climate change communication studies, summarizing main themes and approaches including: 1) issue attention cycles influenced by Down's issue-attention cycle model, 2) a political economy approach which emphasizes the influence of media corporate interests and unequal distribution of power and resources, 3) structuralism which emphasizes the concept of ideology and social factors, and 4) culturalism which concerns cultural norms and usually adopts framing analysis. Because of the sheer volume of climate change communication studies and my research focus, the scope of the following review is limited to empirical media studies using framing theory.

Prior studies have identified different frames used in media. Trumbo (1996) focuses on the functions of frames to define problems, diagnose causes, make moral judgments, and suggest remedies, which are derived from Entman's theory. His study notes that news resources influence the use of frames. Scientists tend to employ frames emphasizing the first two functions, whereas politicians and other vested interests are more likely to emphasize the latter two functions. In the U.S., media moves from defining and diagnosing problems to making judgements and suggesting solutions. Antilla (2005) encounters four frames in her study of U.S. newspapers: "valid science, ambiguous cause or effects, uncertain science, and controversial science" (344). Nisbet (2009) and Semetko and Valkenburg (2000) also summarize the climate change frames often used in media. Their work has been employed in several comparative studies to understand the influence of culture and political ideology, which I will discuss in detail below.

Nisbet (2009) outlines eight frames applicable to climate change, drawn from previous studies analyzing the framing of science-related policy debates. His eight frames include "social progress, economic development and competitiveness, morality and ethics, scientific and technical uncertainty, Pandora's box/Frankenstein's monster/runaway science, public accountability and governance, the middle way/alternative path, and conflict and strategy" (Nisbet 2009:18). Zamith, Pinto and Villar (2013) employ this framework to compare U.S. and South American newspapers. Their research indicates that in Brazil and the United States, newspaper articles cover more about policy progress and economic consequences of climate change mitigation, whereas newspapers in Argentina and Colombia focus more on the urgency and the catastrophic consequences of climate change.

Semetko and Valkenburg (2000) summarize five news media frames prevalent in earlier studies -- the conflict, human interest, economic consequences, morality and responsibility frames. Their research finds that the same information is framed in various ways because of different types of outlets (sensationalist versus serious). In essence, sensationalist newspapers and TV news use the human interest frame more often, whereas serious newspapers are more likely to use the responsibility and conflict frames. Several studies adopt this framework to analyze media coverage of climate change. H. De Vreese (2001) quantify newspaper data and focus their study on conflict and economic consequence frames. Cross-national analysis shows the frequency of using these two frames vary in different countries. Dirikx and Gelders (2010) compare Dutch and French newspaper coverage of climate change by quantifying the five frames, finding that there are no significant differences between the two country's newspapers in terms of framing the annual United Nations Conferences in Paris. The similarity of framing usage in the Dutch and French press is not convincing due to the authors' limited data sources. Their data is from "quality" newspapers, and they only focus on media coverage of one issue. Therefore, the authors propose the idea of using qualitative analysis to grasp more nuance. Dotson et al. (2012) compare portrayals of climate change based on the political ideology of the media (conservative versus liberal) by employing the five media frames of climate change. This research provides evidence of how political affiliation of newspapers influences the construction of climate change in reports.

Previous researchers also focus on one or several frames of climate change in their media analysis. A number of scholars have examined the themes of scientific controversy and uncertainty (Antilla 2005, Boykoff and Boykoff 2004, Boykoff 2007, Brossard,

Shanahan and McComas 2004, Shehata and Hopmann 2012), economic consequences (Weingart, Engels and Pansegrau 2000), and climate change mitigation (Ford and King 2015). The themes of scientific controversy and uncertainty attract scholars' attention to counter-frames of climate change and climate change denial and skepticism.

McCright and Dunlap's work (2000) deepens the understanding of climate skepticism. Since the mid-2000s research has focused on the presence of sceptics in American media (Painter and Ashe 2012). Two counter-frames in media have been identified by previous studies: the scientific-uncertainty frame (Antilla 2005, Boykoff and Boykoff 2004), and the economic consequences frame (Nisbet 2009). Furthermore, Painter and Ashe (2012) examine and compare the presence of climate skepticism in print media from six countries, adopting Rahmstrof's three-type taxonomy—trend, attribution, and impact sceptics. According to this study, news coverage of skepticism is limited to the U.S. and UK, and coverage is linked to a newspaper's political leanings. One notable finding is that trend skeptics, which means questioning whether global temperatures are warming, are found almost exclusively in U.S. and UK media.

Aside from the focus on identifying various frames used in media, scholars (Agyeman et al. 2016, Feldman and Hart 2018, Gifford and Comeau 2011, McEvoy, Fünfgeld and Bosomworth 2013, Nabi, Gustafson and Jensen 2018) also explore the effects of various frames or framing strategies. Human interest frames, which emphasize transmitting information emotionally and address the gain/loss of engaging in climate change mitigation, have significant effects on individual's perception of risks and their willingness to sacrifice. Specifically, information including positive connotations increases level of engagement. (Bilandzic, Kalch and Soentgen 2017, McEvoy, Fünfgeld

and Bosomworth 2013, Nabi, Gustafson and Jensen 2018). Motivational framing, which highlights collective motivation, is more likely to increase engagement of climate change related activities than human interest frames emphasizing the importance of sacrifices on the individual-level (Gifford and Comeau 2011). But some frames may have different impacts on individuals due to their political ideology. Feldman and Hart (2018) note that republicans were more supportive of low-carbon energy policies when they were framed as solutions to specific environmental issues than when they were framed as a solution to climate change. Democrats' level of policy support was unaffected by a shift in framing.

Overall, framing is inevitable in the process of communicating climate change information with the public. There is no unframed information in media, especially when applied to public affairs and policies (Nisbet, Zelenski and Murphy 2009). In different countries and social contexts, media use framing strategies and frames in various ways. Framing strategies and frames are associated with different responses from individuals. Even the same frames may produce different outcomes.

Macro-level Climate Analysis and Policy in Chinese Media Representations

It is well known that China's media is under rigorous censorship. In fact, there is a structural difference between the central and local propaganda authorities. The central authority focuses more on news relevant to national guidelines and policies and the image of the central state and leadership, whereas the local ones tend to focus on examining news which damages social stability and the image of local government. The central authority is shown to be more tolerant than its local equivalents, since it permits news

media to include a significant quantity of content that has negative implications for local governments, which is extensively suppressed by local news authorities (Kuang 2018).

In China, journalism on climate change enjoys a certain level of freedom due to the official recognition of anthropocentric climate change (De Burgh and Rong 2011, Geall 2018, Tong 2014). Journalists make use of loopholes and can present multiple perspectives as long as they do not violate the central government's baseline. Especially after the government incorporated sustainable development into its five-year plan, news reporters enjoyed more freedom within an "authoritarian paradigm" (Xie 2015:156). Unless reports question the governments' adaptation and mitigation policies, journalists have a great deal of flexibility. However, media commercialization since the 1990s created various outlets and certain maneuvering space (Tong 2014). The topic of climate change produces difficulties in reporting. Through in-depth interviews among journalists in China, De Burgh and Rong (2011) find that climate change is a challenging topic due to a lack of scientific knowledge. Therefore, many articles involve quotes from news media in Western countries. This happens less frequently in official and party newspapers.

Scholars from the fields of communication, sociology, and political science have examined media from various aspects to understand the flow and ebb of news reports on climate change, how China is presented in these news reports (Fan, Xue and Xu 2018, Wu 2009), comparisons of Chinese media and American media in terms of how climate change is framed (Xie 2015), and climate change skepticism (Liu 2015, Painter 2011, Painter and Ashe 2012). Frequency of climate change reporting is aligned with the

timeline of when the Chinese government incorporated climate change policies (Wu 2009). Major international events, pressure from abroad, and climate change related environmental issues are significantly correlated with reporting frequency (Fan, Xue and Xu 2018). Studies are largely limited due to a lack of data resources. Fan et al.'s work is based only on the *People's Daily*, which is the "mouthpiece of the central government" and is consistent "with the agendas and positions of the central government" (Fan, Xue and Xu 2018:4-5). The result reflects the central governments' interests, but not all institutional interests. Even though central government ideology will be transformed into different policies, the implementation of policies relies on local government and related administrations.

Compared to research on climate change skepticism or denialism in the US, very little research has been done in China. Painter and Ashe (2012) categorize climate change skeptics in six countries into three types: trend, attribution, and impact skeptics. The newspaper articles the authors extracted from China show the existence of climate change skeptics, with primary involvement from the attribution skeptics, a term which refers to people who accept that climate change is occurring but question the factors that contribute to it. Liu (2015) illustrates that people question climate change due to issues of trust and nationalism which influence the construction of a climate change denial frame. Chinese climate change skepticism stems from identity politics and reflects mistrust toward Western countries. National identity, a collective memory of being encroached by Western countries in history, and the dynamic international political structure influence public perceptions of climate change mitigation, especially international cooperation (Du, Liu, and Mix In progress).

Few scholars focus their studies on decision making and climate change policy implementation in China. The Chinese political system is characterized as a unitary hierarchy, meaning that the central government makes policies and local governments take responsibility for implementation (Qi and Wu 2013). There is no exception for climate change policies. Gilley (2012) argues that authoritarian environmentalism is a model that could be used to analyze the politics of climate change in China. In his view, authoritarian environmentalism is defined as "a public policy model that concentrates authority in a few executive agencies manned by capable and uncorrupt elites seeking to improve environmental outcomes. Public participation is limited to a narrow cadre of scientific and technocratic elites..." (Gilley 2012:288). The response to climate change in China is top-down rather than bottom up; the latter is a more prevalent form in Western countries where democratic environmentalism influences policy making and implementation. The Chinese central government makes decisions on greenhouse gas reduction based on foresight and the leader's wisdom. Combined with green technology, China is on track for sustainable development to create a win-win situation for economic development and ecological protection. The implementation of climate change mitigation policies is limited due to the high turnover of cadres at the local level (Eaton and Kostka 2014).

Overall, media studies of climate change in China are not as variant as they are in Western countries. Reliability of studies would be enhanced by incorporating various types of newspapers and would fulfill the target of garnering sustained attention from the public as well as the government. Data sources are limited, research only represents the

opinion of social elites, and media analysis is limited in how discourse reflects and influences the general public's thoughts.

Even though authoritarian environmentalism is a central feature in China, the implementation of policies and regulations related to climate change mitigation may be impeded without public support or the support of local officials who have to balance economic interests and ecological civilization. It is vital to probe micro-level frames of climate change. To address this central dynamic, I turn to previous climate change studies on the individual level.

Individual-level Analysis on Climate Change in China

Existing research focuses on public opinion on climate change awareness and perceptions. The term "public opinion" refers to "beliefs, attitudes, policy support, and behavioral intentions of people and groups within a particular geographic location," according to Shwom et al. (2015:270). This is aligned with the tradition of studying people's values, beliefs, and attitudes toward environmental problems in the field of environmental sociology. Scholars have conducted various studies employing quantitative methods at the micro-level and on regional and national scales.

Climate change has varying impacts on residents in urban and rural areas due to China's urban-rural dichotomy. Li (2013) argues that the public in rural and urban areas have different opinions on climate change, and there is no consensus on who may suffer more from climate change impacts. Increasingly, scholars have focused their research on rural residents. In rural areas, topography, industry structure, and culture influence

residents' perceptions of and willingness to take action on climate change. Wang and Cao (2015) surveyed residents in an Alpine area in Southwest China, finding that residents' perceptions of climate change intensity had a significant correlation with age and the elevation gradient of their village. A majority of villagers noted the presence of climate change, with perceptions based on daily observations of a shortened snow coverage period. The village of study is famous for beautiful scenery of the snowy mountain Yulong, and tourism is a major income source for village residents. Therefore, the villagers' desire for climate change mitigation was very strong. Farmers in two provinces in east China also showed high levels of concern about climate change. The two regions are dependent on agriculture, and respondents indicate a lack of information, technical knowledge, and financial capability to tackle climate change (Kibue et al. 2016). Local farmers in the Tibet area assert that the temperature has been increasing for the last 30 years and practice strategies to address climate change based on Indigenous knowledge and life experience. The Tibetan Plateau is the highest plateau on earth, and crops and animals are sensitive to climate change. Crop farming and animal husbandry are the primary income resources in the area. Therefore, local residents pay close attention to changes in temperature and precipitation (Li et al. 2013).

The general public's concern for climate change is studied via four aspects: awareness, risk perception, willingness to pay, and adaptation activities. Most previous projects adopt quantitative data collection methods, collecting data and focusing analysis on various predictors of climate change perception and willingness to pay. Educational attainment, gender, age, household income, residency, social status and other demographic characteristics show different levels of correlation with public awareness

and concern for climate change (Haggard, Yao and Cai 2014, Hao and Song 2020, Tvinnereim, Liu and Jamelske 2017, Wei et al. 2014, Wu et al. 2018, Yu et al. 2013). Awareness and risk perception are significant predictors of willingness to pay and policy support (Duan, Yan-Li and Yan 2014, Wang 2017, Winden, Jamelske and Tvinnereim 2018, Yang et al. 2014). A lack of consensus remains on the significance level of predictors due to a regional focus, making it difficult to compare results across studies.

Since the arrival of social media, this mechanism has been used as an option to examine public opinion. Scholars, especially those in Western countries, use a variety of social media sources, including Twitter to discuss climate change. In China, this is an area in need of further research. Seldom have scholars paid attention to online discussions of climate change and many have been hesitant to conduct qualitative studies based on the data. Liu and Zhao (2017) extract data from China's microblogging website to analyze narratives of climate change. The study shows that official accounts and international actors dominate the discussion; Chinese NGOs and public intellectuals are absent from it. Researchers also mapped the locations of all users and determined that users who joined the discussion were mainly from urban China, especially from Beijing, Shanghai, and Guangdong. The three regions are the most developed areas in China. Among them, Beijing users represented over 50% of the population. This finding reflects how environmental degradation may influence public awareness of climate change. It also indicates that public awareness of climate change is likely influenced by personal experiences with environmental degradation. Yang and Stoddart (2021) analyze the public's engagement in climate change discussions. They identify an expansion of climate change communication in the post-Paris period, alongside the central

government's pro-environmental transition. More importantly, they argue that the Chinese microblogging platform's potential to facilitate multi-directional communication and open public deliberation on climate change is limited. At fault is the waning of mutually balanced dialogic interactions, mainly top-down patterned climate communication, and homophily inclinations among eco-insiders and government users (Yang and Stoddart 2021). The two studies mentioned above draw data from *Weibo*, which indicates the necessity of including more social media platforms in the study of climate change communication and discourse in China.

In addition to studies on the general public, college students' opinions on climate change have attracted scholarly attention because their views represent the next generation of decision makers who will definitely influence the design and implementation of a long-term development framework. The United States and China are the top two greenhouse gas emitters in the world. Therefore, it is essential to examine differences in public opinion on climate change between college students in the two countries (Jamelske, Barrett and Boulter 2013, Winden, Jamelske and Tvinnereim 2018). A main finding is that American respondents, compared with Chinese, are less likely to note the anthropocentric nature of climate change. However, Chinese respondents are more supportive of environmental protection policies even if it means slowing down economic development. Jamelske, Barrett and Boulter (2013) argue that three factors influence Chinese college students' opinions: the government's stance, Chinese official media, and personal experiences of environmental degradation. In other words, the uniform understanding of climate change among college students is associated with the government's recognition of anthropocentric climate change. Since there is no debate on

climate change in official media, the public is more likely to be supportive of climate change mitigation policies. Winden, Jamelske, and Tvinnereim (2018) also find that Chinese students are more willing to pay for climate change action than their US counterparts after adjusting for differences in per capita income. Haggard, Yao and Cai's work (2014) illustrates an opposite result, finding that Chinese students were less knowledgeable and presented a less positive attitude towards climate change compared with American college students. Thus, Chinese students were less willing to pay for climate change mitigation. Different methodologies may lead to distinct results. Climate change is influenced by personal experience, and extreme climate events, disasters, as well as other environmental issues may lead to an increased concern of climate change among Chinese students. Yang, Kahlor and Griffin (2014) put out an effort to understand college students' opinions on climate change by studying their motivations to share information related to climate change. Social media is becoming the primary platform for sharing information among college students. Except for social motivation and information seeking desires, college students who want to build a reputation among cohorts are more likely to share information about climate change.

Overall, existing studies of climate change in China focus on only a few central aspects, and most employ quantitative methods. Additionally, prior work overlooks the connection between macro-level and micro-level analysis. This qualitative project aims to fill existing gaps by taking consideration of analytical frameworks from both previous communications studies as discussed above and sociology/social movement perspectives which have not been used in media studies of climate change.

Social Movement Framing Theory and Its Application to the Analysis of Climate Change Narratives in China

In the field of sociology, framing theory has been developed to study social movements because frames are a "discursive tool of social actors" (McCright and Dunlap 2000:502) and framing strategies are important in social movements. Based on Weber's notion of ideal type, Gerhards (1995) proposes his idea of the ideal-type frame, which is the combination of all framing dimensions and framing strategies. He asserts that if protest actors want to mobilize effectively, they must meet five conditions: "find an issue and interpret it as a social problem; locate causes and causal agents for the problem; interpret goals and the chances of success of their efforts; find and label an addressee for their protests; justify themselves as legitimate actors" (Gerhards 1995:227). Based on this ideal-type frame, Benford and Snow (2000) conclude that there are three core tasks in the process of framing: 1) diagnostic framing, where framers identify a problem and assign blame; 2) prognostic framing, where framers give suggestions and tactics about how to solve the problem; and 3) motivational framing, where framers employ strategies to legitimize and rationalize the action. If these frames are constructed properly, social movements can be successful through frame alignment. There are four frame alignment processes—"frame bridging, frame amplification, frame extension, and frame transformation" (Snow et al. 1986:467). At both the macro- and meso-levels, frame alignment processes are vital to keep existing supporters and mobilize the remaining public. On the micro-level, frame alignment explains the conditions under which individuals plan to attend to collective action (Snow et al. 1986).

Sociologists agree that framing is a dynamic process which reflects the social context (Benford and Snow 2000, Chong and Druckman 2007, Fairbairn 2012, Steinberg 1998). The construction of frames is the result of interaction between challengers and power holders (Steinberg 1998); reflecting competition over the interpretation of frames between a social movement and states, corporations, and international institutions (Fairbairn 2012). Although frame construction for a social movement is often a tool to challenge authority and the existing political system, the frame *per se* is often restricted by the political-economic landscape. Steinberg (1998) points out that the framing process is limited by "discursive fields" defined by contexts of hegemony. Political and economic transformation may cause a shift in frames resulting in a loss of supporters or lead to a reframing process (Fairbairn 2012). Generally, the relationship between frames and the societal context is dialectical (Friedmann 1993). Frame analysis allows scholars to go beyond "the original social movement or groups of claims-makers" and individual actors, to provide a more insightful analysis of social structures and the "ideological processes of cultural naming" (McCright and Dunlap 2000:503).

Social movements within the same movement family often represent a coherent ideology (McCright, Dunlap and Marquart-Pyatt 2016). The ideology is a cognitive map of sets of expectations and a scale of values, which provides a framework for social movement reality and justifies motivational actions (Oliver and Johnston 2000). In a country like China, the central government signifies the most prominent authority, dominating the construction of ideology and value systems. The Chinese government consistently modifies stated ideologies based on policy initiatives by incorporating new elements, such as a shift from Marxism to nationalism in recent years (Cao 2005, Kato

2021). The government maintains abundant resources, especially in "institutional claims to legitimacy" (Knight and Greenberg 2011). Ideologies in social movements act as an overarching frame to fulfill tasks of frame alignment and shorten the distance between an individuals' understanding and the frames constructed for social movement or collective behavior activities (Coley 2015).

Newspaper articles are a channel that the central government uses to transmit and communicate its ideology. Framing may influence an individual's concern for climate change, their willingness to change daily behaviors, and support for policies to address climate change mitigation (Gifford and Comeau 2011, Hart 2011, McCright, Dunlap and Marquart-Pyatt 2016). Events covered by Party-controlled media are used by the central government to build consensus among the public. China is shifting from economic modernization to ecological civilization. In 2008, the central government released the China Modernization Report 2007 proclaiming the ideal of environmental modernization for the first time. The report symbolizes how development policy has shifted from an economic priority to ecological priority (Tong 2014), seen by scholars as a symbol of China's reflexive modernization. The shift of development path can be fulfilled without support from the public.

Even though state-led reform is not a social movement according to existing social movement definitions; some similarities persist between them. Diani (1992) synthesizes definitions of a social movement prevalent in collective behavior perspectives, Resource Mobilization theory, the Political Process perspective, and New Social Movement approaches. He delineates four aspects of social movement dynamics, including, "1) networks of informal interaction; 2) shared beliefs and solidarity; 3) collective action on

conflictual issues; and 4) action which displays largely outside the institutional sphere and the routine procedures of social life" (Diani 1992:7). State-led reform is based on informal interaction. The shift of development strategy in China is proceeding partly due to public experiences of environmental degradation -- reform is influenced by public concern for the environment. Furthermore, the same purpose of reaching consensus on contentious issues maintains, mobilizing the public as much as possible to support prevalent state ideology, and realizing social change through public support. Therefore, it is feasible to engage with framing perspectives related to social movement scholarship in this project. Analysis of the diagnostic, prognostic, and motivational frames in newspaper articles, can present a picture of how the state uses newspaper articles as a discursive tool to communicate a preferred ideology to the public and exert power to influence the public's perception of climate change.

Analytical Framework

Early studies on climate change coverage in the media focus on identifying news frames. Various taxonomies are employed to facilitate national and cross-national analysis. Studies are based on theories from the field of communication and focus on the construction of newspaper reports. From my perspective, the five news media frames prevalent in the communications literature (conflict, human interest, economic consequences, morality, and responsibility frames) are strategic frames used for attracting and convincing audiences. Frameworks prevalent in the communications literature provide guidance for developing my coding scheme and lay the foundation for analysis of how Chinese media frame climate change, an existing gap in the literature. Previous

studies (Antilla 2005, Dirikx and Gelders 2010, Dotson et al. 2012, H. De Vreese 2001, Nisbet 2009, Semetko and Valkenburg 2000, Zamith, Pinto and Villar 2013) employing frame analysis, illustrate that various outlets and news corporations and their vested interest groups influence the frames used in covering climate change. Use of categories drawn from extant literature will help identify the nuanced differences in newspaper reports from various outlets. However, these frames are identified in Western media and may not be covered in Chinese newspaper reports. Thus, existing frames will serve as a reference point for my project coding scheme. Benford and Snow's (2000) framing theory (diagnostic, prognostic and motivational frames) is employed understand the nuances of the media's coverage of climate change. Taking into consideration two sets of framing analytical frameworks is necessary to effectively respond to my research questions. The two frameworks are not contradictory. Table 2.1 provides definitions of Benford and Snow's (2000) frames and the five news media frames. From the nature and definitions of the two sets of frames, I argue that the five types of frames used in communications literature can be integrated with strategies used in the three-fold typology often applied to social movements (Figure 2.1). For instance, the economic consequences frame can link to both diagnostic and motivational frames.

Table 2.1. Definitions of Different Frames

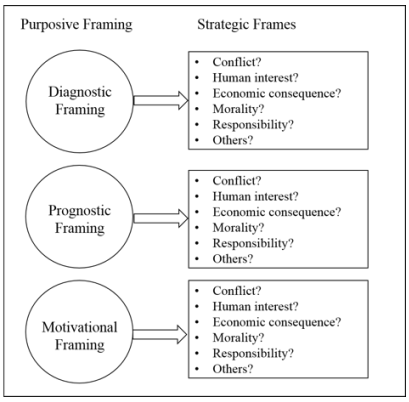
Field	Type of Frames	Definition
Social movement perspective	Diagnostic framing	Identify a problem and assign blame
	Prognostic framing	Give suggestions and tactics about how to solve the problem
	Motivational framing	Employ strategies to legitimize and rationalize the action
Communication perspective	Conflict frame	Conflict between individuals, groups, or institutions

	Human interest frame	Emotional angle to the presentation of information
	Economic consequences frame	Economic consequences for an individual, group, institution, region, or country
	Morality frame	Put the event, problem, or issue in religious tenets or moral prescription
	Responsibility frame	Attribute responsibility for a cause or solution

Source: Benford, Robert D., and David A. Snow. 2000. "Framing Processes and Social Movements: An Overview and Assessment." *Annual Review of Sociology* 26:611-39; Semetko, Holli A and Patti M Valkenburg. 2000. "Framing European Politics: A Content Analysis of Press and Television News." *Journal of communication* 50(2):93-109.

Climate change can be framed as a human-made risk due to materialism, overproduction, and overconsumption, which are economic consequences; or can be framed as a factor catalyzing the shift of industry, which will have positive economic consequences on individuals because of reduced energy prices. Hence, specific frames can be employed to rationalize the development of green energy and obtain public support. Many possible interrelationships abound. Overarching frames or unified ideologies will be identified based on analysis of frames in the official media venues. I foresee this framework as helpful for understanding the detailed nuances in strategies employed by central actors as seen in newspaper articles.

Figure 2.1. Macro-level Frame Analysis Framework



On the individual level, previous quantitative studies have attempted to identify the predictors of climate change concern by surveying general populations as well as students. There is no consensus on what factors influence people's concern, and quantitative studies cannot offer insight into the detailed thoughts of the public. By employing framing theory, which allows scholars to understand how individuals "locate, perceive, identify, and label" (Goffman 1974:21) social incidents, this project aids in understanding how individuals diagnose climate change and consider solutions-based suggestions or tactics. As "people themselves become small, private alternative experts" (Beck 1992:61) in a risk society, individuals construct their personal knowledge of climate change based on available information. Furthermore, as previous studies have identified the existence of climate change skepticism in China, I will take the threefold categories of sceptics—trend, attribution, and impact sceptics—as a reference point in this project. Then, the embedded ideology or set of values will be identified to facilitate comparison between media discourse and individual discourse. Detailed data sources and analysis practices are discussed in the following section.

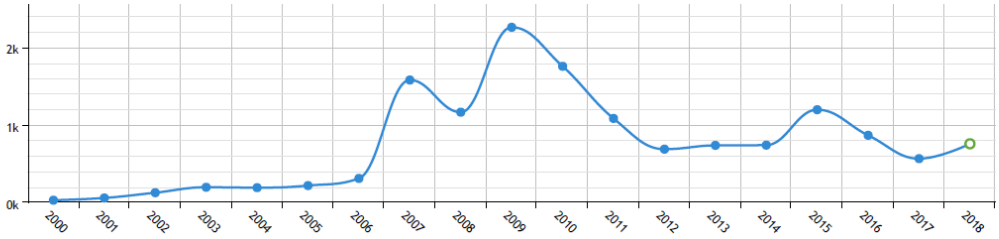
CHAPTER III

METHODOLOGY

This project is a qualitative study, with a portion of the data quantified to offer additional insight into general patterns. Macro-level data is derived from printed newspaper articles. I gathered newspaper articles from two types of state-controlled newspapers in China from 2006-2018: politically-oriented (or party-controlled) and industry-oriented. This time period is chosen because existing studies have shown that 2007 is a tipping point for enhanced climate change discussion in Chinese newspaper articles (Fan, Xue and Xu 2018, Xie 2015). In addition, China experienced several social transitions in this period: the central government transition to a pro-environmental stance (Yang and Stoddart 2021); the rise of nationalistic ideology after Xi's inauguration in 2012 (Bhattacharya 2019, Weiss 2021); and the intense relationship between China and Western countries (Han and Paul 2020). Social change may influence climate change communication and the general public's climate change concern. This time period also includes the two most essential international events for China in terms of climate change: 1) the Copenhagen Summit, aimed at establishing a global climate agreement in 2011 and 2) the Paris Climate Conference, which addressed the Paris Agreement in 2015. My focus on print media for macro-level analysis in this project is a methodological necessity. While online news venues are popular now, this was not the case in 2006.

My preliminary search of newspaper articles, which include "climate change" or "global warming" as keywords also show the same result (Figure 2). I offer analysis of Chinese newspapers for two reasons: 1) most existing media studies on climate change pay attention to English newspapers (Zamith, Pinto and Villar 2013); 2) not every Chinese person can read English newspaper articles. Therefore, the purpose of mobilizing the public cannot be fulfilled solely by English speaking sources.

Figure 3.1. The Number of Newspaper Articles on Climate Change/Global Warming, 2000-2018



After a preliminary search of newspaper articles addressing climate change, I choose *People's Daily* (hereafter *PD*), Guangming Daily (hereafter *GD*), *China Energy News* (hereafter *CEN*), and *China Petrochemical News* (hereafter *CPN*) as data sources[3]. Each newspaper represents the power of a dominating agent in the cultural, political, or

[3] The *China Meteorological News*, *Science and Technology Daily*, *People's Daily*, *Guangming Daily*, *China Energy News*, *China Economic Herald*, and the *China Petrochemical News* are the top seven sources offering articles on the topic of climate change, based on a preliminary search. The *China Meteorological News* is a professional newspaper, subordinate to the China Meteorological Administration, an outlet of meteorological news. Articles address temperature increases and decreases as a scientific fact. I did not include this newspaper among my data sources because of its limited audience. I also exclude the *Science and Technology Daily* for the same reason. The *China Economic Herald* is an economic-oriented newspaper, which is not aligned with my research focus. This research focuses on examining the gaps between the central government and traditional industry giants' climate change discourse to explore the possible strategies used to communicate climate change. I exclude *China Economic Herald, China Meteorological News, and Science and Technology Daily* from the dataset to focus on more significant media sources.

industry field. Newspaper articles represent each dominating agent's will in an effort to maintain a balance among these fields. *PD* is considered the speaker of the central government and represents its overall ideology. *CEN* and *CPN* represents two agents in the field of industry. A hierarchical structure exists between them. While *CEN* represents the will of the National Energy Commission, *CPN* represents one division of the whole energy structure. *GD* is considered a dominating agent in the cultural field.

The *PD* has served as a solid data source for analyzing climate change in previous studies (Fan, Xue and Xu 2018, Xie 2015) as well as environmental issues (Tong 2014). The articles from the *PD* are under rigorous censorship to ensure consistency with the stance of the central government. *PD* is the most crucial party organ, and the news articles from this venue are usually reposted in other newspapers. This data source has a large audience in China and is influential (Fan, Xue and Xu 2018, Tong 2014, Xie 2015). The *GD*, with a daily circulation of more than 490,000 in 2013, is the Chinese Communist Party's official outlet for educated elites. It maintains considerable social influence, and effectively transmits the party's ideology. Compared with *PD*, *GD* generally presents events from cultural and scientific perspectives. *GD* will enrich the understanding of the dominant framing strategy in this project. *PD* and *GD* are the two politically-oriented newspapers in my analysis as they are both directly administrated by the Central Committee of the Communist Party of China. Both newspapers have online websites where the public can easily read reporting. The other two news sources will act as representatives of industry-oriented newspapers. They are the main outlets for information on issues including energy policy, energy management strategy, and future development trends. Including different types of newspapers fulfills the claim by

O'Donnell and Rice (2008) that "future research should compare environmental coverage by newspapers varying in quality and circulation." In total, 4091 newspaper articles address climate change or global warming. 1736 newspaper articles remained in the macro-level dataset after deleting irrelevant and duplicate articles, as well as brief information letters.

The micro-level data set is from the online forum—*Zhihu*. *Zhihu* is China's equivalence of Quora, and it is the largest social Q&A community in China. Users can propose and answer questions, comment on other users' answers, and perform various other actions (Deng et al. 2020). *Zhihu* integrates the features of exchanging knowledge, like the traditional issue-oriented websites (like Google Answers) and the feature of building up social connections within the community (like Twitter). By 2018, *Zhihu* had more than 100 million registered users and more than 60 million searches per day (Zheng, Shi and Yang 2020). The online forum provides reliable and valuable information. Scholars obtain data from *Zhihu* to analyze gender politics (Peng, Cummings and Li 2020), HPV coverage (Li and Zheng 2020), and internet users' behavior patterns (Chen and Deng 2014, Deng et al. 2020).

One of the advantages of using *Zhihu* as the data source is that the website does not have a character limit like other social media (like *Weibo* abovementioned). Therefore, users can provide comprehensive and detailed answers to questions, which facilitate in-depth understandings of individuals' perceptions of climate change. An answer to one question on *Zhihu* can be treated as an open-ended question from a self-administered survey. Open-ended questions often include the possibility of discovering nuanced information and avoid researcher bias (Reja et al. 2003). This feature of a Q&A

community will deepen the understanding of climate change perceptions on the micro-level. The other advantage of *Zhihu* is that different types of users— "Lurkers, Questioners, Answerers, and Questioner-Answerers" (Deng et al. 2020:5), contribute both to generating and sharing public knowledge. Lurkers do not contribute to constructing content by asking or answering questions, but they play an essential role in assessing the information provided by Questioners and Answerers. The function of "agree" in *Zhihu* allows Lurkers to express their ideas conveniently, which also promotes the interaction between Lurkers and Answerers. In addition, Zhihu users are more likely to receive the answers with more "agrees", this leads to more responses and answers; the "agree" function also contributes to a thriving social Q&A community (Deng et al. 2020).

Some limitations of using *Zhihu* as a data source exist. According to the user report released by *Zhihu* in 2017[4], about 80.1% users have bachelor's degree or above. 61% of users are from 25 to 35 years old. *Zhihu* users are from first-tier to fifth-tier cities, but 41.4% of users hail from second-tier cities and above. Findings from this dataset may not be appropriate to represent the whole population, especially those people residing in rural areas. But considering the large number of answers related to climate change, the information from *Zhihu* can enhance our understandings of climate change concern among individuals in China.

Overall, *Zhihu* includes 1,855 questions with "climate change" and "global warming" in their threads. I include questions with over 20 answers in my analysis and consider the relevance, representativeness, and influence of the questions (Saunders et al.

[4] 知乎用户刻画及媒体价值研究报告(Zhihu User Profile and Media Value Research Report)

2018). The list of questions and number of responses are provided in Table 3.1. The questions are organized based on the nature of the questions: general, climate change causes, climate change impacts, and climate change mitigation and adaptation.

Table 3.1 Question Threads and Number of Answers in the Micro-level Dataset

Nature of Questions	Question Threads	Number of Answers
General	Some people claim that global warming is a hoax. Is there evidence to prove that it is true?	115
	Is global warming a hoax?	448
	Why does no one care about global warming?	24
	Why is the issue of global warming that was hotly discussed in the past few years now hardly mentioned?	129
	What are the common misunderstandings of global warming?	57
	Trump believes that climate change is a conspiracy. How do we view climate change today?	26
	How do you view the fact that in the 2016 U.S. election. vice presidential candidate, Pence, does not believe in theories of evolution, smoking causes cancer, and the greenhouse effect?	84
	How do you think the Bishop of the Vatican Marcelo Sanchez Sorrento believes that Trump's views on climate change are anti-scientific?	33
	Why do people claim global warming when most of the countries are experiencing the coldest winter in recent years?	34
Causes of climate change	Is there any conclusive evidence that human activities have caused global warming?	116
	Is there any relationship between climate change and carbon dioxide emissions?	23
Climate change impacts	Will global warming really harm humans?	44
	Why does climate change induced melting glaciers threaten the continent?	24
	What does the substantial increase in the concentration of carbon dioxide and methane since the industrial revolution mean to the ecological environment and human society?	29
	What do you think about news reports that the sea level rose by 38 millimeters in 2016?	22
	How do you view the 15,000 scientists "second warning" to humans?	191
	NASA and NOAA announced that 2017 is the second hottest year since 1880. Does this explain the severity of climate change?	82

	In the year 2100, all human animals on the earth are facing extinction. Shanghai will be flooded, is it true?	26
Climate change mitigation and adaptation	Would the use of nuclear weapons to change the earth's orbital radius curb global warming?	186
	Can large-scale planting of moso bamboo become an effective way to alleviate global warming?	24
	Should humans prioritize adapting to climate change or mitigating climate change?	30
International conferences and agreements on climate change mitigation	What do you think of the 2015 Paris Climate Change Conference?	28
	From the Copenhagen Climate Conference to the Paris Climate Conference, what developments and changes have been made in the academia's understanding of global climate change?	87
	How do you view the cancellation of the China-EU Joint Climate Communique?	39
	How do you view the US media expect Trump to announce that the US will withdraw from the "Paris Agreement"?	84
	How do you evaluate Trump's decision to withdraw from the "Paris Agreement"?	365
	What do you think of Donald Trump's announcement of the withdrawal of the United States from the "Paris Agreement"?	86

Additionally, I consider time and the type of questions (knowledge-based, policy-discussion, objective conditions, and behavioral intention) in the analysis. To enhance my analysis, I also include two relevant incidents. The first one is journalist Chai's interview with Ding Zhongli. Ding was the vice-president of the Chinese Academy of Sciences, with expertise in Neogene sediments and ancient climate. The interview is about carbon emission reduction and aroused an intense discussion among internet users. To some extent, Ding represented the idea that the carbon emission plan is controlled by Western countries and it is used by them to influence China's economic development. Chai's view on climate change mitigation is that we should do whatever we can for mitigation. In the interview, Chai challenged Ding's opinion several times. The public had varied responses to the two public figures as well as their ideas on climate change mitigation. Therefore, the case is significant and related questions are included in the individual-level analysis. Cultural events such as international and domestic movies and documentaries reflect

climate change and related environmental degradation as well (Schäfer, Ivanova and Schmidt 2014). The second case centers on the discussion of a self-financed documentary named "Under the Dome," which discusses the energy industry and air pollution in China, as well as climate change. The director is the journalist Chai. According to my analysis, the two cases are intertwined and reflect the public's understanding of climate change and air pollution.

Dirikx and Gelders (2010) note that qualitative methods have been used by scholars to study media portrayal of climate change. My research strategy offers in-depth insight into how specific time periods, political, cultural, and social factors as well as their interactions influence the media's construction of climate change. I first conduct qualitative content analysis to assist descriptive analysis. Qualitative content analysis is a common data analysis approach used to systematically describe and ascertain meaning in qualitative data (Schreier 2012). I provide descriptive understandings of the main frames found in both newspapers and the online forum. Additionally, this study is the first to apply social movement framing theory to media construction of climate change in China. The identified frames are rooted in studies of Western countries, which means it is inappropriate to employ coding themes from exiting frameworks. Qualitative content analysis also makes the integration of concept-driven and data-driven data and analysis possible (Schreier 2012).

Several methodological weaknessses in research design exist due to availability of data. First, the scope of newspapers is limited to four national ones. Hundreds of newspapers operate in China, therefore, the information obtained from the four newspapers cannot be generalized to others and representation is limited. Second, the

scope of individual's climate change perception is limited to one online forum, with unique demographic features a. Trends and characteristics identified from the forum cannot be generalized to the general public. Third, even though the Chinese official media's influence is significant, this project cannot assert that *Zhihu* users' climate change perceptions are directly influenced by the information presented in the official media.

I start with exhaustive open coding to identify all the subcategories that arise in my newspaper reports. Then I treat the strategic frames as main categories and group the subcategories accordingly. Operationalization of the three purposive frames is based on latent evaluation of the themes in the discourse and language used in the reports. I include additional concepts as they arise in my analysis. To offer additional nuance for special factors/events covered in news reports, I track issue trends using frequency analysis, employing the three main types of climate change stories in newspaper reporting: ecological, political, and scientific (Boykoff 2011).

For the micro level analysis of forum content, I engage in open-coding based on framing and reasoning mechanisms, identifying exhaustive sub-categories to help determine how individuals perceive climate change, what influences their understanding, and what sources they use to support their arguments. Then I adopt an interpretive approach to make comparisons between identified media frames and individual frames. This approach stems from a hermeneutic tradition, and allows me to dig deeper for meaning in discourse. The interpretive approach helps to present multiple realities that are represented in a collection of personal narratives (Guest, Namey and Mitchell 2013).

I use Nvivo12 to organize my data, allowing for coding, memo writing, and analysis simultaneously. Memo-writing helped to develop and refine my analysis. Charmaz illustrates that "memo-writing is the intermediate step between coding and the first draft of your completed analysis." (2004:166) I engaged with memo-writing throughout the coding and analysis process and also use Excel to facilitate the quantification of qualitative data.

All newspaper articles and online discussions are in Chinese, and I conducted coding in Chinese. Translation work was completed in the analysis phase, once extracts were selected for use in my document. As it is impossible to translate all the data into English, the reliability of the coding themes is checked with the help of a well-trained qualitative research practitioner from China. The practitioner and I first coded 25 news articles chosen randomly from *PD* and *CEN*, and 30 randomly chosen answers to the question "Is global warming a hoax?" from *Zhihu*. We developed individual coding themes using an open-coding strategy. Then we discussed the meanings of each coding theme, and compared the similarities and differences between our coding themes. 2) Then based on the identification of coding themes, the practitioner and I coded another ten articles from *PD* and 20 answers from the same *Zhihu* question. This process helped to clarify thematic descriptions.

CHAPTER IV

CLIMATE CHANGE FRAMES IN OFFICIAL MEDIA

"(Media) is a place where formal climate science, policy and politics operating at multiple scales permeate the spaces of the 'everyday'." (Boykoff 2011:3)

Boykoff (2011:1) notes, "as we progress in the twenty-first century, climate change has become a defining symbol of our collective relationship with the environment. Diagnoses (what it is) and prognoses (what we should do) make for high-stakes, high-profile and highly politicized science and policy deliberations. Each cut to the heart of how we live, work, play and relax in modern life, and thus critically shape our everyday lives, lifestyles and livelihoods" (2011:1). Diagnostic and prognostic frames are the cornerstones of structure, guiding policies of climate change adaptation as well as climate change mitigation practices.

Media, no matter the society in which it operates, is influenced and shaped by power relations. "The news media serve as an important institution for the reproduction of hegemony" (Dispensa and Brulle 2003:79), and so do the official media in China. Official media in China is the mouthpiece of the central and local government. Also, it can be a medium to transmit government ideology and shows what information the government wants the public to know and what activities the public should participate in. The way media outlets construct climate change and the focus they put on their efforts

deserves scholarly attention.

In this chapter I attend to various frames identified in newspaper reports and the ways different newspapers transmit their ideologies to the public in China. How do different state-controlled newspapers transmit climate change ideology to the public and in what ways? I start this chapter with a descriptive analysis of the general trends evident in the four newspapers, including coverage of climate change over time and events attracting journalist interest to understand macro-level trends across time. Then I offer descriptive analysis of political-oriented and industry-oriented newspapers separately, employing three framing dimensions: diagnostic framing, prognostic framing, and motivational framing. I end the chapter with comparisons of the different frames employed in the four newspapers.

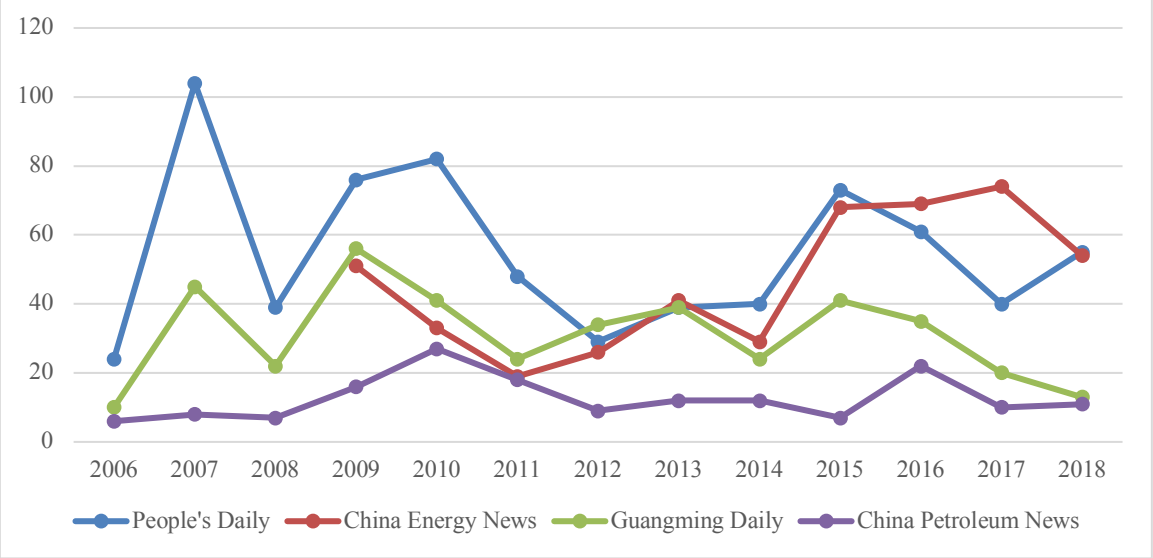
General Coverage Trends over Time

Coverage of climate change fluctuates from year to year in each media source (Figure 4.1), correlating with significant international attention and the promulgation of climate mitigation policies in China. The number of climate change reports increases after Xi's inauguration in 2012, but not significantly. The number surges in 2015 because of the 2015 United Nations Climate Change Conference in Paris. In general, the two politically-oriented newspapers, *PD* and *GD,* illustrate similar trends regarding the number of reports over time and have a higher level of coverage of climate change. *CPN* has the lowest coverage of climate change among the four.

PD and *CEN* show the same fluctuation trends over time except for the periods 2011 to 2012 and 2016 to 2018. The number of newspaper articles relating to climate change in

PD increased dramatically from 2006 to 2007. This trend aligns with the increase in global climate change reporting during this time period (Boykoff and Smith 2010). The key events in *PD* reports are the 2007 United Nations Climate Change Conference, the fourth assessment report of the IPCC, and the release of China's National Climate Change Program. Coverage decreased from 2007 to 2008 by 63%, likely due to the hosting of the 2008 Summer Olympic Games, which shifted media attention from climate change related content. Reporting increased again in 2009, influenced by the Copenhagen Climate Change Conference. It is not surprising that *CEN* has a different focus than *PD*. *CEN* increased coverage of climate change from 2011 to 2012 because of the topic related to the energy revolution, which was barely discussed in *PD*. Increased coverage from 2016 to 2017 in *CEN* was linked to Carbon Markets, which was only discussed in three reports in *PD*.

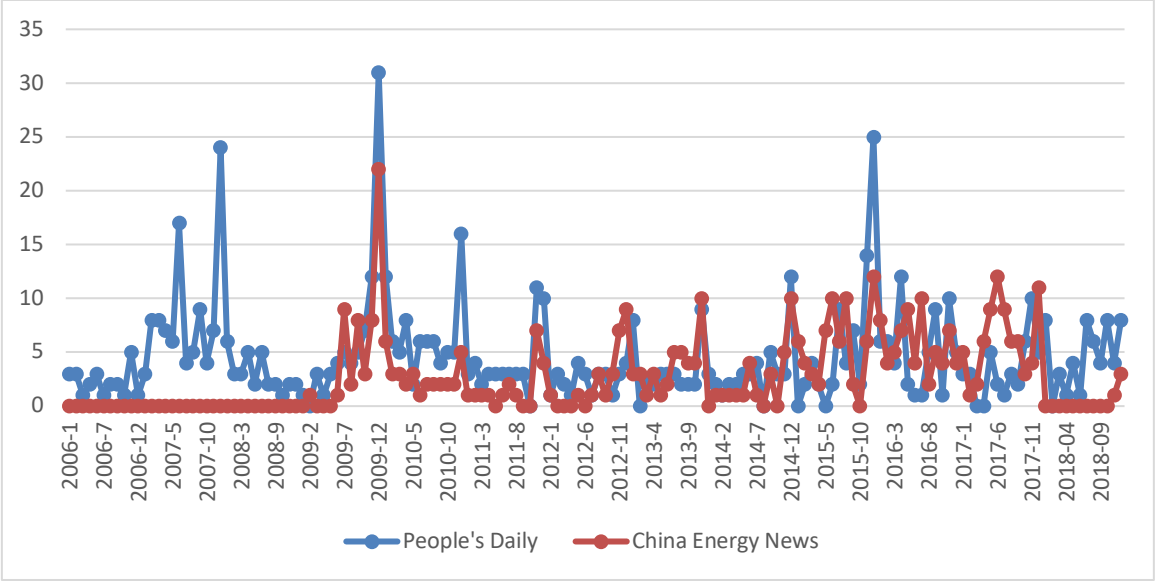
Figure 4.1 Number of Newspaper Reports Covering Climate Change Related Events 2006-2018



Specifically, *PD* and *CEN* maintain similar trends of coverage by month[5]. It is important to point out that the start date of *CEN* is 2009. There are some dissimilarities regarding the frequency of reporting climate change among the newspapers. In *PD*, newspaper reports on climate change occur almost every month, not the case with *CEN*. This may be due to publishing frequency between the sources. *PD* is a daily newspaper, but *CEN* is a weekly newspaper. The two newspapers have differing foci, attending to different types of events, discussed in detail later. There are some months when *CEN* published relevant reports of climate change while *PD* did not. They are Feb. 2013 (3), Jan. 2015 (6), May. 2015 (7), March 2017 (2) and April 2017 (6). These articles are reports and comments on technical information related to the traditional energy industry, not a focus of *PD*. In the following analysis, climate change related reports based on contextual events are categorized in various ways. An additional category named "industry issues" was created for *CEN*. Except for the international conferences, other countries and areas' energy policies, especially in the U.S. and the EU, also attracted journalists' attention. For instance, *CEN* published several articles providing details of American President Donald Trump's policies on energy, while *PD* talked about Trump's decision regarding the Paris Agreement withdrawal in 2017.

Figure 4.2 Coverage of Climate Change in *PD* and *CEN* Monthly, 2006-2018

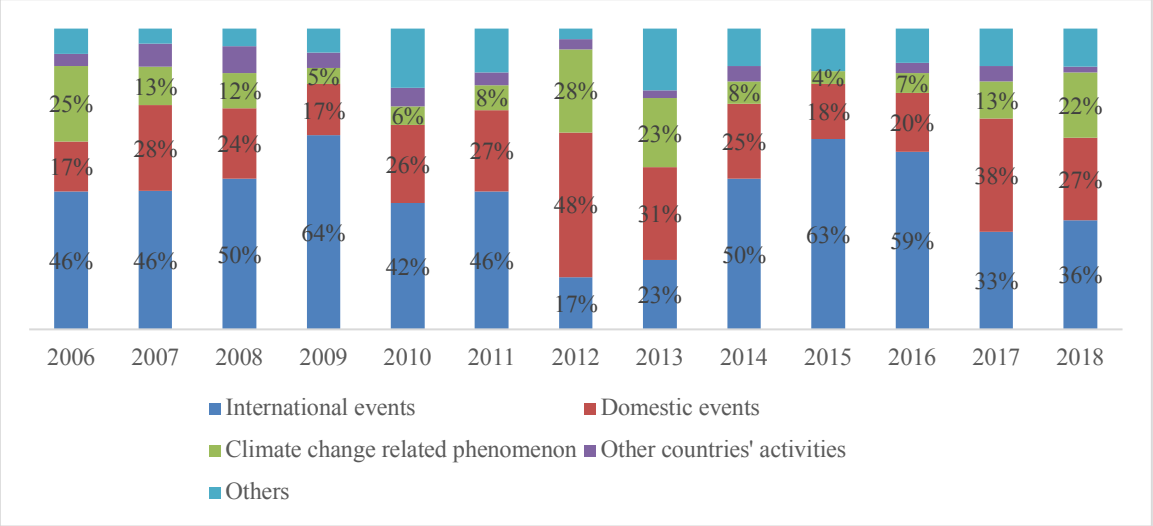
[5] Here I only discuss *PD* and *CEN* because of the limited reports in *CPN*.



People's Daily

In general, coverage of climate change in *PD* is event-based. Contextual events are divided into five categories: international events, domestic events, climate change related phenomena, other countries' activities, and a miscellaneous category named 'other.' International events include international conferences, release of international reports, and international cooperation. Domestic events include promulgation of policies and reports, conferences, and other activities promoted by local governments, industries, individuals, as well as other social institutions in China. Climate change related phenomena includes extreme weather and disasters both in China and other countries correlated to climate change. Other countries activities include policies, conferences, and other events in nations other than China.

Figure 4.3 Contextual Events in *PD* from 2006 to 2018



International events receive significant attention in *PD*. For instance, the 2007 United Nations Climate Change Conference was held in Bali, Indonesia, between December 3 and December 15. The number of reports covering climate change climbed to 24 in December, which accounted for almost 20% of the overall number of reports in the same year. In 2009, the number of newspaper reports increased dramatically in December because of the Copenhagen Climate Change Conference. The same trend is seen in 2014 when the United Nations Climate Change Conference took place in Lima, Peru. In 2015 and 2016, international events including the upcoming United Nations Climate Change Conference, COP21 in Paris, the Paris Agreement, and G20 were subjects of interest. In contrast, in 2012 and 2013 the United Nations Climate Change Conference did not receive the same amount of attention as its counterparts. Coverage of climate change dropped sharply in 2012 and 2013. At the same time, domestic events related to climate change received more attention, such as the 18th National Congress and the release of China's Policies and Actions for Addressing Climate Change (2013). Climate change

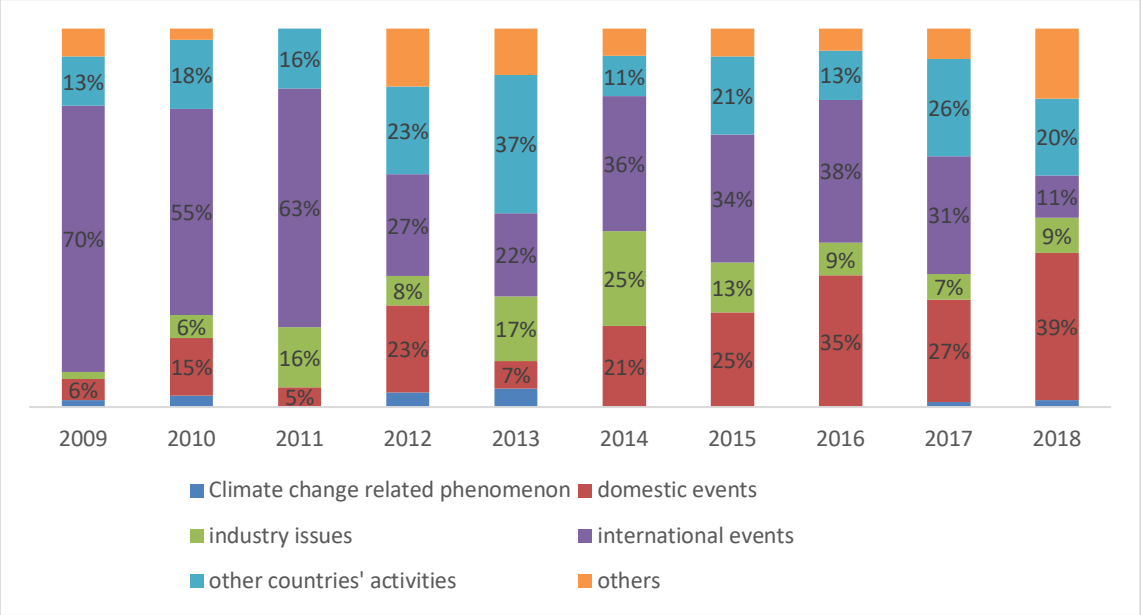
related disasters and extreme weather including drought, rainfall, and unusually cold winters and hot summers, attracted *PD* reporting as well in 2012 and 2013.

China Energy News

In *CEN*, attention to international events decreased over time. In contrast, domestic events and other countries' activities received more attention. A number of articles were published around the conferences held and reports released by the National Energy Commission (known prior to 2010 as the National Energy Bureau), local governments, China National Petroleum Corporation as well as China Petroleum & Chemical Corporation. The latter two corporations are owned and governed by the central government, therefore I treat these conferences as domestic events. Such events are not covered and reported in detail in *PD*. Another big difference between *PD* and *CEN* is that climate change related phenomena was not covered frequently in the latter. Only a few articles address air pollution in Beijing.

As is the nature of this newspaper, reports focus on technological aspects more here than in the other three sources. Technological events or scientific facts stand for a considerable proportion of the content, shown in the following figure.

Figure 4.4 Contextual Events in *CEN* from 2009 to 2018



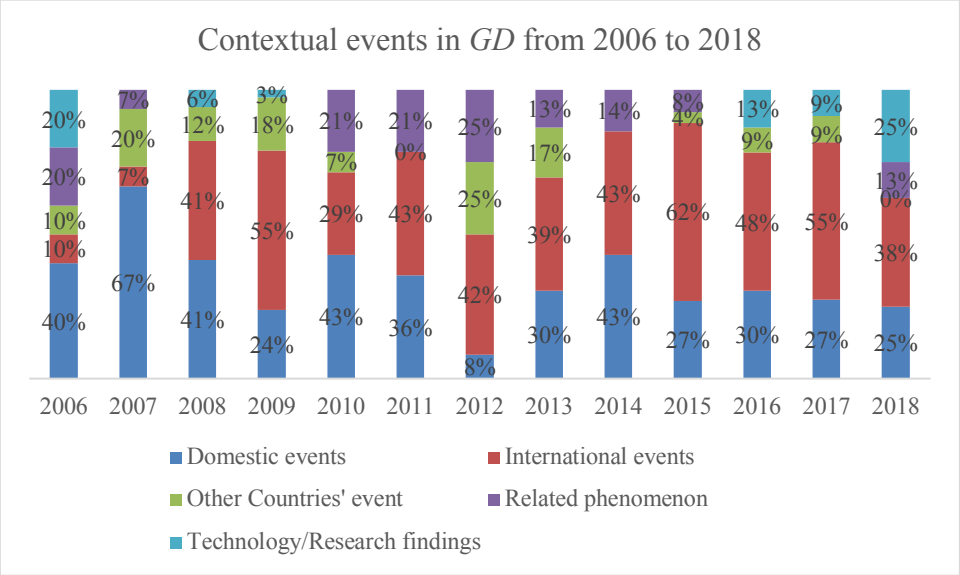
Guangming Daily

Compared to *PD*, *GD* includes more content focusing on the facts of climate change, aligning with the nature of the newspaper. *GD* carries responsibility for educating the general public, while *PD* emphasizes the spread of political ideology. It is not unusual for *GD* reporters to develop their story based on research findings as well as technological innovations. Coverage of international conferences represent a large proportion of stories - from Copenhagen (2009) to Bonn (2017). In addition, *GD* includes stories of culture and climate change both globally and domestically. It is the only newspaper covering Yuan Xikun's artwork, which connects the traditional goodness sculpture with ozone depletion and climate change.

GD also takes the responsibility of addressing popular science propaganda, to establish a close relationship between science and the public. "Green Education" is a

unique theme in this newspaper. It covers the promotion of environmental protection awareness among the public in general, stakeholders and practitioners in industries, and college students, as well as children.

Figure 4.5 Contextual Events in *GD* from 2009 to 2018



Another unique aspect of *GD* is that while it emphasizes the importance of understanding climate change in a scientific way, it is the only one among the four addressing the relationship between scientific study and interests of the nation. These two aspects are in contradiction as science should be objective, but interests of the nation should not be violated by scientific findings. The famous words from an interview on Ding Zhongli, "Science without borders, but scientists have the motherland" is quoted in reports which shapes the middle ground to negotiate the objectivity of science and patriotism as well as nationalism.

China Petrochemical News

The number of news reports related to climate change in *CPN* is small compared to the other three outlets, and this source is less valuable in presenting the contextual events of reports. Overall, the unique part of *CPN* is that it includes existing trends of the petrochemical industry in other countries, especially relating to Big Oil Corporations like BP, Royal Dutch Shell and Exxon Mobil. This source focuses more on discussion of "renewable resources," and "clean energy" as well as industry meetings and domestic events. Alternatives for climate change mitigation are also a focus of *CPN*. Wind, nuclear power, tidal power among other alternatives are discussed with the conclusion that all of them have shortcomings and will not be able to replace petroleum. Efforts and ideas on how to make the petrochemical industry "cleaner" are emphasized in reporting.

Domestic news coverage focuses on the central government's conference, industry meetings, as well as the China Petroleum and Chemical corporation's regular meetings. The UN climate change conferences are covered in the news over the years, but only 1-2 reports are provided for each conference. In all the reports over 12 years, only one article was constructed based on climate change related phenomenon. Subjective or emotional responses are not the purpose of news reports on *CPN*.

This chapter is rooted in extant research, finding that politically-oriented and industry-oriented newspapers focus on different aspects of climate change. Data collected from the last 12 years support earlier findings. Overall, politically-oriented newspapers put more effort into covering climate change related issues, based on the number and diversity of reports. Compared to the other two newspapers, *CEN* and *CPN* are limited in coverage to international and domestic conferences, technical innovations in China and other

countries, energy giants' actions to fulfill the promise of GHG emission reduction, as well as debates of traditional energy and green/clean energy.

Framing of Climate Change in Politically-oriented Media

In this section, I focus on analyzing the strategic frames used by the two different types of official media in China. Table 4.1 provides details of identified strategic frames – diagnostic, prognostic and motivational - and their purposes. The responsibility strategic frame is used the most in politically-oriented newspapers. The conflict strategic frame is employed the least. I articulate prevalent thematic statements throughout to organize discussion of my findings.

Table 4.1. Core Tasks of Framing, Master Codes and Strategic Frames in *PD* and *GD*

Purposes	**Master codes**	**Strategic frames**	**Number of reports**	**Percentage**
Diagnostic framing	Anthropogenic climate change	Human interest	34	3.1%
	Assign the blame	Responsibility	242	21.9%
	Climate change uncertainty	Conflict	6	0.5%
Prognostic framing	International cooperation	Responsibility	127	11.5%
	Low-carbon economy in China	Economic consequence	51	4.6%
	Energy structure shift in China	Economic consequence	49	4.4%
	Daily behavior shift	Economic consequence	23	2.1%
		Responsibility	16	1.4%
Motivational framing	China's accomplishments	Responsibility	247	22.4%
		Economic consequences	118	10.7%
	Hopeful future	Human interest	33	3.0%
	Urgency of climate change mitigation	Human interest	49	4.4%
		Economic consequences	31	2.8%
	Carbon tax	Morality	12	1.1%

	Irresponsible developed countries	Conflict	68	6.2%

Diagnostic framing

Diagnostic framing aims to provide the nature and the contours of social issues in media. This framing responds to the question: what is climate change? As the Chinese government plays a leading role in climate change adaptation and mitigation, there is limited discussion of whether anthropogenic climate change is occurring. Both *PD* and *GD* provide plenty of evidence, either from the IPCC report or from formal research, to normalize public recognition of anthropogenic climate change in a scientific way.

Statement 1: Climate change is happening and it is a threat to all human beings.

Unlike the increasing polarized news coverage of climate change in the U.S. (Chinn, Hart and Soroka 2020), the statement that climate change is an undoubted fact still dominates the politically-oriented official media in China. The IPCC report, official observation data from China and other countries, scientific findings from academic journals like *Nature* and *Science* are regularly cited in the news. Evidence is from diverse disciplines as well, including archeology, meteorology, and geology, among others.

To make the arguments more persuasive, newspaper articles often add an emotional angle to evoke public attention. Descriptions of catastrophic scenarios are prevalent in articles which emphasize the strategic frame of human interest. For example, an article in the *PD* in 2007 notes,

> In 2006, China experienced several major typhoons, which to some extent were related to global warming. Last year, typhoons in China were featured by early landing time, long stay time, strong winds, heavy rainfall, and strong destructiveness, rare in history…. heavy rain, high temperature heat waves, heavy fog, haze, thunder and lightning, acid rain and other frequent disastrous weather and mountain torrents…have seriously affected economic and social development and the safety of people's lives and property.

Connecting extreme and unusual weather to climate change is sufficient to convince the public that climate change is happening and is devastating. Emphasizing the loss brought by extreme weather has a significant influence on the public's perception of climate change (Bilandzic, Kalch and Soentgen 2017). In addition, predictions of a tragic future are prevalent in the reports. Readers can easily determine potential harm through some of the report titles: "Weeping Glacier," "Living in Stove," "Earth has a fever," "Heaven on Earth is disappearing," and "Alarm Bell is ringing" just to mention a few.

Furthermore, by connecting climate change to activities cherished by the public, media reports can effectively awaken awareness of climate change among the public. For example, a 2007 report in *PD* relates climate change to the famous ice sculpture festival in Harbin, a city located in the north part of China,

> Global warming has made Heilongjiang the warmest winter in 56 years. Recently, the rising temperature has made the street ice scene of Harbin city more beautiful out of sight, the relevant departments had to dismantle the melting ice scene in advance. These ice sculptures call for at least 20 days earlier than usual!

Keeping the public updated about scientific knowledge is a significant way of preventing climate change doubt. Terminology about climate change shifted from the term "global warming" in the official media around 2012. The shift reflects the dedication of the central government to avoid uncertainties and scepticism. In 2012, most Chinese provinces experienced a colder winter. This phenomenon may easily arouse doubts of global warming claimed by authorities. As a result of this concern, *PD* published four reports and *GD* published three in 2012 to clarify the relationship between cold weather, global warming, and climate change. Here is an excerpt from a 2012 *GD* report:

> Under the trend of global warming, why does winter become colder? Wang Qiyi said: "Global warming is a fact, and cold events are determined by the natural laws of climate change. The temperature curve rise will not be a straight line, but Fluctuating rise…There is no essential change in the long-term trend of global warming."

The clarification of the connotation of "global warming" and "climate change" is essential. Even though in other media the two terms are often used interchangeably and the term "global warming" is most preferred because it is a more concrete expression, the consensus in the scientific community is that climate change is a more appropriate term. Both *PD* and *GD* take the responsibility of transmitting accurate and trustworthy information to the public. The choice of terminology is critical.

Statement 2: Human activities are the main cause of climate change.

The second most prevalent statement in China's official media is that climate change is anthropogenic. Human activities, including consumption and production, are

considered the main source of greenhouse gas emission and the primary cause of climate change. Attributing responsibility for climate change to human activity in diagnostic framing lays a foundation for the latter two framing process -- what human beings have done is wrong and we have to fix it.

A 2006 *GD* article notes, "More than six billion people on the planet conduct activities day and night without stopping. Greenhouse gas emissions are increasing day by day, the ozone layer is being destroyed, the Antarctic Circle is shrinking, and the Arctic Circle is also narrowing... These changes have raised serious warnings to mankind. It's not a small challenge." A 2007 *PD* report also states, "With the transformation from a traditional agricultural society to a modern industrial society, energy-consuming companies have an unshakable responsibility for global warming." Illustrating that human activities are the main causes of climate change and arguing that all human beings should be blamed is a fair and general claim in reports. This diagnostic frame lays a foundation for mobilizing the public to take individual action and justify the ecological revolution happening in China. It is worth noting that newspaper articles in China often make more specific claims as to who should be blamed for climate change.

Statement 2a: Developed countries should be responsible for climate change and developing countries are the victims of climate change.

Even though human activities are a primary cause of climate change, not everyone is equally expected to take responsibility. The common but differentiate responsibilities principle from the United Nations Framework Convention on Climate Change (UNFCCC) are emphasized in the news sources. Industrialization experienced by most

developed countries is a significant contributor of CO2 as well as environmental issues that burden all human beings on earth. Therefore, developed countries should and must take more responsibility to mitigate climate change.

The intense relationship between developed countries and developing countries is clear in the climate change news reports. One argument is that global warming reflects the debt owed by developed countries. GHG emissions by developed countries in their industrialization processes are a primary cause of climate change. A 2007 article in *GD* notes, "the modern development model of developed countries since the Industrial Revolution has led to more and more serious global climate change problems. According to statistics, from 1860 to 1990, the cumulative CO2 emissions of major developed countries accounted for 78% of global cumulative emissions, while their population in 1990 accounted for only 22% of the global population. Developed countries have been, are, and will be the main emitters of greenhouse gases for a long time to come." Therefore, "developed countries should be responsible for their historical cumulative emissions and high level of emissions per capita. Not only take the lead in terms of reducing emissions, but also provide funds and transfer technology to developing countries" (*PD,* 2009).

The debate regarding distribution of responsibilities is the main barrier to consensus regarding reduction to the proportion of GHG over the years. Zhang (2003) identifies three principal forces driving China's climate change policies: promoting the national interest, protecting state sovereignty, and enhancing international image. Emphasizing that responsibilities should be taken by the developed countries, reducing losses due to

GHG emission reduction, and playing tough as a representative of developing countries in international negotiations respond to the three forces.

Statement 3: Climate change uncertainty is produced in Western countries.

Climate change uncertainty is covered in *PD*, contradictory to the expectations of politically-oriented media. However, the presentation of information related to climate change uncertainty plays a role in confirming Chinese government's stance and judgments of the fact that anthropogenic climate change is happening. Journalists mainly discuss why there is climate change uncertainty and describe the climate change uncertainty in Western countries as "political farce," "a show directed by traditional energy industry oligarchs in developed countries," and "irresponsible words from 'scientists.'" A 2012 article covers the debate of climate change in the U.S. and Europe and claims a war between conservative and liberal ideologies. Most importantly, the article notes that "the debate does not help with the development, and these disputes should not affect our determination and actions to deal with climate change…we should act smart and not put the survival and long-term development at risks." Therefore, by giving out negative evaluations of the construction of climate change uncertainty in Western countries, the reports in *PD* re-emphasize the importance of including climate change mitigation in China's development policy.

Overall, human interest, responsibility, and conflict frames are adopted in the two politically-oriented newspapers. The three strategic frames fulfill the tasks of stating that climate change as a problem caused by human activities, especially by developed

countries, in a clear and easily understood way. Using an emotional angle to present relevant information is efficient in attracting the attention of a general audience.

Prognostic framing

Prognostic framing points out solutions to problems identified in the process of diagnostic framing, suggests the best ways to implement solutions, and rationalizes approaches (Snow and Benford 2000). As climate change is a global issue, strategies related to climate change mitigation range from macro to micro, from global to domestic. Strategic frames of economic consequence and responsibility are presented in party-oriented newspapers to rationalize the suggested policies and development path shift.

Statement 1: Low-carbon economy and energy structure shifts bring economic benefits and help with sustainable development at macro- and micro-levels.

PD and *GD* emphasize economic consequences in their introduction of a low-carbon economy and shift in energy structure in China. A major concern addresses conflict between environmental protection and economic development. Articles generally deny the possibility that a low-carbon economy would impede development. Newspaper reports emphasize that development of "green" technology and clean energy would facilitate the transformation of traditional industry, and guarantee benefits brought by sustainable development economically and ecologically.

Both newspapers address the economic consequences of living a sustainable life and provide guidance for reducing carbon emissions on the individual level. Greener living styles include: less energy consumption in daily life, taking public transportation, garbage classification, and less food waste. Economic benefits are emphasized by calculating

utility and gas costs in the household. A piece in *PD* (2009) notes, "After washing rice and vegetable, the water will be poured into two large buckets. It can be used to water the flowers, flush the toilet…; when the gas stove is turned on at night, a pot of boiling water will be heated together, killing two birds with one stone... one month's utility bills can be reduced by 40 or 50 yuan." In addition, the introduction of governmental aid is constructed by including individual examples, and sharing the amount of money the individual will save. In the same report, the journalist interviewed Zhang, who lives in Chaoyang District, Beijing. Zhang states that "the community recently held a 'one yuan for energy-saving lamps' event. Thanks to government subsidies, we can buy an energy-saving lamp for one yuan!"

According to its official introduction, *GD* emphasizes the coverage of educational dimensions and cultural aspects. Therefore, two unique themes, "green education" and "promoting environmental education," are seen in its reports. By including and making some of the primary schools' models in the reports, encouraging inventions related to green technology, and building a "greener campus." *GD* spreads the central government's ideology of "a greener society."

Statement 2: International cooperation can be reached as long as developed countries take more responsibility.

The responsibility frame is emphasized in *GD* and *PD*. As climate change is framed as the debt owed by developed countries, it is not surprising to see reports urging developed countries to action. Active participation in international climate change conferences, providing financial aid and technological support to developing countries, and taking

voluntary action are the main tactics mentioned in articles. It is interesting to note that there is an attitude shift toward European countries in *GD*. Before 2009, European countries, specifically the UK and France, were considered bellwethers and educational models regarding climate change mitigation. Innovations of green technology, green policy, as well as behavior changes were covered in the reports. In a reversal, starting in 2009, the same concepts are framed as "green technology hegemony," "the fourth industry revolution," and "battle for leadership in climate change mitigation." Politicization of climate change is omnipresent in news reports.

Even though relationships between China and other developed countries have grown conflictual in past years, the necessity of international cooperation is emphasized. "This is how climate negotiations are: there are consensus and differences; there are contradictions and cooperation. Quarrel is indispensable, and you must shake hands. Tackling the big issue of climate change is a test on the wisdom of mankind on the planet, and affects the long-term common future of mankind" (*GD*, 2010). By stating that the process of negotiation is inevitable, reports also try to build up the image of China as a responsible country. It is prevalent to find the statement in both party-oriented newspapers saying that "China always follow its vision of a community with a shared future for all human beings, live up to its responsibility as a major country, and made a substantial contribution to global public health."

Overall, strategic frames of responsibility and economic consequences are prevalent in both the politically-oriented newspapers. This pattern is aligned with U.S. newspaper articles, which focus more and more on providing details of climate change related policies and their economic consequences (Zamith, Pinto and Villar 2013). Emphasizing

the benefits of an industry structural shift and renewable energy rationalize the solution and plays a crucial role in strengthening the confidence of institutions as well as the general public.

However, both *PD* and *GD* emphasize actions to reduce climate change impacts with a targeted population -- urban residents. Urban residents represent a large proportion of carbon emissions from both production and energy consumption. With regard to industry, agriculture and animal husbandry are primary sources of GHG. None of the reports mention strategies regarding shifts in these two segments. Agriculture is considered foundational in China, and rural residents represent about 41.5% of the population (2019 China Census Data) and farmers represent about 30% of the population (2019 China Census Data). The annual income of farmers in 2018 was 14,600 RMB[6], significantly lower than that of urban residents (42,359 RMB). China is facing the challenge of losing farmers as more and more young rural residents choose to work in urban areas. Encouraging a shift in traditional energy industry and emphasizing the economic consequences of developing "greener energy" is not enough. It is vital to promote the economic benefits of agriculture as well in future reports of climate change prognostic framing.

Motivational framing

Introducing policies and regulations is not persuasive for the public, therefore, journalists offer various strategies to legitimize and justify arguments. Based on the analysis, strategic frames of human interest, morality, and responsibility are often used to

[6] RMB stands for the Chinese currency

construct convincing news reports, and to emphasize the urgency of taking actions. By using human interest frames, news reports arouse compassion and emotional resonance; while morality frames help put climate change within the context of a moral prescription.

Statement 1: It is urgent to act because all creatures are suffering from climate change.

Pictures of skinny polar bears, adorable penguins, dry and barren fields, and burned animal bodies are frequently presented in climate change communications to shorten the distance between reports and audiences (Hulme 2009). Catastrophic descriptions of future possible disasters without efforts to slow down the pace of climate change are presented in both newspapers. A 2012 *PD* report covers the catastrophic consequences of water shortages caused by climate change, "if the average temperature rises by 3 degrees Celsius, more than 7 million people in Asia will face floods each year, and more than 100 million people worldwide will face food shortages; if the average temperature rises by 4 degrees Celsius, more than 3 billion people worldwide will face water shortages." Another report from *PD* in 2012 covers food shortages, and says "once the temperature is 1 degree Celsius higher than the optimum temperature for growing is higher, crop yields may be reduced by 10%." Loss of biodiversity is covered in a 2015 *GD* report, "from 1600 to 1800, 25 species on the earth were extinct; but 78 species have become extinct from 1800 to1950… and now biological species are disappearing at an unprecedented rate due to more and more extreme weather." It is noteworthy that in a 2016 *PD* report, the relationship between climate change and unknown disease and pandemics is discussed, and "If the global temperature rises by 2 degrees Celsius compared to 1990 …it will make dysentery, meningitis, dengue fever and other diseases more prevalent." The fear aroused by scenarios of environmental degradation is employed by

reporters to push individuals to make significant changes to their daily behavior and support climate change mitigation policies.

Statement 2: It is immoral to ignore the impacts of climate change.

Taking actions to mitigate climate change is considered a moral behavior in news reports. A 2009 report in *PD* explicitly states that "a low-carbon lifestyle can be achieved by taking the bus, changing energy-saving lamps, etc. This will reduce energy consumption and carbon emissions while ensuring a high-quality life…Try our best to consume less energy and emit less carbon dioxide. This should be promoted as a social morality." Specific behaviors are considered as immoral and devastating to all human beings. A 2014 report in *GD* talks about food waste and states "the carbon footprint of a 130-gram cheeseburger is 2.85 to 3.1 kilograms of carbon dioxide equivalent, which is equivalent to 23.7 times the weight of the burger itself. The consequence of wasting a burger is not just about the food itself, but also about the GHG emission. It is vital for everyone to think about people who suffer from hunger and food shortage caused by climate change before they throw away food only because the food is not to their taste." Similar reports were also published in *PD* in 2015 and 2017, emphasizing the immorality of food and energy waste.

Culture plays a significant part in justifying a low-carbon lifestyle or adopting green policies and regulations. In both the fields of sociology and communication, scholars reach a consensus that framing processes and frames reflect the social context (Benford and Snow 2000, Chong and Druckman 2007, Fairbairn 2012, Steinberg 1998). Frames that are closely related to cultural and community background are efficient in mobilizing

the public (Van Grop 2007, Zald 1996). Chinese culture stresses the intergenerational transmission of valuable resources, and this traditional value is used to persuade people to change behavior. “Leave a thriving earth for future generations” and “saving the earth for our descendants” are presented in *PD* and *GD* as the ultimate goal of climate change mitigation. One article from *PD* in 2009 states, “Our current emission reduction behavior may take hundreds of years to take effect, but our children and grandchildren will benefit from it.” Chinese traditional family morality and ethics are presented in newspaper articles to gain support from the public.

Statement 3: China is making efforts and is a responsible country.

The statement “China, being a responsible country” is presented in reports frequently. Titles of news reports include, “China, facilitating the international cooperation,” “China, being praised by its efforts regarding climate change mitigation,” “China is the model of other countries,” and “the World needs China to slow down climate change,” remind the public via imagery of how glorious China is as a nation. China’s current global position recognizes the achievements that Chinese people have made in the past three decades, and is essential to remain a leader regarding climate change. Being involved in climate change mitigation is key to establishing a “new image of China.” Therefore, the public should be proud of what the country has achieved and be supportive of future plans. The paradox is that while some reports claim that European countries are using climate change mitigation as an excuse to establish a new global order, others claim it is beneficial for China to lead climate change mitigation or to participate in “making the rules of the game.” Connecting patriotism to national policy is a frequent tactic in

China's official media, and can also be found in the reports promoting climate change mitigation.

To make the image of China on the global stage more unique and important, several reports criticize the U.S., a big country that did not make contributions to climate change mitigation, especially after the election of President Trump. According to reports, he U.S. impedes the progress of reaching consensus in international conferences, burdens developing countries represented by China, influences the ambitions of some countries, and weakens American's climate concerns. The strong contrast between China and the U.S. highlights the greatness of China and increases patriotism among the public.

Overall, in the two party-oriented newspapers, climate change is constructed as a phenomenon that threatens people's security in a variety of ways. It is necessary to take actions from macro-, meso-, to micro-levels. By incorporating strategic frames of morality, human interest, responsibility, and economic consequences, the nation's goal of realizing ecological modernization is solidified and justified.

Framing of Climate Change in Industry-oriented Media

Even though *CEN* and *CPN* are governed by the National Energy Bureau, news reports are also controlled by NPPP and should not violate the central government's general ideology. Thus, most of the frames employed in *CEN* and *CPN* are aligned with findings from the *GD* and *PD*. In this section, analysis will primarily focus on the unique role of industry-oriented media in terms of constructing climate change in their reports. An overall view of strategic frames is industry media is outlined in Table 4.2.

Table 4.2. Core Tasks of Framing, Master Codes and Strategic Frames in *CEN* and *CPN*

Core tasks	Master codes	Strategic frames	Number of articles	Percentage
Diagnostic framing	Anthropogenic climate change	Responsibility	24	3.8%
	Assign the blame	Responsibility	76	12.0%
	Climate change uncertainty	Conflict	12	1.9%
Prognostic framing	International cooperation	Responsibility	76	12.0%
	Low-carbon economy in China	Economic Consequence	107	16.9%
	Energy structure shift in China	Economic Consequence	167	26.4%
Motivational framing	China's accomplishment	Responsibility	109	17.2%
	National enterprise's accomplishments	Responsibility	75	11.9%
	Hopeful future	Human interest	39	6.2%
	Urgency of climate change mitigation	Conflict	8	1.3%

Diagnostic framing

CEN and *CPN* do not generally define climate change as a problem. They make similar diagnoses as the politically-oriented newspapers. They note that climate change is happening and is anthropogenic and developed countries should be responsible for it. Yet some unique information related to climate change skepticism is identified. Though most of the articles do not say that climate change is a hoax, they leave spaces for uncertainty.

In *CEN*, reports address skeptics of the results of climate change, skepticism in other countries and skeptics of climate change mitigation. Articles covering these two types of climate change skepticism are from interviews of foreign experts. One excerpt from a 2010 report notes, "many of the views in the IPCC report are "thin," simply because there is no solid argument… More importantly, these "facts" are all about demonstrating global

warming, and the "prejudice" is very obvious. This is the crux of the problem." Another report in 2011 articulates, "when scientists look at the entire emission process of natural gas, the advantages of natural gas are less prominent… Methane in natural gas has more pollutants than other greenhouse gases... The level of pollution between natural gas and coal may be further reduced…" Media sources borrow foreign experts' views and present them in the report as a way of balancing news content. Such an action avoids surveillance from the NPPN (National Press and Publication Administration), and related possible risks.

Both *CEN* and *CPN* talk about incidents related to climate change skepticism in other countries, yet they present the information in different ways. *CEN* reporters discuss incidents including "climategate," "Skeptical of IPCC reports on the Sunday Times," and make arguments like "It is not that the theory of global warming must be wrong, but the IPCC is no longer a scientific and fair research center for climate change as it previously claimed. Instead, putting these reports together, we can find that the IPCC is intentionally or unintentionally promoting the theory of global warming." Reports on *CPN* present information without criticism or comments, which give the audience some freedom to digest the articles according to their own will.

It is unique to find that *CEN* reports that directly question climate change as a fact. One article in 2016 proposes several questions about climate change, "Why is the controversial issue of global climate change simplified as a statement that 'warming is an indisputable fact', and use this hypothesis as a definite theoretical basis for holding meetings? Is warming a constant trend, or is it temporary and local? To what extent is climate change caused by humans, or does it have its own periodic pattern of change?

How sure is it that the Earth's ice age that was once worrying will not come again?" Even though this report cannot be generalized to represent the key ideologies that *CEN* wants to encourage, it reflects the freedom of speech enjoyed to some extent by news practitioners.

Prognostic framing

Both *CEN* and *CPN* are aligned with the government's development plan in terms of abandoning coal as a main energy source and developing "clean energy," "greener oil," and a "low carbon economic shift." Both the interests of the nation and the industry are considered by journalists from *CEN* and *CPN*. Reports do question how technologies or tactics related to climate change mitigation have been used by developed countries and present them as a way to undermine developing countries' future, including China. A 2012 report from *CPN* states,

> Why do developed countries turn a blind eye to major issues that involve the basic survival of billions of people, but have a soft spot for the so-called low-carbon economy? Under their planning and lobbying, governments of developed countries have also acted to try to take advantage of the development of low-carbon technologies in the name of climate change. Fully prepared for a low-carbon economy to seize the commanding heights of a new round of global competition and regain a competitive advantage. It's not for all mankind, as they claim.

Claiming a carbon market as a way that developed countries keep a leading position in the international political and economic structure acts contrary to emphasizing the importance of carbon emission trading in politically-oriented newspapers. But this is also

rare in industry-oriented newspapers. It reflects the struggles and challenges that the traditional energy industry faces in the shift of development path.

Motivational framing

Different than politically-oriented newspapers, *CEN* and *CPN* uses economic consequences to justify the importance of action. Using examples of oil giants in other countries, news reports emphasize developing "clean energy," the sooner the better. This strategy will help Chinese oil corporations take their market share and avoid being charged with patent fees or other additional costs. A 2015 report from *CEN* states, "the threat of global warming has caused energy companies that were once dismissive of climate change to face it. European companies have taken the initiative to propose remedial measures to ensure their long-term survival and market. It is important for us to develop our own technology and reduce reliance on foreign corporations…" Using examples of other countries to express traditional energy company's concerns and demands is a tactical approach identified in *CEN* and *CPN*.

Climate change mitigation is considered a sign of the fourth industry revolution. Whomever has the technology will win the game. Conflict between different countries is catalyzing the traditional industry in China to reform. The U.S. is considered the one to maintain its dominant position in the global hierarchy, especially in the Obama era. A 2010 report in *CPN* notes, "the economic stimulus plan launched by the Obama administration has benefited more than US$50 billion in new energy. Rejuvenating the United States in the field of new energy technology, constructing a new national core

competitiveness, and regaining the United States' global leadership in the field of new energy is one of the main goals of the New Energy Deal."

Not only is the U.S. considered a competitor who wants to be the leader in the new world structure, other Western countries' green technological trends are covered in industry-oriented newspapers as well. In a 2014 *CPN* report, the journalist explicitly talks about this issue in an article titled, "Petroleum, for Environment or Political Interests." Politicizing climate change mitigation as competition among countries is obvious in this piece.

Aside from glorifying the image of China, *CEN* and *CPN* emphasize the responsibilities and efforts that have been made by the traditional energy giants in China, represented by PetroChina and Sinopec. The contributions the companies make regarding innovative technologies, participating in environmental protection activities, environmental charity work, and speeches given at international climate change conferences compose the main themes of the news articles.

Conclusion

Newspaper stories are created based on facts and evidence, "rather than there being only 'facts' about climate change proclaimed by institutions such as the IPCC-- 'facts' received intact by the masses -- the circuitry of the media offers spaces and creative potential for social actors to filter, amplify and rhetorize these 'facts' in multiple ways" (Hulme 2009:225). The presence of state-controlled newspapers is an important way of transmitting significant, high quality information in China, in an effort to promote wider public understanding of climate change and its anthropogenic nature. Furthermore, the

stories can raise awareness of the relevance and urgency of China's development strategy shift.

The strategic frames used to construct news reports reflect four variants of beliefs. The variants echo belief amplification, which refers to the construction of ideational elements to support actions in social movements, proposed by Snow et al. (1986). The five beliefs are 1) the seriousness of climate change; 2) climate change is caused by human activities, especially developed countries' activities in the period of industrialization; 3) stereotypic beliefs about the developed countries; 4) China has made changes in the past years, which reflects the possibility of changes and the efficacy of actions; and 5) the necessity of taking actions on the individual level. The last belief is less emphasized in the official media than the previous four.

Overall, defining climate change as a fact and assigning blame to human being's activities as well as developed countries are themes repeated throughout the four newspaper resources. Solving the climate change problem needs new technology, low-carbon economy, and an industry structure shift, all of which are emphasized in news content. As the newspapers have different content and audiences, journalists employ a variety of focal points. Compared to *PD* and *GD*, the two industry-oriented newspapers leave larger spaces for audiences to digest and assess information.

There are obvious differences regarding the purpose of frames employed by the two types of state-controlled media. *PD*, *CEN*, and *CPN* cover the discussion of climate change uncertainty. In the reports from *PD*, the focus is on clarifying the causes of climate change uncertainty and emphasizing how the relevant interest groups

purposefully construct the debate. But in the reports from *CEN* and *CPN*, the reports only retell ideas skeptical of climate change mitigation and provide no comments on it, which implicitly expresses the question of climate change. Both *PD* and *GD* emphasize the urgency of taking actions on the individual level in motivational framing, but *CEN* and *CPN* focus on motivating relevant institutions. This difference may be due to variation in targeted readers.

Based on analysis of the data, I find that the central government has interests in transmitting ideologies to its public. China's mitigation efforts aim to create a better environment, beneficial for the current public as well as future generations. Developed countries' actions on climate change mitigation aim at keeping their global leadership. The division and intense relationship between developing countries and developed countries are discussed and emphasized in the newspaper reports. China, as the biggest developing country, is described as a responsible and impressive nation, which makes efforts to meet international climate change protocols and even goes further than the requirements. While the U.S., the most powerful country and the biggest contributor to GHG emissions per capita, impedes international cooperation. Climate change is politicized in the newspaper reports as a battle among countries with power.

CHAPTER V

CLIMATE CHANGE DISCOURSES IN ONLINE FORUMS

In 2017, according to the "Climate Change in the Chinese Mind Survey," only 5.3% of respondents noted climate change is not happening, and 66.0% of respondents understood that climate change is caused "mostly by human activities." This survey offers an optimistic picture of individuals' general climate change concern; however, the quantitative work conducted by Liu and Zhao (2017) shows a different result. Based on the "China Governance and Public Policy Survey," the authors find that public climate change concern is low compared to other countries. The level of concern varies across province and location. As mentioned in the literature review, public climate change concern is influenced by social context, and varies across time and space (Li et al. 2013, Li 2013, Wang and Cao 2015). Various climate change measures may lead to different conclusions, which highlights the importance of qualitative analysis at the micro-level. This chapter deepens the understanding of how internet users in China, represented by *Zhihu* users, diagnose the climate change issue, propose solutions to fix the problem, and their attitudes toward related national policies. No micro-level studies of climate change skepticism exist to date. How do individuals frame climate change in cyberspace?

I begin with a description of climate change related questions in *Zhihu* and the time fluctuation of user involvement. Analysis starts with climate change as a fact, followed

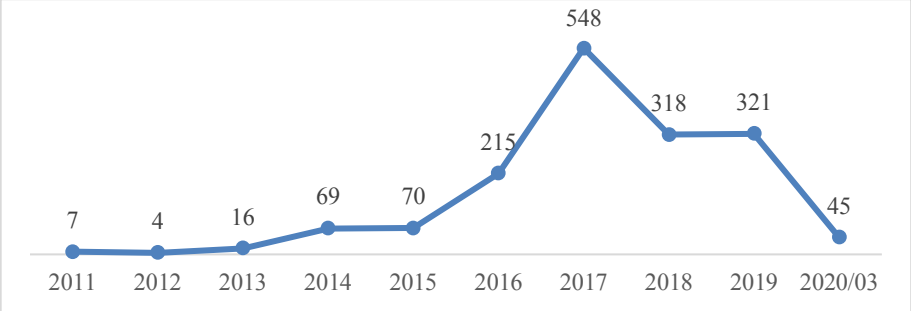
by causes of climate change. Then I address micro-level discourse of climate change mitigation and adaptation. The three aspects I discuss have been identified and frequently addressed by scholars (McCright and Dunlap 2000) analyzing campaigns of climate denial in Western countries. I analyze supportive and oppositional statements to delineate a comprehensive picture of climate change discourse and confrontation related to differing views.

Questions on *Zhihu* and Users' Involvement over Time

Discussions on climate change related questions on *Zhihu* started in 2011. By March of 2020, around 2500 responses had been posted. After filtering responses irrelevant to questions and those with no relationship to climate change concern, the total number of question responses is 1613. The number fluctuates over time (Figure 5.1), reflecting public attention to climate change. Answers start to surge in 2015 and most were posted in 2017, in response to the question "What do you think about the fact that Donald Trump decided to withdraw from the Paris Accord?" On the surface, this question does not directly elicit a response regarding Chinese concern over climate change. Due to the nature of the question, people who support Trump's move give us hints on their attitude toward climate change as a fact as well as the urgency of climate change mitigation. Forty-three point five percent of answers support Trump's decision, and 17.8% are in opposition. Posts arguing that climate change is a hoax, GHG emission is a political show, and climate change mitigation is an impossible mission, are prevalent. Including this type of question enhances access to a broad range of responses. Focusing only on direct questions like "Is climate change a hoax?" or "Should we believe that climate

change is real?" may limit responses to only those with manifest interest in climate change. Including indirect questions in the dataset increases diversity of responses. Donald Trump called climate change a hoax in public, and his attitude and actions reflect this claim.

Figure 5.1 Number of Answers to Climate Change Related Questions in *Zhihu,* 2011 – 2020 March



Zhihu users' discussion on climate change are coded around four aspects: fact of climate change - whether climate change is true and is happing; causes of climate change; impacts of climate change; and solutions to climate change. In total, 1312 users answered questions related to climate change. Among them, 252 users (19.2%) answered more than one question. As the themes of questions vary, the answers may only cover one of the four aspects of climate change concern. Due to limitations related to the nature of online discussion, it is impossible to construct a comprehensive and exclusive typology of users based on their answers to one or more than one question. In general, 640 answers (36.9%) reflect positive attitudes toward climate change, either agreeing that anthropogenic climate change is happening or the necessity of climate change mitigation. Eight hundred eighty-eight answers (51.2%) note skepticism of climate change, and 85 answers (4.9%)

remain neutral toward climate change. Importantly, the number of answers in agreement from other users reflect general patterns of climate change more accurately (Table 5.1). In *Zhihu*, users can click on the agreement button after they view each response. Based on analysis, skeptical answers to questions received 24771 agrees. But on average, answers with positive attitudes towards climate change received more agrees (32 agreements per answer) than ones reflecting a skeptical attitude (28 agrees per answer).

Table 5.1 The Stance of Answers and Number of Agrees Received

Stance	**Number of answers**	**Percentage**	**Number of agrees**	**Range of agrees each answer received**
Skeptical	888	51.2%	24771	0-6000
Neutral	85	4.9%	7298	0-5200
Support	640	36.9%	20576	0-3000

To be more specific, answers skeptical of climate change can be divided based on aspects discussed. Table 5.2 provides details of climate change skepticism among *Zhihu* users. Excerpts including typical narratives of climate change skepticism received the most agreements from other users. Thirty-one answers (3.5%) are skeptical of the trend of global warming because respondents experienced a colder winter. Thirty-five answers (3.9%) are skeptical of the certainty of climate science. Seven hundred eighteen answers question at least one aspect of the causes, impacts, or mitigation of climate change. One hundred four answers show opposite attitudes toward climate change without giving a reason. The following section of descriptive analysis reflects the four aspects of climate change concern. I present statements from both supporters and opposers to provide comprehensive understandings of *Zhihu* users perceptions of climate change. This data

analysis presentation lays a foundation for comparison between official media climate change frames and individual discourse.

Table 5.2 Types of Climate Change Skepticism among *Zhihu* Users

Types of skepticism	Excerpts from the answer with highest number of agreements	Number of Answers	Percentage
temperature trend	Isn't it still snowing this winter?	31	3.5%
fact	"Experts"? You can predict the global climate?! Okay. Do you dare to finance in the Grain Futures? I bet you "experts" can't make the decision. This is just a bet for things happening in one year later. How dare you to say that you can predict the global climate in many years from now?	35	3.9%
causes	Climatologist has not been able to explain why there was a much hotter age in ancient times. Should the mechanism of global warming be reflected and studied in depth?	198	22.3%
causes/impacts	The statement that global warming is a scam cannot be falsified. However, it can be found that the powerful dynasties in China's history are basically concentrated in times when the climate is relatively hot…	26	2.9%
causes/mitigation	Academician Ding said there had been more periods of high carbon dioxide concentration and high temperature in the history of the earth than it is now…G7 countries use carbon emission tax to fool developing countries, include China	111	12.5%
impacts	Terrible things will happen after I die	92	10.4%
impacts/mitigation	Carbon dioxide melts the Arctic and drowns polar bears, rising sea levels, none of these is China's concern… Carbon emission limit influences industrial manufacturing in China which wants to improve the living standards…	21	2.4%
mitigation	Limit carbon emission? Even what you eat is restricted by a rule, which is even worse than a slave.	262	29.5%
causes/impacts/mitigation	Are you 100% sure about the climate change theory? How serious the impacts are? How dare you to expect to we pay a huge price to deal with a hypothesis…	8	0.9%
opponent without giving a reason	No comments, it is a lie	104	11.7%

Climate Change as a Fact

Zhihu is well known for its highly-educated consumers, and it is common for users to cite sources from academic journals and official statistics. Among users who believe that climate change is anthropogenic, it is not surprising to see quotations from IPCC reports, famous documentaries including "An Inconvenient Truth" and "Chasing Coral," NASA reports, as well as journal articles illustrating the relationship between climate change and human activities. Cited articles are from oceanography, physics, geology, meteorology, botany, and the environment. Trust in science and technology is manifest in the arguments.

Except for the professional knowledge that well-educated *Zhihu* users display online, *Zhihu* users use their personal experiences to support the argument that climate change is a fact. One comment points out, "It's getting hotter year by year, don't you feel it? This summer, air conditioners were sold out in the northeastern area! The merchants have to recruit workers who can install air conditioners... Northeast is not much cooler than Chengdu [a southwest city]." Another user also from the northeast of China says the same, comparing the temperature when he/she was a kid and current experiences, "…I can remember that the average annual temperature has risen by at least two or three degrees in the past two decades. The temperature did not drop to minus 40 degrees Celsius in winter anymore. In May and September … it [the temperature] used to be below zero. Now there is no freezing outside in these two months…" Personal experience of temperature change influences attitudes toward climate change (Liu and Zhao 2017).

The terms global warming and climate change are used interchangeably by *Zhihu* users. Their personal experiences of temperatures rising reflects only a part of climate

change dynamics. Most of their personal experience is related to the high temperature in the winter, but very few *Zhihu* users mention more extreme weather related to climate change. One commenter says, "Personally speaking, I live in Xi'an. In the past, it started to snow in November. In these years, there was no snow until January. Extreme weather became more and more common. I remember that I haven't seen hail in the past few years, and now it happens every year." But for other *Zhihu* users, the disconnect between extreme weather and climate change may lead to doubt. The terminology of global warming may lead to the impression of temperature increase; therefore, public's perception of cold weather events can be used as evidence against global warming. Thirty-one users talk about colder winter and fail to connect the unusual winter to climate change.

Distrust of the scientific community leads to skepticism of climate change as a fact. Inaccuracy of prediction, the purpose of getting funding, and data revision to prove global warming, are main discourses in the skepticism of climate change as a fact. It is noteworthy that there is no overlap between skepticism of facts and skepticism of causes of climate change among *Zhihu users*.

Causes of climate change

In this section, I focus on various arguments of the causes of climate change, central to the climate change debate. Even though IPCC reports point out that GHG emitted by human activities is the main cause of climate change, the claim that climate change is not caused by human beings, is often identified in denial campaigns, represented by individuals with conservative ideologies in the U.S. (Elsasser and Dunlap 2013,

McCright and Dunlap 2011). Understanding the causes of climate change is a significant predictor of awareness of the negative climate change impacts (Yang 2018). Therefore, it is essential to know whether *Zhihu* users agree with the statement that climate change is anthropogenic.

Among *Zhihu* users who believe that climate change is anthropogenic, it is common to argue that extracting energy like oil and gas, industrialization, and deforestation leads to climate change. They connect this assertion to IPCC reports. However, data also illustrates that *Zhihu* users give answers to whose activities cause climate change. They argue that Western countries and rich people should be blamed and take responsibility for climate change.

The boundaries between developed and less developed countries and the line between rich people and those who are not is constructed by *Zhihu* users who claim that certain groups are responsible for climate change. The relationship between the industrial revolution in developed countries and climate change is mentioned by *Zhihu* users frequently. One comment notes, "The poor cannot pollute the environment. Those capable of polluting the environment are those of the middle class who often clamor, the upper class, cars, airplanes, clothes, houses, hotel decorations, product packaging, etc. They look noble, but in fact, they are very hypocritical!" Assigning blame to developed countries is aligned with the diagnostic framing in the official newspaper reports. Based on this statement, shifting responsibility to rich people and developed countries decreases an individual's willingness to participate in climate change mitigation on the individual level.

Among the 343 answers (38.6%) related to causality skepticism, there are two prevalent claims. The first is that climate change or global warming is temperature fluctuation of earth; and the second is that climate change may be correlated with human activities, but don't overestimate human's impacts. The denial of human activities' influence on climate change lays the foundation for impact skepticism and climate change mitigation skepticism as shown in Table 5.2.

Even though scientists have reached consensus that climate change is mostly due to human activities, *Zhihu* users argue that the earth is always experiencing temperature fluctuation. This argument is based on famous Chinese meteorologist Chu Kochen's statement that warnings about global cooling[7] are excessive (Chu 1972). Therefore, *Zhihu* users used historical records to support their arguments that climate change just reflects the natural temperature fluctuation of earth. One comment argues, "In the history of the Sui and Tang Dynasties, the temperature was a few degrees higher than it is now, so a large number of silkworms were raised in Hebei, wild elephants were found in Henan, and the rainfall was so plenty in Shaanxi that it was full of forests." Another similar comment also used species distribution in history to support their argument,

> Since the history of mankind, the climate has been changed. The ancient Henan region was called Yu, which indicates the land of elephants; many of the Oracle bones in the Shang Dynasty were made of buffalo bones and water turtle shells.

[7] In Chu Kochen work "A Preliminary Study of China's Climate Change in the Past Five Thousand Years," he criticized the argument prevalent in the Former Soviet Union that the earth was getting colder. This criticism is supported by his examination of temperature fluctuation over five thousand years in China. This work was published in 1972.

> These indicate that Asian elephants, water buffalo, water turtles, and other animals that can only live in subtropical tropics nowadays were all over the Yellow River basin at that time; why were people named as "seven sages of the bamboo forest" not the "seven sages of the forest" in the Wei and Jin Dynasties (ancient countries located in the north area of China)? It shows that at that time, people were able to grow bamboo in the north area. It can be seen that the climate is similar to that of the southern Yangtze River basin today.

Arguing that temperature rising or cooling down are just cyclical variations are common in online discussions (6.9% of skeptical answers). The evidence they provide, including occurrences during the Shang, Tang dynasties, are similar to evidence offered in Chu's work (1972). *Zhihu* users also mention that time scale is essential regarding the causes of climate change. One comment notes, "compared to the temperature in Mid-Holocene period, the temperature rising we experience now is nothing. If we push forward the time scale, the Quaternary is only one of the many ice ages…"

This type of argument is also identified in previous studies of climate change denial (Dunlap 2013, McCright et al. 2016). By borrowing arguments proposed several decades ago from famous scientists, like Chu Kochen, *Zhihu* users try to add rationality to their skepticism. Not only do they borrow ideas from scientists, but they also include conclusions made by a famous economist, Larry Hsien Ping Lang, to strengthen their arguments. From one side, this may indicate a high level of trust

in science, scientists, and experts. On the flip side, these *Zhihu* users only choose the experts' words to support what they already believe.

The second type of causality skepticism reflects the ideology of Biocentrism, which is often employed to support biodiversity. Among *Zhihu* users, this ideology is distorted. They argue that *homo sapiens* is just one species on the earth, and human activities are not so influential that the temperature changed. From responses to different threads, the following analogies of human beings and human activities are identified: parasites, cells, a drop in the ocean, ants, leech, bacterial colony, and passer-by. One comment notes, "If you were the earth, then humans were the parasites on you. Who farted more? You or the parasites?" This statement does not deny that human activities have impact, but argues that there is no certain proof of the significance. By denying that climate change is anthropogenic, *Zhihu* users shift the focus of responsibility and are unlikely to admit the importance of reducing GHG emissions.

The Impacts of Climate Change

Emphasizing the devastating impacts of climate change and the urgency of taking actions are common in the four newspapers, but the perception of the impacts of climate change varies among *Zhihu* users. Most of the users agree with the fact that climate change causes devastating consequences, this general trend is aligned with Yu et al. (2013) finding from a survey among China's public. Opposing attitudes toward the statement that climate change may cause detrimental impacts upon an individual's life and development of society are identified from the discussion.

Assessments that climate change is a global issue with devastating impacts on all human beings, and that one should care about struggles in different countries are not prevalent in *Zhihu*. Several answers quote worldwide news reports covering extreme weather incidents, melting glaciers, challenges facing island residents, and the spread of infectious disease. To what extent humans will be influenced by climate change is widely discussed. Two scales of concern are addressed: human-centered and all living species. Some believe that climate change will influence all human beings' daily lives and that production activities on the earth cause ecological catastrophes. In contrast, a few users state that human beings should not be the only focus of climate change impacts, and climate change also poses a great threat to other species. This is related to the ideology of biocentrism identified from causality skepticism.

Two scales connect with the value type of self-transcendence (universalism and benevolence) posited by Schwartz (1994). A self-transcendence value emphasizes concerns for the welfare and interests of general others more than the interests of oneself or the group that individuals belong to. Furthermore, Cheung, Luke and Maio (2014) conclude that people with strong self-transcendence values are more likely to protect the environment. Only 0.5% of users show a more caring perspective for all species on earth than human beings in *Zhihu* responses.

But more users make the argument that climate change will cause the extinction of species and eventually impact human beings. The arguments often start with the loss of biodiversity and are followed by impacts on human beings. One comment notes, "I was watching 'Era of the Great Extinction' in the past two days, one of the most impressive

things is that by 2060, …The marine ecological communities that depend on coral reefs will collapse collectively…The ocean provides a lot of resources for mankind, including contributions to medicine. There is a medicine called prostaglandin, which comes from sea fan, which can fight cancer. There is a medicine called podophyllin, which comes from coral rhizomes, can also fight cancer." Another similar post notes, "We always wait for a perfect time to see these beautiful mountains and rivers, and always want have fun with these beautiful places when we save enough money. Unfortunately, these beautiful places may not be able to wait until you come. They are disappearing... Or are about to disappear..." Even though *Zhihu* posts talk about the impacts on natural environment and other creatures on earth, the arguments are human-centered in nature.

Among *Zhihu* users who care about the universal impacts of climate change, most care more about Chinese people and China's development. Due to possible sea-level rise, one comment says, "If one of China's three plains is flooded, and the grain output will fall dramatically. By then, there will be food shortages, and where the population in the plains should move to. These are all factors of social instability." In contrast, the attitude towards climate change's influences on other countries is merciless. As one user claims, "who cares about Maldives being flooded?!"

The perceived risks of climate change are closely related to *Zhihu* users' geographical location. One comment points out, "Even if it [sea level] rises by 38 meters, my hometown will not be influenced as it is not a coastal city. It's ok to see the sea level rising by another 38 meters…" This statement is typical. If places commenters live in will be less likely to be impacted directly by sea-level rise, they argue that it is

unnecessary to worry about it. Another representative comment states, "Ok. . . If the Arctic and Antarctic glaciers melt faster, it is estimated that Shanghai will be submerged before 2050. Fortunately, I did not buy an apartment in Shanghai." The possible plight facing residents in coastal cities does not pertain to some posters. One comment says, "these countries gained profits from tourism, and it is not hard for their people to immigrate. Why should I care about their situation when I earned less money than them…" The lower level of perceived risk of climate change among users who live in the inland area of China is associated with incomplete and limited knowledge of climate change. In addition, it relates to the egoistic value, and reflects the expression of self-protection and personal focus among *Zhihu* users.

Sustainable development is not a concern in this cyberspace forum. Some comments argue that as long as devastating things will not happen before they die, climate change is not their concern. The statement "the flood comes after me" showed up 21 times (1.2%) in all the answers being analyzed. One *Zhihu* user argues, "The demise of mankind? Who cares about things decades or hundreds of years from now? To be honest, we, human beings, always focus on immediate interests… who thinks about the next generation? Would there be the next generation without our generation? To be honest, even if the end of mankind is tomorrow, and there will not be many people acting. After all, all the living things are going to die…" The pessimistic view of life and of future impacts *Zhihu* users' concern over climate change implications. Furthermore, carelessness for the next generation is in contradiction with traditional Chinese culture.

Compared to the *Zhihu* users who admit the negative impacts of climate change, others propose a unique argument regarding consequences of climate change, noting that climate change is beneficial to human beings. Three related arguments are found in these responses: technology advancing, new land exploration in artic areas, and more opportunities for agriculture. One comment says, "Countries with arctic regions are extremely happy with the climate change. The Arctic waterway will be possible, and the frozen ground will be thawed. It does not matter if several cities were flooded. It is not like a tsunami happening when people have no time to immigrate."

Similarly, users argue that climate change will benefit the inland areas of China. By simplifying impacts of climate change to "warmer winter and hotter summer," one *Zhihu* user argues,

> It [climate change] means that a stronger monsoon will transport more water vapor to the desert in north-western and north China so that these places can and will be habitable. Plants will be capable of capturing the thin carbon dioxide easily, which will result in high yield. Grass grows in the deserts of Gansu province, and the deserts of Inner Mongolia will turn into grasslands. This means that the groundwater level in Hebei province will rise, and wheat growing in Henan province will not need artificial irrigation. This means that the Loess Plateau in Shaanxi will be greener, and Ningxia has a larger area for grape growing.

Zhihu users, who emphasize the benefits of climate change, present their desire for economic development and believe that it is time for "coastal areas [to] sacrifice." One *Zhihu* user who lives in the coal mining area argues that, "the 'coal mining province'

[Shanxi] is 1,000 meters above the sea level. If climate change makes the weather warmer and humid, that would be great…I don't care about what happened to coastal areas… We were laid-off workers and merely survived because coastal areas did not pay the coal they bought…It is our turn…." As the central government implemented the policy of "the rich first pushing those being rich later" and preferential development policies in the coastal areas in the 1990s, there has been a huge economic gap between coastal and inland areas. The imbalance leads to the abovementioned response to climate change mitigation. As long as "we" (or I) benefit from climate change, it is unnecessary to change anything.

Overall, in contradiction to Zhihu users who admit the devastating consequences of climate change, impact sceptics challenge anthropogenic concern for implications, focus more on negative impacts on in-group members, and even considers the bright side of climate change. More importantly, impact scepticism is associated with doubts about climate change mitigation, influencing people's attitudes toward international climate regimes as well as their willingness to change daily behavior.

Climate Change Mitigation

Among the positive comments on climate change mitigation, it is rare to see answers related to individual efforts. Only 19 answers (3.0% of positive answers) state the importance of shifting to a green lifestyle. One response to the thread "Will global warming devastate human beings" states, "As a normal citizen, I don't know any advanced knowledge. But I know that we will reap what we have sown. Some people say that our generation does not have to worry about the extinction of mankind due to

environmental damage! This kind of thinking is absolutely simple and selfish. When I go to the supermarket to shop, I don't buy their plastic bags. I always bring my eco-friendly bags. I usually bring my electric toothbrush and water cup on business trips. I rarely order takeaways as I don't want to produce too much rubbish... We are ordinary, but these are very easy to do. It depends on your willingness." Caring about the future, one value in traditional Chinese culture, encourages this *Zhihu* user's sustainable lifestyle.

Universalism also enhances willingness to take actions on different levels. One comment notes, "What about global warming? This is a question to all human beings. No one can escape the various environmental problems caused by it, and naturally, we are all responsible for it. Regardless of ability, each of us can do something." Describing the earth as the "common home" for all human beings reflects an embedded worldview and emphasizes the nature of climate change as a global issue.

This line of thought is not prevalent in online discussions. Climate change is an example of the problem of many hands (Van de Poel et al. 2012). Many stakeholders are involved in climate change mitigation, and shirking responsibilities become a common stance among the *Zhihu* users. Many users locate responsibilities for mitigating climate change with other individuals (who caused the problem and who are competent), government (regulations and policy reliance), industry (green technology adoption), and Western countries (industrialization and climate change). The findings from the *Zhihu* online forum support previous conclusions that blaming others and repudiating individual responsibility is a barriers to public engagement (Lorenzoni, Nicholson-Cole and Whitmarsh 2007). In the following sections I illustrate three different ways of shifting the blame and assigning responsibilities to various stakeholders.

Basic needs to sustain everyday life, other than climate change mitigation, are prioritized by some *Zhihu* users. Representative comments include, "whatever! I can't even afford an apartment and pork…," and "feed me with enough food before worrying about the destruction of mankind." Climate change mitigation, including environmental protection, is considered a luxury by some *Zhihu* users. Normal people cannot afford it, as, "organic food is expensive," "green food is not for us," "I need meat for health," and "Tesla is good, but not for me." One *Zhihu* user says, "Although I know all these issues, I still have to continue to work, buy a place to live, get married and raise children, and take care of the elders in my family. How can I help with climate change? But there is one thing I am certain about. If I don't eat for a week, I will starve to death…"

Another barrier that prevents people from acting on the individual level is the lack of enabling initiatives. Public facilities are not available or are inconvenient. One *Zhihu* user says, "if you [the government] can build a new bus line from my workplace to my front door, I promise not to drive anymore."

The third barrier relates to long-term efforts. Climate change mitigation is different than solving environmental problems. The result cannot be seen in time. Therefore, changing PD behavior without definite results stops people from changing. "If I did not turn on the air conditioner, did not drive, saved electricity, and ate more vegetarian food, the earth would stop becoming warmer? I don't think so. Then why can't I still do these things?" This barrier is aligned with the opposing argument of the impacts of climate change. Long-term efforts are viewed by part of Zhihu users as valueless.

Contrary to the argument that everyone can contribute to climate change mitigation, an opposing statement assigns responsibilities to a certain population. Those making this assertion argue that, "scientists," "experts," "rich people," and "politicians" should make efforts because climate change is a grand issue. Macro-level solutions are considered the most effective ways to fix the global issue. "Even if the sea level reaches the Himalayas, it is not me who should be worried. If the whole world will sink to the bottom of the sea, why do you need to worry? The rich and the powerful have already acted. Their lives are more expensive than yours." Another notes, "…scientists built up complicated models to predict climate change. Normal people can't understand it… we just live our lives…." Still two more, "it is not the thing that individuals can change…" and "without the consensus reached by political leaders from different countries, this problem will never be solved…" Arguments reflect the fact that some *Zhihu* users overlook the responsibility that individuals should take regarding climate change mitigation, and provide evidence that there is a huge gap between climate change realization and willingness to make changes on the individual level.

In addition to shifting responsibilities to government, technology, and people who are competent, Western countries are also a focus. In the Chinese view of fairness, the one who made the mistake takes responsibility for fixing the issue. Arguments like "Western countries exploited more natural resources" and "they [Western countries] contribute more to the GHG emission" are prevalent in the discussion of who should be blamed or take responsibility for climate change. If Western countries do nothing, why should China?

This statement also reflects attitudes toward international cooperation of climate change mitigation. Since western countries emitted more GHG in the past century, they should put more effort into it. “If they don’t want to do this internationally, why should we do it?” This comment relates directly to a question mentioned at the beginning of this chapter, in which forum members were asked about their attitudes toward the U.S. withdrawal from the Paris Accord. One comment articulates, “the Paris Climate Agreement is originally a very nonsense agreement. Is the earth’s climate affected by human activities? Or is it a natural manifestation of the earth’s own climate periodic changes? This is still academically inconclusive. This agreement itself is something the leftists have mashed up under the influence of ideology. It can only be said that the Americans have seen this pragmatically.” Viewing Trump’s decision as a practical move is not a rare case among the *Zhihu* users. Therefore, it indirectly reflects their feelings of international cooperation. As one comment states, “Very good, so that we can take advantage of this opportunity and withdraw from the agreement…Anyway, people on the earth will not go extinct in 100 years. So that it is possible for us to abandon National VI and large [GHG] emission tax, it will reduce the pressure on industrial enterprises, promote employment and economic growth, and postpone the degree of deindustrialization...” Emphasizing the loss caused by climate change mitigation and prioritizing economic development is not rare among *Zhihu* users.

While some *Zhihu* users urge developed countries to reduce GHG emissions; others, including the 143 (16.1% of skeptical answers) who responded claim that international climate change agreements initiated by developed countries are actually “political and economic tools,” “political shows,” “political correctness,” “scripts,” “moral arches,”

"conspiracies" and "The Emperor's New Clothes." The real aim is "constraining our (China) development" and "keep America's hegemony"; it is "European countries' last attempt to save their faces." These analogies and conspiracy theories indicate *Zhihu* users' attitudes toward being a member of the international agreements, which are contradicted by the government's stance. While the central government praises the changes that have been made and the international status that China has reached, some of the public, "hope Tianchao[8] will not be so stupid that taking the responsibilities which should be taken by the U.S." and "China can focus on the economic growth without considering the GHG emission." Opposing attitudes toward international agreements are driven by distrust and hostile attitudes toward Western countries and the consideration of economic growth.

Overall, opposition to climate change mitigation reflects a large proportion of climate change skepticism among *Zhihu* users. This does not mean that they also doubt the facts and causes of climate change. Only 28 answers (3.2% of skeptical answers) express skepticism of mitigation and other aspects of climate change. The disconnect between mitigation skepticism and other forms of skepticism indicates the possibility for social institutions to mobilize the public to act.

Conclusion

In general, assessments of climate change among *Zhihu* users follows a continuum from recognition to skepticism. Admitting that climate change is happening lays the foundation for recognition of its causes and impacts. Their stances on this issue are

[8] This term is 天朝 in Chinese, and is used by internet users to indicate the central government.

aligned with Hobson and Niemeyer (2012)'s analysis of climate change skepticism among individuals, which include epistemic skepticism, causal skepticism, and epistemic impact skepticism. Epistemic skepticism questions the fact of climate change; causal skepticism questions the relationship between human activities and climate change; and epistemic impact skepticism challenges the pros and cons of climate change.

According to my findings, one additional dimension—mitigation skepticism — must be included to comprehend our understandings of climate change denial frames adopted by internet users in China. This dimension furthers understandings of climate change skepticism. Specifically, some *Zhihu* users' doubts focus on climate change international agreements. As mentioned in the analysis, doubting that international agreements on GHG emission reduction is a way that developed countries limit China's development is prevalent in the discussion (7.71% of all answers). Technology proponents are a group of people who believe that technological development could eliminate or at least reduce the impacts of climate change on individuals eventually. Therefore, it is unnecessary to join in the international agreements. Furthermore, some *Zhihu* users argue international agreements and negotiations are political shows. Climate change negotiations, in nature, are fights for world leadership.

CHAPTER VI

INCONSISTENCY OF FRAMES BETWEEN OFFICAL MEDIA AND ONLINE FORUMS

After analyzing various framing strategies employed by official media in China and discourses prevalent in the online forum, in this chapter I focus on the inconsistency of climate change frames between news media and the online platform by applying framing theory from the field of social movements. As individual frames focus on diagnosing climate change and attitudes toward climate change solutions, the comparison will focus on the two aspects.

In general, the four official newspapers analyzed represent China's firm stance on climate change. Climate change is anthropogenic, and the consequences are devastating. I note that official media use different strategic frames to spread the urgency of climate change mitigation and justify the relevant policies. It is essential that the traditional energy industry shifts the development path to put more effort into green technology innovation. Furthermore, responsibility is emphasized by politically-oriented media and industry-oriented media. The principle of common but differentiated responsibilities arose more frequently in the news reports than any other principles mentioned in UNFCCC. As a developing country, China is willing to act together responsibly with other countries under the premise that developed countries act and keep their promises. The intense relationship between developing and developed countries regarding climate

change mitigation is evident in the news reports.

In *Zhihu*, the frames of climate change are less unified as they are in the newspaper reports. Different understandings of climate change exist among the users and four types of skepticism are evident. Climate change skepticism held by *Zhihu* users reflect the inconsistency between official frames and individual frames. Here I address nuanced differences based on the interpretive analysis of the online discussion and newspaper reports. Specifically, inconsistencies include reliable information about climate change, assigning blame and responsibility, and specific climate change mitigation activities – notably carbon emission reduction and international agreements on climate change.

The inconsistencies of climate change frames are an unexpected result of value amplification. Snow et al. (1986) suggest that value amplification, which refers to "the identification, idealization, and elevation of one or more values presumed basic to prospective constituents but which have not inspired collective action for any reason" (Snow et al. 1986:469), can be used in social movements, including the peace movement, to mobilize the public's support. Fundamental values including justice, being responsible, benevolence, sanctity of all lives, and most importantly, national pride, are repeatedly embellished in the official newspapers. These values are constructed to convince the public that climate change mitigation is worthy of promotion. However, values emphasized in the news may result in various beliefs and attitudes.

While nationalism permeating in official media aims at increasing social cohesion and group attachment, nationalistic ideology produces climate change skepticism among the *Zhihu* users, especially with regard to mitigation skepticism. Different frames of climate

change in the four official Chinese newspapers and among *Zhihu* users reflect two groups with different ideologies namely: holism versus reductionism and individualism, and the ideology of sustainability versus anti-anthropogenic responses. In this chapter, I analyze nationalistic ideology and its related narratives first. Then, I discuss climate change frames related to the two groups with differing ideologies.

Nationalistic Ideology and Its Influences on Climate Change Concern

Chinese nationalism and patriotism are emphasized in newspaper reports to gain support from the public, and this is aligned with the finding that climate change skepticism is featured by nationalistic attitudes in Chinese publications (Liu 2015). Narratives from newspapers reflecting nationalistic ideology include: 1) China is the torchbearer of the international climate change regime; 2) China is a responsible country; and 3) China has made huge progress in developing green energy and industry. Nationalistic statements, such as "China is taking a leading seat in international cooperation to respond to climate change," "China's efforts are recognized," "Global climate change mitigation cannot be realized without China," and "Chinese wisdom contributes to world development," arose in 407 newspaper reports. These narratives aim at arousing the pride of being Chinese, building up confident nationalism, and enhance in-group affection. However, nationalistic ideology plays a significant role in constructing climate change science uncertainty, blaming and assigning responsibilities to out-groups. Nationalistic themes among the *Zhihu* users include: "Science has no borders, but scientists have a motherland," "Western nations contribute more to the GHG emission in history, and they should reduce more," "don't tell us what to do," "don't take

climate change mitigation as an excuse to limit our development," and "technological utopianism." I address the nuances of each of these themes below.

Zhihu users' doubt about climate change is associated with Jing Chai's interview on Zhongli Ding, a geologist and vice president of the Chinese Academy of Sciences. Ding is considered the authority figure in the field of climate change and articulated four key points in the interview. First, due to his academic background, he argues that climate fluctuation is natural if we look at the earth's history. Second, carbon emissions should be considered a fundamental human right, and everyone should enjoy the same right because all beings are equal. Third, given that Western countries emitted more GHG in history; China should reduce 80% of the emissions that Western countries promised to reduce. Fourth, if these plans, which require China to reduce the same amount of GHG emission, become international agreements, these agreements would be unequal treaties, and they are morally evil. They would be treaties of national betrayal and humiliation, just like the treaties China had to sign after the First World War.

Ding's statement emphasizes that Chinese should enjoy the benefits, culture, and long history shared by the Chinese and the difference between us (Chinese) and them (people in Western countries). Ding's interview aroused significant online discussion in *Zhihu* especially in the questions related to climate change mitigation. His name was quoted 286 times, along with his famous conclusion: "Chinese are not human beings?" Ding's words are viewed as true sayings. On the contrary, *Zhihu* users vigorously attacked the journalist, Chai. One of the most frequent critical opinions is that Chai is sponsored and brainwashed by Western countries.

Contrary to the appraisal of Ding's arguments, skeptics of climate change science are uncertain if, “climate change predictions are scientific models or a new form of superstition?” The view that scientists are impacted by their nationalities and the interest groups they represent is prevalent among online climate change skeptics. Ethical concerns exist in the scientific community. Therefore, Chinese scientists are more trustworthy than Western ones.

Viewing climate change as a political issue is common in official media and online discussions. One article from *PD* in 2008 claims, “Climate change is becoming a highlight of international politics...Some experts, scholars, and politicians argue that climate change and environmental protection is becoming a diplomatic card played by Germany; what hidden behind this ‘climate diplomacy’ card are energy policy and economic interests.” Terms including climate change diplomacy, climate diplomacy war, and climate change politics are used frequently in newspaper reports.

The focus is on how developed countries use commitments to reduce carbon emissions as a political tool to restrain developing countries’ forward pace. A report from *CEN* states, "This move is 'the drunkard's heart is not in the cup,' and developed countries want to take advantage of the global climate change issue and put pressure on developing countries..." Emphasizing this type of information is a way to support the Chinese government's insistence on the common but differentiated responsibilities principle. It reflects China's attitude towards the reduction of carbon emissions. It is unfair for developing countries to reduce the same or more emissions than developed countries.

The same type of argument is also prevalent in online discussions. In general, *Zhihu* users argue that developed countries "sell" the concept of climate change globally, and "fool" laypeople in developing countries. Then developing countries are "constrained" to follow a specific development path that satisfies the needs of developed countries represented by the U.S. The issue of climate change is politicized with tension between developed countries manifested as disagreement about climate change. One *Zhihu* comment notes,

> The so-called international environmental protection agreement is essentially just a political game between countries. Developed countries don't want to witness the rapid development pace of developing countries, especially China. Therefore, they [developed countries] start a plot in the name of justice and stand on the side of green environmental protection that meets human needs. It is like people who are vested crossing the river and breaking the bridge. They didn't realize that all the fruits of economic development they currently enjoy are at the cost of the environment.

On the surface, this type of argument aligns with official media content. But in essence, *Zhihu* users shift the focus from climate justice required by the government to withdrawal of international agreements. Related discourse includes, "these international agreements are the same with those unequal treaties signed a century ago," "don't participate in those messy things [climate change mitigation]," "don't be fooled by others [Western countries]," "The U.S. frauded China," and "withdraw from the international agreement is practical." Each reflect a skeptical attitude toward the efficiency of international cooperation. Some *Zhihu* users even claim that the Chinese government

should play tougher and oppose carbon reduction, showing their muscles to Western countries. This type of thought reflects the rise of nationalism among the public in China. One of the first slogans Xi raised upon taking office in 2016 was the "China Dream," which is about building a strong nation and a strong military. The propaganda of this ideology is intense in official media. Since then, many internet users defend China voluntarily. They guard the nation's sovereignty, praise hawkish diplomacy, and esteem autonomy and agency. Therefore, when official media depicts how Western countries make things difficult for China in climate change negotiations, they show strong opposition to international cooperation.

In addition, some *Zhihu* users emphasize that the nation which grasps the leading position on climate change mitigation will be the leader on the global stage. "Climate change has nothing to do with making tomorrow better. The key is the new multilateral relations and world order established in the process of global cooperation. The world structure dominated by the United States was born in several similar global cooperation plans…" Climate change is a new opportunity for global cooperation and China to be the leader on the global stage, "The United States looks down on it and is not eager to participate in it, which gives China a chance to perform. It will not be as efficient as economic and military cooperation, but [China] has to take the first step, not to mention that people (other countries) still assume that you are and will still be the bellwether [of climate change mitigation]." Support for international cooperation aims at fulfilling political goals rather than mitigating climate change.

Even though the theme of blaming developed countries arises in both newspaper reports and online discussion, relevant conclusions vary. In Chapter IV, I illustrated how

newspapers talk about stakeholders of GHG emissions. Scanning human activities on a long-term scale leads to the conclusion that developed countries should take more responsibility for emission reduction. One article from *CPN* in 2012 says that, "Developed countries have relied on large amounts of carbon emissions to drive industrial growth in the past two hundred years, which is the main cause of global warming at present. Since 1950, three-quarters of global carbon emission growth has come from developed countries. Still, they are not responsible for historical emissions." The purpose of having this argument in the official media is to clarify the principle of "common but different responsibilities." It is unfair to require China and other developing countries to reduce the same amount of GHG emissions as developed nations. However, this purpose is being overemphasized and distorted in online discussions.

One of the opposing statements of climate change mitigation noted in Chapter IV is that "anthropogenic climate change is happening, and it is impacting human's living situation seriously. But we are not the culprits, Westerners are." Therefore, Western countries should be blamed if they do not act, and China should not be accused of taking fewer responsibilities. According to *Zhihu* posts, it is reasonable for China not to act until Western countries do so.

The development of technology reflects achievements that the Chinese government has made. Green technology, "clean," and green energy are illustrated in the diagnostic frames used by newspaper reports and align with one strand of arguments in the online forum: technology development will solve all the possible issues. However, trust in technological innovation is a double-edged sword. On the one hand, it motivates the public, especially younger generations, to delve into the world of science and make

significant contributions to the long-term development of science. On the other hand, it reduces incentives to reduce GHG emission on the individual level if the technology is considered a panacea for all the challenges and problems facing human beings. In Chapter IV, I discussed the statement of "let the people who are capable of fixing the climate change issue." Technological innovation is an excuse for not changing the unsustainable way of living among some of the *Zhihu* users. Technology is an essential component regarding climate change mitigation, but not the only one.

Overall, the nationalist ideology produces doubts around climate sciences, responsibilities China should take, international agreements, as well as an individual's efforts to aid climate change mitigation. On the one side, the official newspapers are successful in terms of transmitting nationalism in reports of climate change. On the other side, too much emphasis on nationalism creates a backlash against climate change mitigation.

Holism versus Reductionism and Individualism

Climate change mitigation is narrated as an essential element in ecological civilization in the official media. China's accomplishments regarding GHG emissions are emphasized, specific measures of climate change mitigation are discussed, and the view of how China has transferred its development principles toward ecological civilization is frequently addressed in newspaper reports. However, in online discussion, users generally recognize the government's achievements regarding environmental issues but rarely talk about efforts related to climate change mitigation. Separating environmental

protection from climate change mitigation reflects a significant inconsistency between holism in official media and reductionism in individual perceptions.

Previous study (Bord, O'connor and Fisher 2000) identifies the gap between climate change concern and environmental concern. Over the years, Brechin (2003) found that even though the level of public climate change concern has increased, it is still lower than the public's concern over specific environmental problems, especially air and water pollution. From online discussions from 2011 to 2019, the same pattern exists among *Zhihu* users.

One answer to the question, "What does the substantial increase in carbon dioxide and methane concentrations since the industrial revolution mean to the ecological environment and human society?" notes that, "It means nothing. It doesn't make much sense to [normal] people. But it has far-reaching significance for politicians, business people, and certain experts. Power and money can only be obtained by producing correlation and even causality. It is better to work honestly in the field of environmental protection." This answer received 231 agreements. The reason *Zhihu* users see environmental protection as a separate issue is that the correlation between climate change and human activities is not 100% certain for them. The statement also implies that climate change is rifle with uncertainties in terms of its influence. Unlike other environmental issues, the impact of climate change varies across time and space. Missing personal experience of climate change caused by incidents, impacts, or the perception of risk impact the urgency of action. The disconnection about climate change risks is partly due to the terminology of global warming.

Global warming, a term used in previous years, impacts climate change concerns among the public significantly. Personal feelings of weather directly shape people's climate change concerns. One comment states, "it was cold as hell in the past winter in Harbin, and you claim global warming?!" Coincidentally, another answer points out that, "It even snows in Guangdong, global warming?" Some *Zhihu* users' understanding of climate change is still limited to the rising of temperature. When the temperature falls, global warming does not exist. It is ever harder for them to connect extreme weather to climate change. Compared to other environmental problems, including air pollution, water contamination, sand storms, and hazardous facilities among others, climate change is abstract in the public's view.

Furthermore, compared to abstract and macro-level solutions to mitigate climate change, the public sees more certain ways to protect the environment or nature. Building natural reserve parks, planting trees, reinforcing the management of a highly polluting industry, and developing electric vehicles are efficient ways to solve environmental issues. In contrast, there are no such clear mitigation strategies to fix climate change. Essentially, climate change mitigation needs long-term efforts, and the public has no such patience.

Inconsistencies between holism and individualism are related to the relationship between reduction of GHG emission and development. In newspaper reports, climate change mitigation is not seen as a barrier to economic growth. With guidelines of ecological modernization, the Chinese government will devote itself to expanding the green industry and energy. Meanwhile, the traditional energy industry is transforming its production mode and becoming "greener" to align with the central government's

requirements. Industry transformation facilitates economic growth eventually. The official media incorporates elements in the economic structure as a whole, and consider the long-term economic outcomes.

However, it is not easy to digest the conflict between economic and environmental dimensions on the micro-level. To the public, economic growth is manifested in more specific aspects. Buying big houses, more savings, higher salaries, and owning a car are considered the growing economy's signals. Some of these practices are barriers to climate change mitigation. For instance, big cities limit the number of car licenses and regulate how many cars can be driven each day. It is difficult for individuals who have an urgent need for vehicles to meet their demands. Even though the government invested a considerable amount of money in the Electric Vehicle (EV) industry and encourage consumers to purchase EVs, it will take time for the public to accept the new technology and benefit from it. A *Zhihu* user notes, "Reducing emission will influence the amount of money I earn. At least in a short period, I don't see the good influences on my family or me. Why do I care and change the way I live? Western people do something first…" Compared to the official media's holistic ideology, individuals are more likely to focus on personal needs and tangible benefits.

Perspective matters. When the government makes decisions, decision-makers usually consider the consequences in relation to large scale and long-term influences. Individuals are more likely to focus on immediate losses and benefits. Inconsistencies between holism, reductionism, and individualism could lead to public opposition to regulations and influence policies and regulations.

The Ideology of Sustainability versus Anti-anthropogenic Responses

The slogan, “saving the earth,” “saving the mother planet,” and “leave the descendants with green hills and blue waters” is omnipresent in the official media, especially in the human interest frames which are used to mobilize individuals. These themes are seen in 69 news reports. However, *Zhihu* users argue that environmental protection agencies glamorize their actions by promoting the slogan, “saving the earth.” In their view, this slogan is hypocritical and is hiding an anthropogenic ideology, “saving the human being.” One post states, “The earth does not need our help…The biggest misunderstanding is that slowing global warming is saving the earth. The fact is: even if the temperature rises another 50 degrees Celsius, the earth is still the earth. It is not the earth to be saved, but humankind...”

The anthropogenic value embedded in the slogan arouses oppositional attitudes toward mitigating climate change, similar to the “chicken or egg” issue. The relationship between the earth and human kind is underlying this argument. Would human beings be able to protect the planet? Earth gives lives to human beings, and human beings should do the same as other species on the earth. Therefore, human beings have no right and enough power to change the planet. The type of anti-anthropogenic and pessimist argument leads to a negative response to climate change, “the human beings take themselves too seriously. Creatures are psoriasis on the earth, and humans are just one kind of biological population. The earth had experienced mass extinctions so many times before the human species emerged. Human beings represent a phase in the evolutionary history of earth's creatures, not the final...” It is unique that the anti-anthropogenic value lays the foundations for displacement of climate change skepticism among *Zhihu* users.

Conclusion

Nationalism is manifested in newspaper reports and online discussions. Chinese official media is often viewed as the channel transmitting the CCP's ideology and is used to spread Chinese nationalism. From the discussions online, it can be verified that official media has reached this goal. However, Chinese nationalism may guide the public in the opposite direction.

It must be clarified that using the same frames of climate change do not lead to support for climate change mitigation-related policies and regulations. Emphasizing China's achievement and its contributions to international cooperation of climate change mitigation is discussed in Chapter IV. This type of information strengthens group cohesion and builds confidence among the public. However, it is often presented as a way of comparing China and Western countries, drawing a boundary between "us" and "them." Therefore, it is not surprising to see that *Zhihu* users often emphasize boundaries and claims of agency, which form opposing attitudes toward international cooperation for climate change mitigation.

Furthermore, while newspaper reports praise industry transformation and call for technological innovation, this aligns with the macro-level frame of technology reliance. It does not drive individuals to shift their behavioral model; on the contrary, it leads to dependence on technology. Individuals are less willing to act on the individual level to fix the issue. Responsibilities are instead shifted to the industry and science community. More attention is required to address unexpected responses on the individual level regarding climate change mitigation.

CHAPTER VII

DISCUSSION AND CONCLUSIONS

Climate change mitigation is a significant component of China's development plan. After 20 years of intensive development since opening and reform in the 1980s, the Chinese public experienced environmental deterioration, especially air and water pollution. Complaints of ecological issues were heard frequently. Environmental concerns among the public reached a high level, which was manifested as multiple environmental protests against highly polluting industries and facilities. The increase of public environmental concern is aligned with the timeline of the Chinese government's efforts to tackle climate change. Since 2007, China actively promotes policies and actions to mitigate climate change; the central government put efforts into adjusting the economic structure, transforming its development model, and vigorously conserving energy. A series of policy measures have been adopted to improve energy efficiency, optimize energy structure, promote re-forestation and afforestation, and achieve remarkable results.

From analysis of newspaper reports, I conclude that politically-oriented newspapers transmit certain aspects of information related to climate change, with intent to impress the public with China's achievements. It is not a surprising finding because the Chinese politically-oriented newspapers are considered ideology propagation machines.

Significantly, after Xi's inauguration, the central government strengthened its control over traditional media and social media. Therefore, the content related to climate change covered by party-controlled news media is aligned with the central government's moves. Politically-oriented newspaper reports cover climate change causes, impacts, and solutions. As the target audience is the general public, reports include scientific facts explaining the causes of climate change and proposing micro-level solutions. Industry reorientation is another focus of the news, emphasizing the ecological and economic benefits brought by the adjustment of industry structure.

A unique dimension of politically-oriented newspaper reports is that they frequently adopt responsibility as strategic frame. This is aligned with Xie (2015)'s finding from the comparative study of newspaper frames of climate change. Human activities cause climate change; China is a responsible country and should be a part of international cooperation; every individual should take action and be responsible for climate change. We should not burden our next generation and people in coastal areas with a degraded environment. The emphasis on responsibility reflects Confucianism and collectivism engrained in the fabric of Chinese culture. They both lay the foundation for creating a Chinese society where allocation and distribution of resources are equal for each member. Citizens are tightly bonded culturally, socially, and economically (Lin and Huang 2014). Social stability is maintained by emphasizing responsibility, and therefore climate change mitigation-related policies and regulations are justified.

However, a different targeted audience leads to a dissimilar focus in industry-led newspaper reports. The cause of climate change is not their focus. The reports leave space for climate change uncertainties by including climate change skepticism in other

countries and information of incidents threatening the legitimacy of anthropogenic climate change. Instead of emphasizing what China has done, industry-oriented reports put more effort into what the traditional industry has sacrificed to reach GHG emission reduction. The frame of responsibility is employed in a different way than politically-oriented newspapers. Industry newspapers glorify traditional oil companies as responsible for abandoning massive potential earnings due to the energy structural shift, noting their monetary devotion to the development of "green and clean energy." This is unique to industry-oriented newspaper reports.

Another distinctive feature is that industry-oriented newspapers rarely talk about the disastrous impacts of climate change. In party-led reports, there is a clear logic to claim the importance of taking action to mitigate climate change. Journalists describe phenomena related to climate change first. Then they provide predictions regarding the catastrophic outcomes of climate change to garner audience compassion; followed by what the Chinese government has done and how irresponsible Western countries are; concluding in an appeal to individuals, industries, and local governments. In industry-led reports, the logic is diverse, and most reports only cover the facts of new technology and China petroleum and Sinopec efforts.

International conferences on climate change are the most important events attracting both types of newspaper attention. However, the agreement is not the focus. The debate between developing countries and developed countries is the center of attention. Praising China's efforts, blaming developed countries for not being responsible, and claiming that developed countries set barriers to international cooperation are prevalent in the reports.

Scholars often criticize that China is an authoritarian country which means policies are designed from top to bottom and thus it is hard for the public to voice their opinions. In my assessments, this is not an accurate understanding. As long as the public does not challenge the central government's political ideology and does not touch on sensitive topics, their voices are respected by the government to some extent[9]. Therefore, a qualitative analysis of online discussions on climate change-related issues is vital for the legitimacy of the transformation from intensive development of economy to ecological civilization announced by the central government. Study of individual's realizations of climate change, their attitudes toward climate change sciences and technologies, their preference for international cooperation of climate change mitigation, their view of nature, as well as their willingness to act are all important. Even though I cannot assert that there is a causal relationship between the information from the official media and individuals' climate change concern, gaps between individual level framing and media framing reflects a potential weakness in the process of propaganda, which could lead to social instability.

Climate change skepticism is not a unique product in developed countries, and it exists among some Chinese. Although the *Zhihu* forum is famous for its highly educated users, there is no consensus on the correlation between education level and climate change concern. Information sources, the experts they choose to trust, observation and personal experience of unusual weather and natural disasters, views of the relationship between human beings and nature, world view, and nationalism influence their attitudes

[9] Previous environmental protests against unwanted hazardous facilities were successful and stopped the local government's actions. See Lu Jian and Chris King-Chi Chan's work (2016) on the QiDong case.

toward climate change. The globalization of climate change skepticism needs more attention due to the information shared on the internet[10]. Though there is no direct evidence showing climate change skepticism among *Zhihu* users, when borrowing related discourses from the public in other countries, it is vital for scholars to be aware of the formation of global climate change skepticism discourses.

Even though the official media changed its terminology from global warming to climate change in 2012, the term global warming is still used by most *Zhihu* users and the term leads to the simplified phenomenon of increased temperature. The public can easily refute climate change if they experience a freezing winter. Information sources are diffuse due to access to the internet. The two famous scientists' illustrations of weather and climate change are misused and overemphasized by *Zhihu* users. In addition, they overlook the fact that the IPCC report is written by scientists from different countries, not just from Western countries. *Zhihu* users choose the scientists they want to trust.

Second, the public has a different understanding of climate change impacts. The media depicts that climate change is a challenge facing all human beings on earth. But some individuals believe it only challenges people living in coastal areas. This difference leads to the third gap. Third, there is a gap regarding climate change mitigation and adaptation. The media covers possible solutions and policies from micro, meso, to macro-levels. Among the public, the responsibility frame is used in a narrower way. Developed countries, coastal area residents, rich people, experts, and scientists should be the ones

[10]Even though China has the most thorough and sophisticated internet censorship of any country, major Chinese internet sites built extensive self-censorship measures as needed by the government and the government restricts access to certain websites, like Google, Youtube, etc. Young Chinese internet users can purchase VPN services to circumvent all of the censorship and visit the blocked websites.

taking responsibility. Shifting responsibility is an apparent characteristic among *Zhihu* users. One aspect of the responsibility frame constructed on the micro-level is aligned with media frames, blaming developed countries for not taking the lead, but is not helpful to gain support from the public in meeting requirements of GHG emissions. Commitments to international agreements are costly as they lead to industry transformation and hurt individuals working in traditional industry. Even though the green energy industry and new technology can create job opportunities, emphasized by the official media, in the long term, some individuals may face losses in the short term. This inconsistency regarding long-term benefits and short-term losses is a potential risk of societal stability. The voluntary commitments to international agreements should be designed meticulously (Tingley and Tomz 2020).

The high level of trust in domestic scientists, the central government, and technology reflect the fact that the official media does a good job of gaining support from individuals regarding climate change policies and regulations. Emphasizing efforts and achievements in official media help with increasing social cohesion and highlight China's vital role regarding climate change agreements. Media strengthens national pride, but overemphasis may lead to doubt regarding costs and benefits among the public. The extant of climate change skepticism regarding climate change mitigation indicates that the official media does not perform well in mobilizing the public to take action.

Even though environmental protection and climate change mitigation are inseparable targets in China's plan of ecological civilization, it is essential to point out that *Zhihu* users are more likely to accept policies and regulations in the name of environmental protection rather than climate change mitigation. Fresh air, unpolluted water and land,

more greens to enjoy, less highly polluted factories and facilities, and less waste, are the things in daily life that influence individuals indirectly. This finding is aligned with previous studies, which show that personal experience has a close relationship with willingness to take action (Wang and Cao 2015). In terms of mobilizing public support for national policies and regulations regarding climate change related environmental issues, the official media is efficient. But it is more important to bridge climate change mitigation and environmental protection in official media using examples from daily life, which will help increase the public's climate change concerns and make China's commitments to international agreements more acceptable.

The analysis of *Zhihu* users' perception of climate change mitigation furthers our understanding of climate change skeptics in China. Previous studies focus on skepticism in Western countries. This work enriches the types of climate change skepticism by including skepticism of climate change mitigation, especially concerns regarding international cooperation. This type of skepticism is a byproduct of the nationalism emphasized in Chinese media.

Scholars (Han 2018, Schneider 2018) point out that China's cyber-nationalism is on the rise after the inauguration of Xi. Internet users voluntarily defend criticism against China (Han 2015) and try to construct an image of strong power against developed countries. Thriving nationalism is a double-edged sword. On the one side, it leads to the support of the central government's hawkish moves on international events; on the other, it leads to complaints and dissatisfaction when the central government takes too many responsibilities and makes concessions. Therefore, when it comes to international agreements on climate change mitigation, it is not unusual to see that some *Zhihu* users

believe that China should also withdraw from the Paris Accord when Trump made the decision. Chinese nationalism was born when imperialism threatened China's territorial, cultural, and racial survival (Zhao 2004). Therefore, one of the most prominent features of Chinese nationalism is responsiveness. Nationalism arises when the Chinese feel that Western countries threaten them. The intense relationship between China and the U.S. may lead to more opposing attitudes toward an international climate change mitigation agenda.

Being recognized and agency are the claims embedded in both newspapers and online discussions, which are also essential components of nationalism. They lay the foundation for climate justice. "Climate change is a justice issue" (Harlan et al. 2015:127), which is caused by social inequalities on local as well as global levels. Based on the discussion of environmental justice, Harlan et al. (2015) reiterate four dimensions of climate justice: distribution, recognition, participation, and capabilities. Newspaper reports ask for recognition, and *Zhihu* users' arguments mainly refer to distribution and capability justice, which denote "equity in distributing the burdens and sharing the benefits of climate change in communities and among nations" and "freedom of people to make choices that maximize their capabilities to survive now and, in the future" (Harlan et al. 2015:136). Zhihu users argue that they have the freedom to make decisions regarding how to live with the climate threat. This response is expected, and it is easy to find similar appeals in other climate justice campaigns and movements (Fielding and Hornsey 2016)

The comparison of the official climate change frames and individual frames provide us with clues of how to realize micromobilization in terms of climate change mitigation.

The repeatedly emphasized values and beliefs in the official media effective in mobilizing part of the *Zhihu* users (36.9% of answers show positive attitudes toward climate change) and gain support from them regarding climate change mitigation. However, it is worthwhile to note that over 50% of answers show negative attitudes, in contradiction to information provided via national guidelines. The use of belief and value amplification does not realize the government's goals of promoting consistent perspectives on climate change.

Individual's actions are partly influenced by beliefs and values (Dietz, Fitzgerald and Shwom 2005, Snow et al. 1986), therefore, participation in collective actions is more likely to happen if there is a positive relationship between the beliefs and values about the object and the nature of the collective actions (Snow et al. 1986). From the analysis of the official frames and individual climate change perceptions, I conclude that the repeatedly emphasized value of national pride does not help promote climate change mitigation among the Chinese public. There is a gap between national values and the global nature of climate change, which deserves more in-depth study in the future.

This work adds a more detailed understanding of the public's climate change concern in China, which has the most rigorous media censorship and regulations on public engagement in public affairs. Previous studies have identified that climate change awareness and risk perception were significant predictors of willingness to pay and policy support (Duan, Yan-Li and Yan 2014, Wang 2017, Winden, Jamelske and Tvinnereim 2018, Yang et al. 2014). From the characteristics mentioned above of climate change concern on the micro-level, it is important to examine the correlation between nationalism and climate change concern in a quantitative manner. This work is based on

analysis of four newspapers and one online forum. Conclusions must be tested using different data sources and approaches.

Climate change concerns on the individual level are influenced by political and cultural context (Anderson 2009). By taking into consideration the intense international political layouts, it is crucial to indicate that concerns regarding climate change become more complicated among the public, and there are possibly more difficulties facing international environmental organizations. For instance, the intense relationship between the U.S. and China stoke the rise of nationalism, which hindered the campaign in China on climate change mitigation launched by WildAid, a U.S.-based NGO. Covid-19 raised concerns about the relationship between human activities and climate change. After the breakout of Covid-19, I conducted interviews with residents in Hubei province and followed the discussion on climate change. The pandemic leads people to reflect on the scope of influence caused by climate change. These unique events provide scholars with more opportunities to explore climate change discourse in the future.

As extant theoretical frameworks directly related to climate change developed in Western countries are not applicable for the analysis of China as mentioned in Chapter II. Considering that China is becoming a significant player globally and its growing influence, it is necessary for future scholars to put this on their agenda and develop a set of theoretical frameworks to reflect China's unique political and social structure.

China's stance on climate change needs more research due to its growing influence in the developing world. China's position on an international climate change regime may influence other developing countries' attitudes on the distribution of responsibilities

related to GHG emission reduction. The finding that *Zhihu* users seldom question the facts of climate change and the seriousness of climate change consequences reflects the success of official propaganda. It is possible for other developing countries to adopt certain climate change frames emphasized in China and to educate the public, gain support from the public, and maintain social stability. Other developing countries need not use the same official climate change rhetoric due to variations in social and cultural background, as well as the inefficiency of the official frames to mobilizing the public to engage in climate change mitigation on the micro level.

Generalizability of =findings is limited due to the scope of macro- and micro-level data. It is meaningful to explore narratives of climate change concern from different official venues, including various newspapers with Chinese and international audiences, local newspapers which provide clues of how local governments transmit the central government's ideology of climate change and implement related policies, social media, as well as the leaders' speeches given at national and international events in the future. It will be meaningful to discuss the temporal changes of official climate change frames by including more news reports prior to 2006, to trace how the frames change over time which is also influenced by the shift of political regimes. There is a lack of public information channels in this project. It is necessary to conduct a quantitative study of the general public's climate change information channels in the future to provide more clues about the globalization of climate change skepticism. More explicit comparative analysis of how official media frames of climate change affect individuals' perception of climate change will further our understanding of the promise or failure of propaganda tools. Both *PD* and *GD* have official accounts on *Weibo*, a popular social media site similar to

Twitter. Through greater data collection and analysis, it is possible for us to establish a direct association between official frames and individual discourses of climate change. Official media's influence on individuals reflects the trust in government and also impacts the implementation of climate change policies. Furthermore, it is important to analyze political leaders and governmental officers' views on climate change by analyzing internal speeches. Data access limitations may continue to be a challenge.

This project attends to framing dynamics at the macro and micro-levels and provides the general types of climate change skepticism held by *Zhihu* users. It is important to conduct in-depth and network analysis of users to explore the role of opinion leaders in social Q&A communities. Future studies could include network analysis to identify the accurate numbers of *Zhihu* users who participate in the discussion of climate change and the opinion leaders of climate change in the platform. Internet opinion leaders are pivotal in studying social movements and collective actions, especially in the process of framing. In addition, *Zhihu* users can comment on each answer to the questions, and it will provide more details of how opponents and proponents debate over climate change topics. Considering the Chinese central government's continuous efforts and steady determination to mitigate climate change and realize ecological civilization, China is taking an important role in the international climate change agenda. In the context of globalized media and the possible spread of climate change skepticism on the internet, further discussion of China's efficiency in mobilizing the public might offer useful implications for a general approach to global governance of climate change.

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VITA

JUAN DU

Candidate for the Degree of

Doctor of Philosophy

Thesis: UNDERSTANDING CLIMATE CHANGE DISCOURSE IN CHINA

Major Field: SOCIOLOGY

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Sociology at Oklahoma State University, Stillwater, Oklahoma in July, 2021.

Completed the requirements for the Master of Law in Sociology of Ethnicity at Minzu University of China, Beijing, China in 2011.

Completed the requirements for the Bachelor of Law in Social Work at Beijing Normal University, Beijing, China in 2008.

Experience:

2017-2021 Graduate Teaching Associate
2015-2017 Graduate Teaching Assistant

Professional Memberships:

Southern Sociological Society
Society for the Study of Social Problems
Alpha Kappa Delta