

**Ethics and Effectiveness in Climate Change Communication Handbooks: A Close  
Reading Analysis**

By

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### Abstract

The field of climate change communication (CCC) seeks out ways to effectively communicate climate change topics to a less scientifically expert public. To assist climate communicators in crafting messages that have high resonance, engagement, and comprehension among audiences, several best practice guides (BPGs) have been created by academics and climate organizations. While CCC research has been highly developed in terms of effective strategies for audience engagement, little literature exists about the ethical expectations for climate change communicators. This dissertation analyzes the recommendations that inform the work of climate change communicators, as seen through five BPGs. Additionally, this dissertation compiles a list of potential ethical considerations for CCC practitioners and analyzes the depth at which each BPG addresses each of the ethical considerations. Using an *a priori* and *a posteriori* approach to close reading analysis, it appears that CCC can achieve both ethics and efficacy. While ethics and effectiveness may come in tension for climate communicators, such as balancing the depth of detail in a communication and its degree of intelligibility, they are not mutually exclusive, nor do the BPGs omit reference to these ethical considerations.

**Keywords:** climate change communication, communication ethics, science communication, effective climate change communication, science communication ethics, dialogical climate change communication.

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## Chapter 1: Introduction

### Background

Research in the field of climate change communications (CCC) has proliferated in recent years as scientists and communicators grapple with the task of communicating the findings from climate science in a way that will motivate public action and support for climate policy. The field of CCC seeks to assess the gap between the science of climate change and public comprehension

and willingness to act upon that science (Lamb & Lane, 2016). Ideally, CCC research finds the most effective ways for audiences to understand climate problems and solutions and offers motivation for these audiences to act on climate change.

As a tool for scientists and communicators, various consulting firms, non-profit organizations and climate change research centres have published best practice guides (BPGs) for communicating the findings from climate science. These handbooks compile strategies and guidance for climate scientists to use when disseminating their findings to policy makers or the greater public. These BPGs are focused primarily on effective CCC, which draws from research in the fields of psychology and communication studies. Effective communication, in the context of CCC, would be a message or communication that inspires the audience to adopt certain pro-environmental behaviours or support certain science-informed climate policy (Howarth et al., 2020).

BPGs made for climate science communicators offer simple, clearly stated recommendations. Communication and information dissemination are aspects of the scientific process that are often given less time and resources than other aspects of scientific inquiry (Priest et al., 2018). The BPGs seek to assist these ‘communication practitioners’, and thus their recommendations have direct implications in science communication. Knowing that climate communicators (and science communicators in general) have a responsibility to disseminate their findings to relevant stakeholders, groups, and communities (Priest et al., 2018), these BPGs seek out the most engaging and comprehensible way to do so.

Discrepancies in scientific literacy between experts and the public mean that climate science must be translated and adapted into more accessible formats and into more comprehensible language. For instance, several BPGs emphasize the need for a narrative

structure in CCC, as an alternative to displaying climate information through data. Used as strategic tools for framing messages, narratives “give meaning to certain issues, and they enable audiences to make sense of complex issues” (Howarth et al., 2020, p. 323). The BPGs also suggest using rhetorical devices such as metaphors as a means for easier comprehension of complex science.

However, rhetorical and narrative devices like those described above can lead to misrepresentations or omissions of the complexities and nuances that are inevitably a part of the scientific process. Lamb & Lane (2016) assert that CCC is “a form of persuasive communication” (p. 232) and therefore is prone to rhetorical misconduct, such as overstating scientific uncertainties as known risks. By not considering the realm of ethics in communication practices, “CCC risks being received as a set of strategic tools that can be manipulated for any purpose” (Lamb & Lane, 2016, p. 232). This perception – and use of manipulation – could undermine trust in the scientific process and in the people and organizations that communicate climate science. Additionally, these suggested rhetorical devices and practical guidelines for communication may pervert the basic purpose of communication, that being to “serve our human need to *deliberate* and *decide* what to do about practical matters that are contingent and uncertain” (Lamb & Lane, 2016, p. 236). There appears a tension here – between communicating an information-rich message while still maintaining audience comprehension and attention.

The challenge in balancing ethics and effectiveness in science communication is not novel or unique to climate change communicators. The atmospheric scientist Stephen Schneider coined the concept of the “double ethical bind” in his 1989 book *Global Warming: Are We Entering The Greenhouse Century?* According to Schneider, the double ethical bind comes from “the scientific culture of caution and reticence and the media’s penchant for the drama, dread and

debate that keeps the show lively and the audience tuned in” (Schneider, 1989, p. 236). This double ethical bind concerns climate scientists who need to communicate complex and uncertain findings. These findings must be communicated to an audience in a way they can comprehend and that will motivate them to want to learn more, to take individual action and to support climate change policies. Schneider writes that the “double ethical bind for communicating science to the public, then, is for the scientist to find an appropriate balance between being an effective agent for change and being honest about the limitations of the state of knowledge” (Schneider, 1989, p. xi). This ‘appropriate balance’ has been under-researched in the field of CCC.

While some popular academics such as Bjørn Lomborg have accused and criticized climate communicators for spreading ‘climate alarmism’ (Lomborg, 2020), the professional field of CCC has not encountered any major crisis of ethics and practice, unlike the field of international development. In the 1980s, following famines in both Ethiopia and Sudan, the international development sector was criticized for creating and using images in fundraising campaigns that portrayed people from developing nations as “helpless, passive objects” (Plewes & Stuart, 2006, p. 23). Coined as the ‘pornography of poverty’, “the issue of responsibility for the presentation of popular images and public understanding of disasters became prime concerns for [non-governmental organizations]” (Plewes & Stuart, 2006, p. 26). In response, many international development organizations have created codes of ethics to regulate any communications created for fundraising or informational purposes. The experience of international development organizations offers useful insights for those thinking about the ethics of CCC.



The balance, tension, and potential trade-offs made between effective and ethical CCC has had little research, and currently there are no standardized codes of ethics made specifically for CCC practitioners. While the BPGs offer readily available guidance for climate communicators who may not have the time and resources to spend disseminating their findings outside of the scientific community, these BPGs must be evaluated to ensure these recommendations are grounded in robust, morally defensible literature and adhere to the moral codes of communications.

Scientific illiteracy is not the only challenge that communicators face. With the pervasiveness of digital media, audiences have shrinking attention spans and more exposure to crises and ‘bad news’ other than the climate crisis. Audience detachment or numbing from bad climate news is something climate communicators must grapple with. How can the communicator disseminate information in an accurate, engaging, and resonating way, whilst ensuring these messages have not been manipulated to omit vital information?

### **Research Objectives**

The core tension I will investigate in this thesis is the balance between adhering to ethical practices of communication and achieving effective communication about climate change. This dissertation will answer the central research question: are principles of communication ethics adhered to in the BPGs created for climate change communicators? Further, this dissertation will:

- Review the literature on ethical science communication and ethical CCC specifically,
- summarize the current state of knowledge on effective CCC, as seen through five BPGs,
- analyze the content of ethical communication standards in each of the selected BPGs, and

- note instances where recommendations on effective CCC may give rise to ethical dilemmas, or where ethics and effectiveness can both be achieved and balanced in CCC.

### **Significance of Study to Sustainability**

Schneider's 'double ethical bind' offers a "coping strategy for difficult circumstances, rather than a thoroughgoing reconceptualization of how scientific knowledge might best be communicated in conditions of urgency" (Russill, 2009, p. 67). The purpose of this study is to assess whether ethics are thoroughly considered in the BPGs made for climate communicators. Additionally, this study aims to investigate the choices and compromises made by climate change communicators when they produce communications intended for a broad audience. CCC is a particularly significant locus for research in ethical and effective communication as the climate crisis requires our swift and collective action in achieving climate policy and emission reduction targets. Finding ethical and effective ways of communicating the science of climate change in urgent conditions requires careful attention to framing and messaging. Additionally, communicating the science of climate change is not merely an objective for environmental organizations to achieve more support for climate policy. With greater understanding of complex climate science, the public can better understand the present and imminent environmental risks they face in their communities.

From my *a priori* analysis of five BPGs, I found that ethics are discussed only 'between the lines' and are not typically framed in terms of 'ethical expectations' but rather as 'effective strategies' for CCC. However, this does not mean that ethical and effective CCC are mutually exclusive, nor does it indicate that the BPGs necessarily violate any ethical standards for CCC. The BPGs, along with the literature on ethical CCC, suggest that a dialogical approach to CCC is highly effective form of CCC. The dialogical approach to CCC can engage audiences in locally

relevant conversations about climate change, enhance the audience's capacity to understand climate science and climate projections, and empower audiences to understand climate solutions in the face of climate change uncertainty. The *a posteriori* analysis illustrates how CCC can be formulated in an ethical and effective manner.

## Chapter 2: Literature Review

The literature surveyed for this dissertation can be classified in two distinct bodies: literature on effective communications and literature on ethical communications (largely from fields of applied ethics and codes of ethics published by organizations). However, there is little overlap between these bodies of literature, other than Lamb & Lane (2016) and Keohane et al. (2014).

### **Effective CCC**

Research on and frameworks made for effective CCC have emerged in response to the challenges of communicating climate science and the projected impacts of climate change to the public. Additionally, effective CCC is deemed a vital precondition to mobilizing the public to adopt pro-environmental policies. The difficulties that CCC practitioners face emerge due to both professional boundaries and from the nature of climate change as an issue. Moser (2010) suggests that the professional boundaries and lack of rapport between “those doing the communicating and those researching [climate change]” (p. 33) cause difficulties in creating effective CCC products. Further, since climate change is a global issue with temporal displacement and various local manifestations, climate change can be conceptually and emotionally difficult to process (Moser, 2010). Due to this temporal displacement and the large

scale of both the problems and solutions, Moser (2010) suggests that climate change communicators need to “find clearer, simpler metaphors, imagery, and mental models as well as compelling framing to the foundation for more appropriate cognitive processing” (p. 36). To synthesize and summarize these recommendations, I completed a systematic literature review.

### *Systematic Literature Review*

Using a systematic literature review, I have summarized the findings from effective CCC research (see Table 1). This literature is informed by research in psychology and communication studies and reflects both academic and grey literature (where grey literature has been adapted from academic sources). Further, I have classified two distinct types of literature on effective CCC. The American Psychology Association (APA) compiled a report on the relevance of psychological research and expertise in climate change problems, solutions, and communication. The second body of research are the BPGs, which translate the academic research into practical tools that CCC practitioners can apply in their work.

Table 1: Systematic Literature Review Summary<sup>1</sup>

<b>CCC Recommendations</b>	<b>Source</b>
Focus on opportunities and solutions for climate change	(Howarth, Parsons & Thew, 2020; Matthews, 2020; Olano, 2020).
Use a narrative structure to communicate climate science and problems	(Neal et al., 2021; Howarth, Parsons & Thew, 2020; Jones & Peterson, 2017; Matthews, 2022; Olano, 2020; Harvard Center for Health Communication, 2022).

<sup>1</sup> See appendix for Boolean search string.

Engage the audience’s emotions and emotional sensibilities	(Chapman, Lickel & Markowitz, 2017; Harvard Center for Health Communication, 2022).
Empower the audience	(Goodwin & Dahlstrom, 2014; Harvard Center for Health Communication, 2022).
Craft the message differently depending on the target audience	(Holmes & Hall, 2019; Neal et al., 2021; Howarth, Parsons & Thew, 2020; Climate Development Knowledge Network, 2019).
Use simple and accessible terminology	(Howarth, Parsons & Thew, 2020)
Use a trusted messenger to convey your findings	(Howarth, Parsons & Thew, 2020; Climate Development Knowledge Network, 2019; Matthews, 2022; Conservation in a Changing Climate, 2019; Harvard Center for Health Communication, 2022).
Use a local focus in your message	(Holmes & Hall, 2019; Conservation in a Changing Climate, 2019).
Use a dialogical or conversational approach to climate change topics	(Howarth, Parsons & Thew, 2020; Moser, 2016; Regan, 2014).

### *Psychology and CCC*

The APA created a report on the “interface between psychology and global climate change” (American Psychological Association, 2009, p. 3), where research in psychology can complement and inform guidelines for effective CCC. The literature from communication theory that this report draws on is largely from a subdiscipline of psychology known as risk communication (American Psychological Association, 2009). Risk communication includes analysis of “risk messages about impending and unfolding climate change impacts” (American Psychological Association, 2009, p. 22). Since “[c]limate change is not a hazard per se, but a potential driver of many different hazards” (American Psychological Association, 2009, p. 17), communicating risk scenarios, uncertainties and contingencies in turn complicates the work of a

climate change communicator. Despite the challenges that CCC practitioners face in conveying these risks, the field of psychology offers applicable wisdom to improve CCC. Suggesting that psychology can contribute “communication and diffusion techniques and methods”, those methods could include “providing information, using persuasion, advertising, [or] making person-to-person contact” (American Psychological Association, 2009, p. 71).

The field of psychology is aptly equipped to specify and recognize the social identities of specific groups of people or a specific audience. This is important for targeting strategies in effective CCC, where an effective message would be tailored according to its intended audience (Bostrom et al., 2013). Additionally, the field of psychology is also methodologically equipped to evaluate the efficacy of these communications practices by quantifying behavioural changes and resonance with the audience (American Psychological Association, 2009, p. 75). Measuring and noting failures and successes in CCC campaigns allows for improvement in the field of effective CCC studies. When CCC campaigns are evaluated, effective CCC can improve to heighten audience engagement and comprehension.

### *Best Practice Guides*

The BPGs created for CCC seek to translate the large body of academic literature on effective CCC into professional practice. The five BPGs I have selected for analysis were chosen due to their robust grounding in literature on effective CCC, and their credibility by association with large research institutions and environmental organizations. In this dissertation I will analyze the following five handbooks:

- *The Psychology of Climate Change Communication* published by Columbia University's Center for Research on Environmental Decisions (see Center for Research on Environmental Decisions, 2009),
- *Connecting on Climate: A Guide to Effective Climate Change Communication* published in tandem by ecoAmerica and Columbia University's Center for Research on Environmental Decisions (see Center for Research and Environmental Decisions & ecoAmerica, 2014),
- *Principles For Effective Communication and Public Engagement On Climate Change: A Handbook for IPCC authors* published by Climate Outreach (see Corner et. al, 2018),
- *The Uncertainty Handbook: A Practical Guide for Climate Change Communicators* published by Climate Outreach and Information Network (see Corner et. al, 2015).
- *The Consensus Handbook* published collaboratively by researchers from George Mason University, the University of Cambridge, and the University of Bristol (see Cook et. al, 2018), and

It is important to note that the BPGs I have selected, short of *The Consensus Handbook*, are concerned about communicating climate change to audiences who are sympathetic with climate change and already accept and believe that it is occurring. In this sense, the principles of effective communication presented in the BPGs are not intended for an audience of climate change deniers. The recommendations made by the BPGs allow communicators to move their audiences from a state of acknowledgement of climate change to a state of action on climate change. In the context of this thesis, and in most of the BPGs I am analyzing, this transition from an 'informed' to a 'mobilized' audience is what is deemed as 'effective' climate change communication.

## CCC Ethics

The literature relevant to the ethics of CCC comes from two distinct areas: philosophical literature on the purpose of communication (in general or CCC in particular), and professional codes of conduct developed by international development organizations, which address concerns that overlap with and relate to CCC. While other professional sectors of activism and development have created guidelines on ethical communication – especially the international development sector – environmental and climate change organizations remain curiously quiet about ethical considerations in CCC. It is therefore useful to examine the guidelines on ethical communication from international development organizations to help point the way forward for CCC.

### *Communication Ethics from International Development Organizations*

In response to a crisis in communications that arose in the 1980s, international development organizations created codes of ethics for communications (both written and visual). According to these documents, communicators must convey a sense of agency and opportunity in the messages they produce about the groups, populations, and nations they are representing. Additionally, social justice and development issues must not be presented in an oversimplified manner, where the details in the communication must capture the nuance of the social situations, without being overly arduous.

The Dóchas Code of Conduct on Images and Messages (published by the Irish Association of Non-Governmental Development Organisations) compiles a set of ethical communication principles for non-governmental organizations so they may “critically reflect on the messages they are portraying, ask questions about the language they use, and explore the implications of using different terms” (Dochas, 2014, p. 5). The handbook presents several



concerns regarding the depth and nuance of understanding that the audience has from a communication by an organization. For example: “Does the communication convey a sense of interdependence or interconnectedness and encourage long-term engagement in development issues beyond charitable donations?” (Dóchas, 2014, p. 34). Further, the guide mentions the risk of using social media as a platform of communication due to the “risk of ‘dumbing down’ an issue or situation in order to create viral content” (Dóchas, 2014, p. 25). The guide suggests that communicators communicating via social media ought to ask “if those receiving or sharing a message fully understand the wider issues, in terms of what is at stake or what is really happening in the situation being portrayed” (Dóchas, 2014, p. 25).

Cooperation Canada, the organization that represents Canadian development organizations, has compiled a similar document (2020) with similar imperatives regarding depth and nuance of communications. In the section regarding fundraising and communications to the public, the guide asserts that

“[t]here shall be no misleading information or images (including material omissions or exaggeration of fact), nor any other communication which would tend to create a false impression or misunderstanding, and no use of high-pressure tactics in soliciting donations” (Cooperation Canada, 2020, p. 12).

The code asserts that organizations must use images and communications that “are accurate, balanced, truthful and representative of reality and do not generalize and mask the diversity of situations” (Cooperation Canada, 2020, p. 12).

Humanitarian Communication compiled a similar code of ethics, offering four principles for ethical development communication. First, nuanced communication is needed to represent multiple stories and perspectives (Humanitarian Communication, 2021). Second, communicators

must respect the dignity of those they are representing in their messages, by allowing subjects to speak for themselves, and showing both the problems they face and the solutions they are pursuing (Humanitarian Communication, 2021). Third, context is required for a full understanding of the development issue being presented (Humanitarian Communication, 2021). Fourth, inspiration is necessary to “make both [the] target group and [the] audience co-owner of the solution” (Humanitarian Communication, 2021, p. 4).

The codes of ethics created and used by international development organizations contain relevant and transferable material for CCC ethics. While communications from international development organizations are often associated with fundraising, the principles are relevant in that the communication is meant to highlight relevant social, environmental or justice issues and motivate public action on those issues, from fundraising to political activism.

### *Ethics In Science Communication and CCC*

A key question remains unanswered from the literature on effective CCC – why are ethics important for CCC? The literature on the ethics of CCC is limited. Lamb & Lane (2016) claim that while psychology is an important dimension of research in effective CCC, psychology alone lacks a normative quality that is necessary to formulate and regulate CCC. Lamb & Lane (2016) define the field of CCC as one that addresses the disparity between communicating climate science and motivating support and action to address the demands of climate change. These communications are intended to “motivate action and inspire trust” (Lamb & Lane, 2016, p. 229) between the general public and climate communicators. This typifies CCC as a form of persuasive communication, where CCC is intended to achieve pro-climate policy or climate action. Lamb & Lane (2016) draw from Aristotle’s theory of rhetoric (i.e., persuasive communication) and trust production, which they claim “puts less emphasis on strategic

reframing [of CCC] and more on the ethical and political relationship between speaker and audience” (p. 250).

Drawing from Aristotle’s theory of rhetoric, Lamb & Lane (2016) emphasize the importance of fostering a trusting relationship between speaker and audience in CCC, rather than merely compile a set of strategies for communicators to project information to their audiences. A strong relationship between speaker and audience is defined by trust, which they suggest can be tarnished when communicators reframe uncertainty as known risks (Lamb & Lane, 2016). Trust is not a secondary requirement, but a necessary precondition for communicators to establish if they want their message to inform behavioural changes in their audience (Lamb & Lane, 2016).

Keohane et al. (2014) are also concerned about creating ethical standards for CCC. Specifically, they are interested in the ethics of communicating climate science when that science is uncertain or contains ambiguity. By offering a normative account of CCC, Keohane et al. (2014) intend to provide a standard that is “philosophically defensible, workable in practice, and likely to generate comprehension by relevant audiences” (p. 344). These principles include honesty, precision, audience relevance, process transparency and “specification of uncertainty about conclusions” (Keohane et al., 2014, p. 352). Like Lamb & Lane (2016), Keohane et al. (2014) argue that “communication is a matter not just of persuading people but of getting them to think through problems themselves” (p. 352).

### **Tensions and Balances Between Ethical and Effective Communication**

Schneider (1989) writes that the “double ethical bind for communicating science to the public... is for the scientists to find an appropriate balance between being an effective agent for change and being honest about the limitations of the state of the knowledge” (p. xi). While Schneider wrote about science in general, his double ethical bind is an appropriate prognosis

which represents the struggles that climate change communicators currently face. While effective CCC is necessary for public mobilization to adopt pro-environmental policy and perspectives, ethical practices in CCC are necessary to protect the credibility of scientists and communicators, and to meet the foundational purposes of communication (as outlined by Lamb & Lane and through their analysis of Aristotle's art of rhetoric).

Both Moser (2016) and Regan (2007) call for a dialogic approach to CCC. The APA (2009) defines dialogue as an "extended discussion of a topic via written or verbal communication" (p. 103). This deliberative approach to communication is harmonious with the model of communication that Lamb & Lane (2009) call for. Regan (2007) claims that engaging in dialogue about climate change can "provide opportunities for non-specialists to gain knowledge to which they would otherwise not have access... [and] deepen participant's understanding of how a particular problem or its proposed solutions may affect them and others" (p. 217). Moser (2016) claims that "dialogic, deliberative processes can open minds, deepen understanding, foster empathy, change attitudes, and increase receptivity to policy alternatives whereas not as much impact could be simply achieved by simply transmitting information" (p. 352). These two positions regarding the role and potential of dialogic approaches to CCC suggest that effective and ethical CCC can be reconciled. Regan (2007) believes that by engaging in dialogue about climate change we can find "a path out of our deepest fears and a way to realize our most fragile hopes" (p. 221). While the literature on effective CCC may not make explicit reference to communication ethics, Moser's (2016) view, at least, shows the possibility to create CCC that is both effective and ethical.

While a highly dense message might be rich in information, O'Neill (2002) states that "[c]ommunication, unlike mere self-expression, is ethically acceptable only when it aims to be

accessible to and assessable by its audiences” (p. 186). That is, if a message contains accurate data about climate change, and is distributed to a constituency of audience members whom this information would benefit, it would not be ethical per se if this audience cannot interpret the message. This suggests that communicators have a difficult task in creating messages that are grounded in climate science but are also presented in a manner that is ‘accessible and assessable’ to the audience.

Chapter 3: Methods

This dissertation will involve a three-stage approach to data analysis and collection to answer the central research question: are principles of communications ethics considered in the BPGs created for climate change communicators? Table 2 offers an overview of each phase of this research.

Table 2: Overview of stages for data collection and research

Phase 1	Phase 2	Phase 3
Literature review and development of an analytical framework with ethical considerations for CCC.	Close reading by cross-referencing each BPG to the analytical framework and assessing how thoroughly each BPG discussed each ethical consideration.	Close reading through an <i>a posteriori</i> reading of each BPG, noting any areas of potential ethical concern.

In the first phase, I completed a review of the literature on effective CCC recommendations, as well as the limited literature there is on the ethics of CCC. To provide a more robust review of the literature on CCC ethics, I looked to the literature on science communication ethics, as well as codes of conduct for communication as delineated by international development organizations. With this, I devised an analytical framework, which compiles the ethical considerations for communicators as delineated in the literature from the international development sector, science communication ethics in general and CCC ethics in specific.

In the second phase, I completed a close-reading analysis of five BPGs to assess how thoroughly each document discussed the ethical considerations presented in the analytical framework. Using an *a priori* approach to discourse analysis, I devised a scoring rationale to assess how thoroughly each BPG discussed each ethical consideration. This allowed me to assess what ethical considerations are commonly referenced by the BPGs, which ethical considerations are discussed more implicitly, and which ethical considerations are omitted from the BPGs.

Finally, I completed an *a posteriori* analysis of the BPGs. In this phase, I completed a second close reading of each BPG, with special attention on the dynamics between ethics and effectiveness in CCC recommendation, as well as the tensions between the ethical considerations in the analytical framework. The results from the *a posteriori* phase can be seen in the fifth chapter (discussion).

### **BPG Selection**

The five BPGs that were chosen for analysis were selected given their robust grounding in academic literature on effective CCC principles. The BPGs selected were published in tandem between academics (from institutions such as George Mason University, the University of

Cambridge, University of Bristol, Columbia University), and by climate organizations such as Climate Outreach and Information Network, ecoAmerica, Climate Outreach, and the Intergovernmental Panel on Climate Change.

### **Close Textual Analysis**

To complete the *a priori* analysis of the five BPGs, I used the method of the close reading analysis. Gee (2005) offers the following prompts as useful tools when assessing significance, identities, relationships, connections, and activities represented in a text:

- “What activity or activities is this piece of language being used to enact...” (p. 11),
- “How is this piece of language being used to make certain things significant or not and in what ways?” (p. 11), and
- “What sort of relationship or relationships is this piece of language seeking to enact with others...?” (p. 12).

The method of close textual analysis involves two phases. First, it involves reading the text and noting facts, details, and significant passages that generate further questioning, contemplation, or concern (Kain, 1998). The second phase involves analysis of contradictions present in these passages (Kain, 1998). The discourse analysis framework offered by Gee (2005) in conjunction with the two-pronged approach offered by Kain (1998) will formulate the structure of my close reading analysis.

It is important to note some disparities in disciplinary analysis and depth of explanation. BPGs are created for CCC practitioners, and are meant to simplify, improve, and expedite the process of information dissemination for climate scientists. While this close textual analysis will take a critical view of instances where the BPGs omit ethical standards for communication, I recognize that BPGs must also be evaluated from the perspective of a CCC practitioner (i.e., are

the recommendations clear, concise, logical, and does the guide offer suggestions for how to implement each recommendation?). The two-pronged approach to close reading analysis offered by Kain (1998) will ensure that BPGs are analyzed on the basis of both professional clarity and ethical content.

### **Analytical Framework**

After reviewing the literature on ethical communication practices, I created an analytical framework which both summarizes this body of literature and functions as a guide for this research. This *a priori* approach to textual analysis generates a list of ethical considerations to use when analyzing each BPG. Table 3 summarizes each ethical concern present in the literature and indicates the source and category of literature each concept comes from. These categories include literature from the international development (ID) sector, the ethics of science communication in general and the ethics of CCC.

Table 3: Analytical Framework

<b>Ethical Consideration #</b>	<b>Ethical Consideration</b>	<b>Source</b>	<b>Category of Literature</b>
<b>1</b>	Uses a dialogic approach to communication about climate change topics	(Regan, 2007; Moser 2016)	CCC ethics
<b>2</b>	An appropriate richness of detail is included in the message, and the message is not ‘dumbed down’ or lacking nuance and depth.	(Keohane et al., 2014; Dóchas, 2014; Cooperation Canada. 2020)	CCC ethics, ID
<b>3</b>	The process of scientific inquiry and deduction is transparent.	(Keohane et al., 2014)	CCC ethics



4	Scientific uncertainties are expressed.	(Keohane et al., 2014)	CCC ethics
5	Information is presented in a manner that fosters the audience's capacity to understand, deliberate and decide about climate issues that will/do affect them.	(Lamb & Lane, 2016; Keohane et al., 2014)	CCC ethics
6	Communicator ensures that the people being presented in images and visuals speak for themselves.	(Dóchas, 2014; Humanitarian Communication, 2021)	ID
7	Images and text "portray local communities as active agents in their own development process and do not fuel prejudice or foster a sense of Northern superiority."	(Cooperation Canada, 2020)	ID
8	The information presented is accessible and assessable to the audience.	(O'Neill, 2002; Keohane et al., 2014)	Science communication ethics, CCC ethics
9	The communicator does not bypass the audience's capacity for rational thinking and does not exclusively appeal to the audience's emotions.	(Chapman et al., 2017)	CCC ethics

### ***A Priori Analysis***

To interpret and analyze each BPG, I will cross reference each guide with the analytical framework and note any clauses or sections where the BPG addresses or defies each ethical consideration. A similar methodological approach can be seen from Ballantyne (2016), where each document in the review of CCC literature was analyzed according to its expressed aims, key findings, and communication approach. To interpret these notes and observations, I will evaluate how each BPG addresses each ethical consideration using a rating scale.

### *Scoring Methodology*

To evaluate how thoroughly each of the ethical considerations from the analytical framework are discussed in each BPG, I used a rating scale. Table 4 shows the rating scale and the correlating rationale for each rating level. The 0-3 level rating scale offers a simple approach to analysis, yet the detailed notes template will capture the nuances in depth and perspective found in the BPGs. Important to note is that the ethical considerations in the analytical framework are articulated using a positive frame. Thus, a high rating is associated with a high degree of performance in addressing that ethical consideration.

Table 4: Rating Scale for ECs

<b>Rating</b>	<b>Rationale</b>
0	No mention of the ethical consideration or opposing/contradicting guidance offered
1	Implicit or vague mention of the ethical consideration
2	Brief yet explicit mention of the ethical consideration
3	In depth, purposeful and explicit discussion of the ethical consideration

### *BPG Evaluation System*

To evaluate each BPG and track notes from the close reading analysis, a consistent template format was used. Each BPG was given a template, where the title of the BPG was indicated at the top, and the nine ethical considerations were listed in the first column on the left. The second column allowed me to indicate whether the BPG did not mention the ethical consideration (i.e., it would be granted a score of zero), or if it did. The third column was used to

write quotes and note instances where the associated ethical consideration was mentioned, where correlating page numbers are also noted. Once the whole BPG had been analyzed, the score would be assigned in the final column, determined by the depth in which the BPG discussed the ethical consideration.<sup>2</sup>

### ***A Posteriori* Analysis**

Again, by method of close reading, I used *a posteriori* reasoning to generate other ethical questions or concerns that may not have appeared in the initial analytical framework. These questions generated thought experiments and outlined contingent scenarios in which effective and ethical communication may experience tension or trade-offs, or where ethics and effectiveness can be achieved in tandem. To track instances, these questions and notes were added to the same BPG evaluation form, differentiated from the *a priori* notes by using italicized text.

## Chapter 4: Results

### **CCC Recommendations According to the BPGs**

The BPGs are organized by clear, instructive statements, and use directive language as seen in Table 5. These concise statements give CCC practitioners a clear sense of the most effective ways to communicate their findings to an audience that likely does not have the same level of scientific literacy as scientists do. The chapters or sections in the BPGs were typically

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<sup>2</sup> I have omitted the BPG evaluation tables from this dissertation due to space constraints. An open-access link to the Google Sheets files has been included in the appendix.

organized by recommendation or CCC principle, with one overarching recommendation per chapter.

Table 5: Normative Language and Principles Presented in the BPGs

<i>The Psychology of Climate Change Communication</i>	<i>Connecting on Climate</i>	<i>The Uncertainty Handbook</i>	<i>Handbook for IPCC Authors</i>	<i>The Consensus Handbook</i>
1. Know your audience	1. Put yourself in your audience's shoes	1. Manage your audience's expectations	1. Be a confident communicator	1. Use an 'estimate and reveal' technique to convey scientific consensus
2. Get your audience's attention	2. Channel the power of groups	2. Start with what you know, not what you don't know	2. Talk about the real world, not abstract ideas	2. Use simple, clear messages, repeated often, by a variety of trusted sources
3. Translate scientific data into concrete experience	3. Emphasize solutions and benefits	3. Be clear about the scientific consensus	3. Connect with what matters to your audience	3. Use inoculating texts to dispel misinformation
4. Beware the overuse of emotional appeals	4. Bring climate impacts close to home	4. Shift from 'uncertainty' to 'risk'	4. Tell a human story	4. Deconstruct the misinformation message to detect reasoning fallacies
5. Address scientific and climate uncertainties	5. Connect climate change to issues that matter to your audience	5. Be clear what type of uncertainty you are talking about	5. Lead with what you know	
6. Tap into social identities and affiliations	6. Use images and stories to make climate change real	6. Understand what is driving people's views about climate change	6. Use the most effective visual communication	
7. Encourage group participation	7. Make climate science meaningful	7. The most important question for climate impacts is 'when', not 'if'		

8. Make behaviour change easy	8. Acknowledge uncertainty, but show what you know	8. Communicate through images and stories		
	9. Approach skepticism carefully	9. Highlight the 'positives' of uncertainty		
	10. Make behaviour change easy	10. Communicate effectively about climate impacts		
		11. Have a conversation, not an argument		
		12. Tell a human story, not a scientific one		

### **Ethics in BPGs**

After completing a keyword search for the terms 'ethics', 'ethic', 'ethical', and 'ethically' in each of the five BPGs, there were very few search results for each BPG. *The Consensus Handbook* (2018), *The Psychology of Climate Change Communication* (2009) and *The Handbook for IPCC Authors* (2018) each made just one reference to ethics (via the terms 'ethically', 'ethics', and 'ethical', respectively). *Connecting on Climate* (2014) made two references to ethics (via the terms 'ethics' and 'ethical'), and *The Uncertainty Handbook* made no references to any term relating to ethics. While this is not indicative of how thoroughly these BPGs include ethical communication standards in their recommendations, it does illustrate the lack of explicit reference to the importance of communication ethics in CCC. When interpreting the findings from my *a priori* analysis, it is important to consider that while some BPGs may reference the ethical considerations, they are referenced subtly, implicitly, or vaguely. Thus, the reader must read 'between-the-lines' to understand the ethical principles of CCC.

### ***A Priori Results***

Table 6 shows the scores granted to each BPG given how thoroughly they discussed each ethical consideration. The table also includes average scores for each ethical consideration, as well as an average score for each ethical consideration that does not include the data from *The Consensus Handbook*. As per the scoring rationale, discussed in Chapter 3, a higher score (with the highest score possible being 3) is associated with a greater depth of discussion of the ethical consideration. Conversely, a lower score suggests the BPG discussed the ethical consideration in a vague manner or omitted any discussion of it.

Table 6: BPG scores for each ethical consideration and average scores for each ethical consideration

Ethical Considerations		BPG Scores					Average Scores	
#	Ethical Consideration	<i>The Psychology of Climate Change Communication</i>	<i>Connecting on Climate</i>	<i>The Uncertainty Handbook</i>	<i>Handbook for IPCC Authors</i>	<i>The Consensus Handbook</i>	Average	Average (- <i>The Consensus Handbook</i> )
1	Uses a dialogical approach to CCC	3	3	3	2	1	2.4	<b>2.75</b>
2	An appropriate richness of detail	2	1	3	3	0	1.8	<b>2.25</b>
3	Process transparency	3	3	3	0	0	1.8	<b>2.25</b>
4	Scientific uncertainties are expressed	3	3	3	3	1	2.6	<b>3</b>
5	Capacity to understand, decide, deliberate	3	3	3	2	1	2.4	<b>2.75</b>
6	Image subjects 'speak for themselves'	0	1	1	0	0	0.4	<b>0.5</b>
7	Image subjects portrayed as having agency	0	1	1	0	0	0.4	<b>0.5</b>
8	Accessible & assessable information	3	3	3	3	1	2.6	<b>3</b>
9	Does not emotionally manipulate the audience, respects rational thinking	3	3	0	2	0	1.6	<b>2</b>

### *Omission of the Consensus Handbook*

Whilst calculating the average scores, I have included a second average score column which omits the ethical consideration data from *The Consensus Handbook*. This is because *The Consensus Handbook* is of a distinct style than the rest of the BPGs I analyzed. Rather than taking a general overview of the strategies for CCC and the challenges that communicators may face in the field of CCC, this BPG focuses only on the difficulty and importance of communicating scientific consensus in climate science. The niche focus this BPG has on communicating scientific consensus to the public, as an attempt to dispel skepticism and confront disinformation campaigns, means it did not address many of the ethical considerations. While it contributes valuable insights to the literature on effective communication as a whole, it is not indicative of the range of ideas presented in the rest of the BPGs. As a result, I have omitted it from general discussions about the results of my *a priori* analysis and from discussion about the collective strengths and weaknesses of the BPGs.

### *Collective Strengths*

The ethical considerations that were most thoroughly discussed across the BPGs (that is, those with the highest average score as seen in the right two columns in Table 6) were those relating to the explicit communication of scientific uncertainties (ethical consideration 4), and that information must be presented in a way that is accessible and assessable to the audience (ethical consideration 8). The BPGs also made thorough reference to the importance of using a dialogical or conversation-based approach to CCC (as reflected through ethical consideration 1). Additionally, the BPGs thoroughly discussed how information must be presented in a manner



that enables the audience to understand, deliberate, and decide about climate change issues affecting them (as reflected through ethical consideration 5).

### *Collective Weaknesses*

The ethical considerations that were derived from the codes of communication ethics from international development organizations were the least mentioned ethical considerations from the analytical framework. Most of the BPGs did not mention that those who are presented in visual communications should ‘speak for themselves’ in these images and associated text (ethical consideration 6). The BPGs that did reference this principle did so very vaguely. Likewise, most of the BPGs did not mention that communicators should use images that portray communities as having agency and do not portray people as lacking dignity (as per ethical consideration 7). Only two BPGs mentioned the principles of visual communication ethics, and they did so in a vague, brief, and implicit manner.

## Chapter 5: Discussion

### ***A Posteriori Analysis: Key Findings***

#### *Reporting Scientific Uncertainties*

Reporting uncertainties in climate science, like any science, is a requisite and inevitable part of the process of inquiry. As discussed in the results, the BPGs generally discuss that communicators should present climate information in a manner that allows the audience to understand, deliberate and decide about climate changes that will impact them. CCC

practitioners should continue to frame climate change in terms of specific adaptations and solutions their audience can access, as recommended by the BPGs. When audiences understand how they themselves and their community might be affected by climate change impacts, they can then become more involved in solution and decision making related to these impacts. Yet the projected impacts of climate change, as determined by climate scientists, are often presented on a ‘sliding scale’ of severity, due to levels of scientific uncertainty (Corner et al., 2015). Thus, it is imperative that communicators indicate where there are uncertainties in climate science and note that there are contingent scenarios where the severity of climate impacts will vary.

Communicators should discuss the specific solutions and adaptations their audiences can access, which will require the communicator to have an understanding of the context that their audience operates in (i.e., their locale, resources, and demographics). As Keohane et al. (2014) discuss, “communication is a matter not just of persuading people but of getting them to think through problems themselves” (p. 352). When audiences understand that climate science is both supported by an overwhelming consensus and contains uncertainty, they are able to think about the adaptations and solutions that will match each potential outcome.

While (minute) uncertainty in climate science often provides grounds for climate skeptics and deniers to make arguments against climate action, there are benefits to discussing how climate impacts have a range of potential severity. *The Uncertainty Handbook* discusses how a positive frame can be used to discuss uncertainty, as illustrated by two sentences that use different frames for the same data: “If we act now, the chance of destructive winter floods occurring is 20%” (Corner et al., 2015, p. 13). Using the negative frame, the information would be presented as such: “If we fail to act, the chance of destructive winter floods occurring is 80%” (Corner et al., 2015, p. 13). It is important for climate communicators to understand that

uncertainty can be framed in both positive and negative ways, and that “[u]ncertainty is not an inevitable barrier to action provided communicators frame climate change messages in ways that trigger caution in the face of uncertainty” (Corner et al., 2015, p. 13). Framing climate uncertainties in a positive way allows audiences to understand the urgency in which mitigative or adaptive climate action needs to be taken.

Regrettably, communicating uncertainty while maintaining audience engagement and awareness of climate events that may impact them is difficult. The ambiguity in climate change projections can lead to audience detachment and disengagement from climate conversations. Keohane et. al (2014) discuss this tension between creating messages that mention uncertainty while also ensuring that the audience is informed about climate change projections and implications:

“Where uncertainty includes ambiguity, in which the uncertain and less likely outcomes cannot be uniquely characterized and could nevertheless be hugely consequential should they become manifest, communication must include mention and representation of that uncertainty” (p. 360)

If scientific uncertainty is not discussed, it will result in a message that may mislead the audience. This is a difficult tension to manage as a climate communicator.

Despite this difficulty in balance, communicators should continue to discuss uncertainties in climate science. As Keohane et al. (2014) discuss, reporting levels of uncertainty in climate science is vital, just as vital as telling the truth. Reporting scientific uncertainties “cannot be treated as a merely instrumental value, since it attaches to the non-negotiable heart of the scientific enterprise: Scientists, as scientists, are constrained to estimate and report uncertainty” (Keohane et al., 2014, p. 358).

*The Persisting Problem of Scientific Illiteracy*

Scientific literacy is a necessary asset for audience members to comprehend climate science and data. Disparities in scientific literacy require that climate science experts and the non-expert public have a clear mode of communication, where this relationship is characterized by high levels of trust and comprehension. But what is the role of the communicator in enhancing the audience's scientific literacy? Throughout the BPGs, there are several suggestions that communicators should omit facts and statistics if the audience cannot interpret or understand them. But could the communicator contribute to the improvement of scientific literacy among their audience?

A certain level of science and data literacy is required for an audience to interpret a climate science data representation. Rather than discuss ways to empower the audience to understand statistics and climate science data visualizations, one BPG recommends that "images of people or groups, faces, and common household items are among the most powerful" since they are more memorable to an audience than data visualizations (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 42). A tension appears here: if the communicator omits certain facts and figures for being 'less memorable' and engaging, how does this impact the depth of detail that their communication contains? Rather than omit these data visualizations due to their being 'less memorable', perhaps more emphasis is needed on transferring data literacy skills so the audience can interpret these statistical representations.

Another recommendation suggests that "science and fact-based arguments about climate change are unlikely to resonate with the majority of the American public" since "eight in ten Americans do not understand what it means to study something scientifically" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 42). As a result of this scientific

illiteracy, this BPG recommends the use of stories and narratives, rather than scientific explanations, given that "stories are among the best ways to connect with core human values and social identities, build bonds between individuals and groups, and engage the public on climate change" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 42). While stories may be more compelling and memorable, the statistic cited to support this argument suggests a larger problem. If eighty percent of Americans do not know what the process of scientific inquiry looks like, this suggests that scientific literacy is a pressing issue among American audiences, if not all audiences that climate change communicators will encounter. Tensions will continue to arise as communicators provide an appropriate breadth, depth, and accuracy of detail in their messages, while still maintaining that their messages are accessible and assessable to their audiences. This difficulty in balancing breadth, depth, and accuracy, in the face of different levels of numeracy skills, is something communicators should keep in mind when creating their messages.

Fortunately, there are remedies that can help communicators balance both the 'depth of detail' and 'intelligibility' criteria of CCC. One recommendation, on the topic of organizing group discussions about climate change, suggested that "communicators may want to distribute information ahead of time to give [the audience] time to review and prepare for the formal meeting" (Center for Research on Environmental Decisions, 2009, p. 36). Another recommendation stated that communicators should recognize "how an audience approaches probability, statistics, and uncertainty" as it can help communicators "tailor their communication strategies accordingly" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 59). This model shows an expanded conception of the role of the communicator as a translator of climate science: they can enrich the audience's capacity to interpret the scientific data. A

communicator that understands their audience's initial level of scientific literacy can then offer the appropriate materials to improve this level of scientific literacy. However, this implies that communicators and audiences engage in real-time, live communicative settings. Yet several sites of CCC are not hosted in this format but are instead in an online and 'asynchronous' environment (such as a blog, news article, or a comment section). Thus, equipping the audience with tools to improve scientific literacy cannot always occur in this 'real-time' setting. This points to a more fundamental issue in societal levels of scientific literacy, which are largely influenced by school curricula and numeracy education. CCC only has a limited capacity to address this more widespread and systemic issue.

There are means in which the communicator can use climate data visuals in a manner that will make sense to their target audience, regardless of whether the communication is happening in a live or asynchronous format. Communicators can use the following principles when creating climate data visuals: "Identify your main message...Assess your audience's prior knowledge...Consider how your audience thinks...Evaluate by testing drafts of a visual on your target audience" (Corner et al., 2018, p. 23). This formula provides an effective way for communicators to integrate data visualizations into their messages regardless of their audience's baseline level of scientific literacy. However, not all climate messages or climate communicators are afforded the luxury of completing audience demographic research prior to the release of a climate message, especially those environmental organizations with little budget allotted to communication and education.

### *Climate Solutions and Audience Emotion*

Creating a CCC product becomes difficult when the audience is emotionally distraught, detached, or overwhelmed by messages about climate change. The BPGs refer to the 'finite pool

of worry’, as well as the risks of ‘emotionally numbing’ an audience (Center for Research on Environmental Decisions, 2009; Center for Research on Environmental Decisions & ecoAmerica, 2014). These phenomena are commonly associated with climate change news and media, as consumers of media about climate change are often presented with demoralizing statistics and claims. The theory of the finite pool of worry suggests that audiences cannot maintain their attention on more than a few negative topics (Smirnov & Hseih, 2022). Additionally, audiences for CCC are prone to experiencing degradation-desensitization or becoming ‘emotionally numb’ to climate change messages after extensive inundation with bad climate news (Alhadeff, 2015). This presents another challenge for communicators: how can CCC be formulated in a way that resonates with an emotionally numbed or desensitized audience?

The BPGs published by the Center for Research on Environmental Decisions specify that communicators should beware the overuse of emotional appeals. This is purported by the literature on the role of emotions in CCC (Bloodhart et al., 2019; Chapman et al., 2017). While emotional responses and appeals are impossible to avoid in CCC, as audiences will inevitably react to messages in unpredictable ways, messages can be crafted in a manner that does not unnecessarily alarm or over-appeal to the audience’s emotional sensibilities.

Luckily, there are ways for communicators to avoid contributing to audience burnout and emotional detachment from climate change discourse, and that involves showing the audience solutions available to them and their communities (as stipulated by ethical consideration 5). When audiences are aware of climate data, climate impacts, and climate solutions, they can overcome feelings of hopelessness, dread, or detachment. Using the setting of a group discussion or consultation about climate change, communicators can encourage group discussion about

climate solutions which “can help keep messages positive, encourage optimism, and demonstrate how groups can be a powerful force in tackling the climate change challenges ahead” (Center for Research on Environmental Decisions, 2009, p. 36). In this scenario, the group setting is an effective site for solutions to be generated, considered, and for audiences to see themselves as capable and active agents in the fight against climate change.

When discussing climate solutions, the BPGs suggest that communicators be specific about how their audience can contribute to these solutions: “Solutions should be described in a way that identifies specific roles for individuals and local communities to play, either in the development or implementation of proposed strategies” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 22). Further, these solutions being presented should be readily available or feasible ones for the audience to contribute to: “It is important to identify solutions that match the level of action that the audience can take.” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 23). When the communicator emphasizes solutions and benefits, they “can help quell counterproductive feelings of hopelessness and dread” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 23). In this sense, a successful climate communication “must therefore build confidence that climate change can be addressed” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 23). Although, this does not suggest that these accessible and attainable solutions be framed as ‘easy’ and ‘complete’ fixes to complex climate problems. Communicators ought to discuss how these solutions fit into a broader scale of change, to remain truthful and not mislead audiences regarding progress for climate action.

Communicators may need to be especially careful when addressing audiences who have experienced the impacts of climate change, or those who have come close to experiencing



climate impacts. Communicators should be aware that "there is a fine line between productively engaging people through their personal experiences with climate-related impacts and unintentionally leading people away from positive engagement with the issue" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 31). Communicators should understand that audiences who have experienced climate impacts might have emotionally charged responses to climate-related messages, and that this response might affect their capacity to engage in action on climate change. Communicators should note that "[m]aking the issue [of climate change] 'too real' and 'too scary' repeatedly is a possibility and can lead to denial of the problem" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 31). This is yet another balance that communicators must be aware of and recognize that emotional responses to climate change may be uniquely impacted by the audience's previous experiences with the climate crisis.

To empower audiences who have been affected by climate disasters, communicators should "tie concrete, personal climate impacts to immediate, local solutions already available to individuals and communities" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 32). Further, "when discussing the probabilities and plans for future climate impacts, communicators should be careful to focus people on what they need to do to keep themselves safe when the next storm, drought, or other impact does hit" (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 33). Regardless of when this climate event will occur, using a 'proactive' frame in CCC is the most effective way to engage audiences in a productive and engaging manner (Center for Research on Environmental Decisions & ecoAmerica, 2014).

Through visual communication, audiences can easily be overwhelmed by the depiction of climate disasters and impacts, whether or not they themselves have experienced a similar disaster. To quell this sense of dread, communicators can couple “images of climate impacts with a concrete behavioural 'action' for people to take can help overcome this” (Corner et al., 2018, p. 21). However, as discussed in the previous chapter, the ethical considerations pertaining to visual communication ethics were largely omitted from the BPGs. Further consideration should be paid towards the standards for using climate visuals so as to avoid the over-saturation of emotional appeals.

The literature on CCC ethics and science communication ethics in general suggest that emotions are essential and inextricable parts of CCC yet should be used with caution. Specifically, emotions should not be used to trigger a desired effect or response from the audience (Bloodhart et al., 2019; Chapman et al., 2017). Chapman et al. (2017) suggest that “[e]motions should be viewed as one element of a broader, authentic communication strategy rather than as a magic bullet designed to trigger one response or another” (p. 850). Climate communicators should instead “adopt a more nuanced, evidence-based understanding of the multiple and sometimes counterintuitive ways that emotion, communication and issue engagement are intertwined” (Chapman et al., 2017, p. 850). While emotions such as detachment and issue fatigue are byproducts of CCC, rather than targets, they should nonetheless be treated with caution and respect.

### *Considering the Literature on Visual Communication Ethics*

Understandably, the ethical considerations derived from the literature on visual communication ethics were the least discussed from the analytical framework. However, these codes of ethics for visual communication do provide some merit to the field of CCC. Just as

communities in the global South should be presented as having agency and be offered the opportunity to share their perspectives in their own words, those impacted by climate change around the world should be depicted in a similar manner. Communities should be able to speak for themselves about climate impacts and adaptations, and they should be represented in a way that respects their dignity and agency – rather than as helpless victims of climate change. CCC researchers should further consider visual communications ethics to establish a stronger working standard for visual CCC.

In the BPGs, there are few references to the standards and expectations relating to CCC images and visuals. *The Uncertainty Handbook* discusses how art can substitute climate projections and models if it is informed by climate data: “[a] visual artists can capture the concept of sea-level rise better than any graph and still be factually accurate if they use the scientific projections to inform their work” (Corner et al., 2015, p. 12). Here, a balance is achieved between providing a depth of detail while still creating a message that is engaging and assessable to the audience. Another BPG suggests there are two kinds of climate images: “images that increase the emotional impact or saliency of climate change, and images that increase self-efficacy and the feeling of personal agency” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 41). Both types of images should be used in CCC (Center for Research on Environmental Decisions & ecoAmerica, 2014). While these principles for visual communication ethics support that individuals are portrayed as having agency, as per ethical consideration 7, communicators must be wary that they are not exclusively using images that increase the emotional saliency of a climate message, as that would provide an imbalanced appeal to the audience’s rational and emotional processing systems.

*The Dialogical Approach to CCC: Balancing Ethics & Effectiveness in CCC*

All the BPGs referenced, at least implicitly, the benefit of using a dialogical approach to CCC (as delineated by ethical consideration 1). While this ethical consideration was not the most thoroughly discussed from the analytical framework (see Table 6 for results), the *a posteriori* analysis showed that there is immense opportunity to achieve both ethical and effective CCC when using a dialogical approach. A dialogical approach to CCC can take multiple forms, whether through an online discussion forum, conference, consultation, presentation or focus group. A dialogical approach to communication has five principles: “mutuality, propinquity, empathy, risk, and commitment” (Kent & Taylor, 2021, p. 3; Kent & Taylor, 2002). Using a deliberative group participation model (where participants are members of the public and climate scientists), diverse groups and perspectives can be represented, different modes of participation and information comprehension can be accommodated, and the group can discuss a common solution that pertains to their shared locale or predicament (Center for Research on Environmental Decisions, 2009).

When communicators use the dialogical approach to CCC, they can tailor their messages according to the unique context or region they are working with. When communicators use a localized frame, they “not only increase their audience's sense of connection to and understanding of climate change, but also promote the development of local and regional solutions that could transfer well to the national and global arenas” (Center for Research on Environmental Decisions, 2009, p. 10). In this sense, the dialogical approach to CCC can be a mode of climate change solution and adaptation generation.

Additionally, the dialogical approach can be used to move past climate change denial and skepticism. *The Uncertainty Handbook* suggests that “[h]aving a conversation about climate

change uncertainty, rather than simply finessing a one-sentence message, is another way of diffusing antagonism and skepticism” (Corner et al., 2015, p.15). Given that dialogical approaches require that multiple individuals convene in shared deliberative space, those who take part in these conversations can be reminded of how their wider community may be impacted by climate change. When individuals convene in this deliberative forum, they are reminded that they belong to a wider community and network, and therefore “are more likely to promote outcomes that are good for the group” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 78). Additionally, in these settings of community dialogue, participants can discuss “the roles that individuals, governments (local, regional, and national), businesses, and nonprofits can all play in addressing climate change” (Center for Research on Environmental Decisions & ecoAmerica, 2014, p. 78).

The literature on ethical CCC also supports the use of a dialogical approach, given that it can empower audiences, maximize comprehension through collaborative learning, and allow audiences to make more informed decisions about climate change impacts in their unique context. An adaptable model, the dialogic approach to CCC can address uncertainties in climate science, the process of scientific inquiry, climate solutions and adaptation, community decision-making, negative emotions associated with climate change, and the persisting issue of scientific illiteracy.

Lamb & Lane (2016) suggest that “[c]limate communicators should also seek out more deliberative forums, such as civic organizations, community groups, municipal governments, or religious communities, which engage audiences’ values and interests” (p. 239). Lamb & Lane (2016) harken back to Aristotle’s ideas about the merits of collective deliberation. When people have their own personal interests at risk from climate change, they “are likely to make better

decisions about how to respond to climate change when they are invited to recognize how it affects their own communities and commitments.” (Lamb & Lane, 2016, p. 239).

Regan (2007) recognizes that “[a]lthough dialogue is not conflict resolution, neither is it ‘just talk’” (p. 213). That is, dialogue can produce new ideas or ways of thinking. Conversations and deliberation that emerges from this model can “lead to new ways of understanding contentious issues like climate change and to discussing and developing possible solutions” (Regan, 2007, p. 213). A unique feature of dialogue “is its ability to identify an ‘old conversation’ that can act as a discursive trap” (Regan, 2007, p. 215) and to instead provide “opportunities for participants to step out of that conversation and into a new one” (Regan, 2007, p. 215). But discussing climate change requires us to discuss systems shifts, where we then must “engage in dialogue about what those shifts should be and how we make them if we are to pass on a sustainable/liveable world to those who will come after us.” (Regan, 2007, p. 221).

Additionally, dialogue provides “opportunities for non-specialists to gain knowledge to which they would otherwise not have access” (Regan, 2007, p. 217). This notion of collaborative-learning, where non-scientific experts are able to comprehend climate data and learn from climate experts, perhaps provides a remedy for the persisting issue of scientific illiteracy. Yet it is not just the climate communicators or climate scientists who are the experts. Audiences who engage in deliberative and dialogical approaches to CCC offer expert advice of their own. When communicators “approach publics not simply as ‘audiences’ who ‘need’ ‘expert’ help to do anything, but as experts in their own rights who have a real stake and role in [climate change] communications,” (Cone et al., 2013, p. 357) they can then help enhance the decision-making capacities of the audience. This engages audiences in the dialogical approach to CCC as valuable members in dialogue rather than as mere tokens.

The dialogic approach is a highly valuable tool for climate communicators, one that can effectively address disparities in scientific literacy, and engage locals in more nuanced and in-depth discussions of how climate change will impact their communities. As Priest (2018) asserts, CCC, and science communication in general, is “active, dialogic, and responsive” (p. 189). The above illustrates that a dialogical model for CCC can allow communicators to balance ethics and effectiveness in their work.

However, the dialogical approach to CCC faces some practical constraints that must be recognized. While the approach might be an effective way to achieve both ethical and efficacy in CCC, it is a resource-intensive and expensive model of communication. Unlike static, one-way messages, the dialogical approach requires ongoing engagement and contribution to the discourse. Thus, the approach becomes resource-rich or expensive when a climate change communicator must moderate a debate, respond to online comments, or conduct a discussion with a group of community members. Environmental and climate change organizations with small budgets allotted for communication and outreach might find this approach too resource intensive, and understandably adopt alternative methods.

Given the unique opportunity that dialogical approach has to balance both ethics and effectiveness in messages about climate change, CCC researchers should devote more attention to the dialogical approach (Moser, 2010; Moser, 2016). Particularly, Moser (2010) advocates that researchers “explore empirically the role of dialogue for engagement, decision-making, democracy, and society’s response to climate change” (p. 44). Undoubtedly, accessibility will remain a vital consideration to climate change communicators who wish to use a dialogical format. Researchers must consider the multiple ways to engage an audience, and the varying capacities and barriers people have to participate in a dialogue about climate change.

## **Tensions and Implementation**

### *The Implementation Gap: From Theory to Practice*

The BPGs generally lack specific guidance on how to implement the recommendations offered in each document. Perhaps a medium-specific BPG would better equip the reader to implement the CCC recommendations provided. These mediums could be film, photography, verbal, or written communication. Ideally, this would ensure that CCC theory can be easily and effectively translated into CCC practice.

### *Balancing Ethical Considerations: Interactions*

As discussed, balancing the ethical considerations is difficult. A predominant tension arises when the communicator attempts to make a message simple, clear, and concise without diminishing its accuracy. As Keohane et al. (2014) warn, “seeking completeness could reduce the intelligibility of the communication, particularly to audiences not composed of scientific experts” (Keohane et al., 2014, p. 354). Similarly, “[d]ata dumping, for example, would violate the intelligibility dimension of audience relevance” (Keohane et al., 2014, p. 354). While the analytical framework offers a list of ethical considerations offers, it does not provide a full account of the ways in which these considerations interact in practice.



## Chapter 6: Conclusion

### **Taking Ethics Seriously In CCC**

Lamb & Lane (2016) warn that “[w]ithout further attention to appropriate ethical values and constraints, CCC risks being received as a set of strategic tools that can be manipulated for any purpose” (p. 232). This could be damaging and potentially ignite more climate skepticism and denial, which is harmful to CCC and the pursuit for progressive climate action. Keohane et al. (2014) assert that climate change communicators need a standard for ethical CCC that is “philosophically defensible, workable in practice, and likely to generate comprehension by relevant audiences” (p. 344). In essence, ethics are vital to CCC as they maintain a certain quality of work and practice, where the communicator builds a trusting relationship with the audience. This trusting relationship will allow a sustained and functional relationship between audience and communicator, where the impacts of climate change can be communicated to the impacted public in a comprehensible manner.

### **Study Limitations**

The analytical framework I have generated provides a limited account of communication ethics at large. A more complete analytical framework would include more literature from the field of communication ethics in general and adopt interdisciplinary search strategies to find ethical guidelines from other industries (other than the international development sector).

While this dissertation has reviewed the BPGs and given a general overview of the depth in which ethics are considered, it has not offered a fulsome account of how each of these ethical considerations interact. Keohane et al. (2014) created a useful framework for analyzing how CCC ethical considerations and principles may be contradicting, and what principles can emerge

from these contradictions. This research design would provide a useful basis for further exploration of this topic and of the analytical framework I have devised.

It is also important to note that communication theory does not always translate into practice. Thus, analyzing CCC BPGs does not constitute a complete analysis of CCC in practice. While the BPGs indicate the current state of knowledge in the field of CCC, they do not represent what kind of messages climate communicators distribute. Further research about the practical manifestation and interactions of the ethical considerations would be valuable, and a case study of real climate communications is necessary to understand the extent to which the ethical considerations are adopted in practice.

## References & Appendices

### Access to Evaluation Information

You can find my complete BPG evaluation table using this link to Google Sheets:

[https://docs.google.com/spreadsheets/d/1Emt5zoiBjb2p5OW4KPunk\\_zf5KSCwkX6EGegV6\\_PAno/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1Emt5zoiBjb2p5OW4KPunk_zf5KSCwkX6EGegV6_PAno/edit?usp=sharing)

### Boolean Search String

‘Climate change communication’, ‘climate change communication’ best practices, ‘climate change communication strategy’, ‘best practices for climate change communication’, AND ‘since 2019’.

### References

Aldeheff, A. (2015). Numb to the World: Degradation-Desensitization and Environmentally Responsible Behavior. The Bulletin of the Yale Tropical Resources Institute.

<https://tri.yale.edu/publications/tropical-resources-bulletin/tri-bulletin-archive/tropical-resources-vol-34/numb-world>

American Psychological Association. (2009). *Psychology of Global Climate Change: Addressing a Multi-faceted Phenomenon and Set of Challenges*.

<https://www.apa.org/science/about/publications/climate-change-booklet.pdf>

- Ballantyne, A. (2016). Climate change communication: what can we learn from communication theory? *Wiley Interdisciplinary Reviews. Climate Change*, 7(3), 329–344.  
<https://doi.org/10.1002/wcc.392>
- Bloodhart, B., Swim, J. K., & Diccico, E. (2019). “Be Worried, be VERY Worried:” Preferences for and Impacts of Negative Emotional Climate Change Communication. *Frontiers in Communication*, 3. <https://doi.org/10.3389/fcomm.2018.00063>
- Bostrom, A., Böhm, G., & O’Connor, R. E. (2013). Targeting and tailoring climate change communications. *Wiley Interdisciplinary Reviews. Climate Change*, 4(5), 447–455.  
<https://doi.org/10.1002/wcc.234>
- Center for Research on Environmental Decisions. (2009). *The Psychology of Climate Change Communication: A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public*. New York.
- Center for Research on Environmental Decisions & ecoAmerica. (2014). *Connecting on Climate: A Guide to Effective Climate Change Communication*. New York and Washington, D.C.
- Chapman, D., Lickel, D., & Markowitz, E. (2017). Reassessing emotion in climate change communication. *Nature Climate Change*, 7(12), 850–852.  
<https://doi.org/10.1038/s41558-017-0021-9>
- Climate Development Knowledge Network. (2019). *Communicating climate change: A practitioner’s guide*.  
[https://unfccc.int/sites/default/files/resource/Communicating%20climate%20change\\_Insights%20from%20CDKNs%20experience.pdf](https://unfccc.int/sites/default/files/resource/Communicating%20climate%20change_Insights%20from%20CDKNs%20experience.pdf)

- Cone, R., Borberg, J., Stancioff, E., Doore, B., & Grant, K. (2013). Reframing Engagement Methods for Climate Change Adaptation. *Coastal Management*, 41(4), 345-360.  
<https://doi.org/10.1080/08920753.2013.803926>
- Conservation in a Changing Climate. (2019). *Recommendations for Communicating about Climate Change*. <https://climatechange.lta.org/recommendations-for-communicating/>
- Cook, J., van der Linden, S., Maibach, E., & Lewandowsky, S. (2018). *The Consensus Handbook*. doi:10.13021/G8MM6P.
- Cooperation Canada. (2020). *Code of Ethics & Operational Standards*.  
<https://cooperation.ca/wp-content/uploads/2020/10/Code-of-Ethics-English.pdf>
- Corner, A., Lewandowsky, S., Phillips, M., & Roberts, O. (2015). *The Uncertainty Handbook*. Bristol: University of Bristol.
- Corner, A., Shaw, C., & Clarke, J. (2018). *Principles For Effective Communication and Public Engagement On Climate Change: A Handbook For IPCC Authors*. Oxford: Climate Outreach.
- Dóchas, The Irish Association of Non-Governmental Development Organisations. (2014). *The Illustrative Guide to the Dóchas Code of Conduct On Images and Messages*.  
[https://www.dochas.ie/assets/Files/Illustrative\\_Guide\\_to\\_the\\_Dochas\\_Code\\_of\\_Conduct\\_on\\_Images\\_and\\_Messages.pdf](https://www.dochas.ie/assets/Files/Illustrative_Guide_to_the_Dochas_Code_of_Conduct_on_Images_and_Messages.pdf)
- Gee, J. (2005). *An Introduction to Discourse Analysis: Theory and Method* (2nd ed.). Routledge.
- Goodwin, J., & Dahlstrom, M. (2014). Communication strategies for earning trust in climate change debates. *Wiley Interdisciplinary Reviews. Climate Change*, 5(1), 151–160.  
<https://doi.org/10.1002/wcc.262>

Harvard Center for Health Communication. (2022). *Climate communication: 10 research-backed tips*. Center for Health Communication.

<https://www.hsph.harvard.edu/chc/resources/climate-communication-tips/>

Holmes, D., & Hall, S. (2019). *A literature review of best practice communication of climate science and impacts: Guide for Policy Makers*. Monash Climate Change Communication Research Hub, Melbourne.

[https://www.climatechange.vic.gov.au/\\_data/assets/pdf\\_file/0027/419148/CCC-Lit-Review-Guide-for-Policymakers.pdf](https://www.climatechange.vic.gov.au/_data/assets/pdf_file/0027/419148/CCC-Lit-Review-Guide-for-Policymakers.pdf)

Howarth, C., Parsons, L., & Thew, H. (2020). Effectively communicating climate science beyond academia: Harnessing the heterogeneity of climate knowledge. *One Earth* 2(4), pp. 320-324.

Humanitarian Communication. (2021). *Communication guide for development organisations*.

<https://humanitairecommunicatie.nl/wp-content/uploads/2021/10/HuCom-Communications-Code-2021-English.pdf>

Jones, M., & Peterson, H. (2017). Narrative Persuasion and Storytelling as Climate Communication Strategies. *Oxford Research Encyclopedia of Climate Science*.

<https://oxfordre.com/climatescience/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-384>

Kain, P. (1998). *How to Do a Close Reading*.

<https://writingcenter.fas.harvard.edu/pages/how-do-close-reading>

Kent, M., & Taylor, M. (2021). Fostering Dialogic Engagement: Toward an Architecture of Social Media for Social Change. *Social Media + Society*, 7(1), 205630512098446.

<https://doi.org/10.1177/2056305120984462>

- Kent, M., & Taylor, M. (2002). Toward a dialogic theory of public relations. *Public Relations Review*, 28, 21–37. [https://doi.org/10.1016/S0363-8111\(02\)00108-X](https://doi.org/10.1016/S0363-8111(02)00108-X)
- Keohane, R., Lane, M., & Oppenheimer, M. (2014). The ethics of scientific communication under uncertainty. *Politics, Philosophy & Economics*, 13(4), 343–368. <https://doi.org/10.1177/1470594X14538570>
- Lamb, M., & Lane, M. (2016). Aristotle on the Ethics of Communicating Climate Change. In J. Heyward & D. Roser (Eds.) *Climate Justice in a Non-Ideal World* (pp. 229-254). Oxford University Press.
- Lomborg, B. (2020). *False Alarm: How Climate Change Panic Costs Us Trillions, Hurts the Poor, and Fails to Fix the Planet*. Basic Books.
- Matthews, B. (2022). *How to effectively communicate about climate change*. <https://empower.agency/how-to-effectively-communicate-about-climate-change/>
- Moser, S. (2010). Communicating Climate Change: History, Challenges, Process and Future Directions. *Wiley Interdisciplinary Reviews: Climate Change* (1)1, 31–53. <https://doi.org/10.1002/wcc.11>
- Moser, S. (2016). Reflections on climate change communication research and practice in the second decade of the 21st century: what more is there to say? *Wiley Interdisciplinary Reviews. Climate Change*, 7(3), 345–369. <https://doi.org/10.1002/wcc.403>
- Neal, W., Claussen, J., Douglas, M., Spencer, E., Blasius, H., Mackey, T., Hall, C., Kusnierz, P., Douglas, M.E., & Bonar, S. (2021). Best Practices for Communicating Climate Science for Fisheries Professionals. *Fisheries (Bethesda)*, 46(9), 445-448. <https://doi.org/10.1002/fsh.10635>
- O’Neill, O. (2002). *Autonomy and trust in bioethics*. Cambridge University Press.

- Olano, M. (2020). *Communicating the Climate Crisis*. Climate XChange.  
<https://climate-xchange.org/communicating-the-climate-crisis/>
- Plewes, B., & Stuart, R. (2006). The Pornography of Poverty: A Cautionary Fundraising Tale. In *Ethics in Action* (pp. 23–37). Cambridge University Press.  
<https://doi.org/10.1017/CBO9780511511233.002>
- Priest, S., Dahlstrom, M., & Goodwin, J. (Eds.). (2018). *Ethics and practice in science communication*. The University of Chicago Press.  
<https://doi.org/10.7208/9780226497952>
- Regan, K. (2007). A role for dialogue in communication about climate change. In S.C. Moser & L. Dilling (Eds.) *Creating a Climate for Change* (p. 213-222). Cambridge University Press
- Russill, C. (2010). Stephen Schneider and the “Double Ethical Bind” of Climate Change Communication. *Bulletin of Science, Technology & Society*, 30 (1), 60–69.  
<https://doi.org/10.1177/0270467609355055>
- Schneider, S. (1989). *Global Warming: Are We Entering the Greenhouse Century?* Sierra Club Books.
- Smirnov, O., & Hsieh, P.H. (2022). COVID-19, climate change, and the finite pool of worry in 2019 to 2021 Twitter discussions. *Proceedings of the National Academy of Sciences - PNAS*, 119(43), 1–e2210988119. <https://doi.org/10.1073/pnas.2210988119>