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Climate Change Communication in Colombia

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Summary and Keywords

Colombia is in a privileged position to take advantage of international climate agreements to finance sustainable development initiatives. The country is a signatory of the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreements. As a non-Annex I party to the UNFCCC, Colombia produces low emissions in relation to global numbers (0.46% of total global emissions for 2010) and exhibits biogeographical conditions that are ideal for mitigation of climate change through greenhouse gas sequestration and emission reductions. Simultaneously, recent extreme climatic events have harshly compromised the country's economy, making Colombia's vulnerability to climate change evident.

While these conditions should justify a strong approach to climate change communication that motivates decision making and leads to mitigation and adaptation, the majority of sectors still fall short of effectively communicating their climate change messages. Official information about climate change is often too technical and rarely includes a call for action. However, a few exceptions exist, including environmental education materials for children and a noteworthy recent strategy to deliver the Third Communication to the UNFCCC in a form that is more palatable to the general public. Despite strong research on climate change, particularly related to agricultural, environmental, and earth sciences, academic products are rarely communicated in a way that is easily understood by decision makers and has a clear impact on public policy. Messages from the mass media frequently confuse rather than inform the public. For instance, television news refers to weather-related disasters, climate variability, and climate change indiscriminately. This shapes an erroneous idea of climate change among the public and weakens the effectiveness of communications on the issue.

The authors contrast the practices of these sectors with those of nongovernmental organizations (NGOs) working in Colombia to show how they address the specific climate communication needs facing the country. These NGOs directly face the challenge of working with diverse population groups in this multicultural, multiethnic, and megadiverse country. NGOs customize languages, channels, and messages for different audiences and contexts, with the ultimate goal of building capacity in local communities, influencing policymakers, and sensitizing the private sector. Strategies that result from the work of interdisciplinary groups, involve feedback from the audiences, and incorporate adaptive management have proven to be particularly effective.

Keywords: Colombia, climate change, communication for decision making, communication strategies, media, government, academia, NGOs, natural disasters, community empowerment, capacity building, adaptability

Introduction

Colombia is a signatory of international climate change agreements and is well positioned to take advantage of these agreements to finance sustainable development. First, Colombia is not considered a large greenhouse gas (GHG) emitter, and, second, its biogeographical characteristics are particularly advantageous for mitigating climate change through GHG sequestration and emission reduction. The country also contains large forested areas that make up 52% of its total surface area (53 million hectares). The majority of the forested areas are part of the Amazon and *Chocó-Darien* biomes and possess a large capacity to store above- and belowground carbon. Approximately 75% of existing forest remnants lie within collective territories of Indigenous and Black communities.¹ Consequently, the national government is required to negotiate the design and inception of carbon mitigation projects with local communities. Implementing communication strategies that engage these different cultures is key to the success of national GHG sequestration and emission reduction mitigation initiatives in the country.

To analyze how different stakeholders address climate change communication within a complex context, the challenges and approaches of climate change communication in Colombia are examined through the perspective of four different stakeholders: the government, the academic sector, the media, and nonprofit organizations. These are the primary sources of information on climate change for the general public and decision makers alike. These four stakeholders are interconnected, and case studies illustrate the evolution of climate change communication within each of these sectors. As far as is known, this is the first comprehensive review of climate change communication in Colombia.

The Case of Colombia

Colombia's Ethnic, Cultural, and Biological Diversity

Colombia's natural values are well known. The country is ranked second in the National Biodiversity Index (Secretariat of the Convention on Biological Diversity, 2001), houses at least two biodiversity hotspots (Myers et al., 2000), and hosts over 10% of currently known species worldwide (Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, 2012). The country is divided into five terrestrial ecoregions: *Chocó*, Caribbean, Amazon, Orinoco savannah, and Andes. Additionally, two coastal/marine regions are recognized: the Pacific Ocean and the Caribbean Sea (Ministerio de Ambiente y Desarrollo Sostenible, Programa de las Naciones Unidas para el Desarrollo, 2014). Both the *Chocó* and the Amazon ecoregions are acknowledged to be among the world's most biodiverse (Gentry, 1992; Murcia et al., 2013; Myers et al., 2000). Because the territory is located in the equatorial region and is largely influenced by the Intertropical Convergence Zone, warm temperatures and high rainfall provide the ideal conditions for ecosystems to experience high productivity, particularly those that are within lowland and premontane regions.

The country's biodiversity matches its cultural and ethnic diversity. Colombia has a colonization history that resulted in a rich mix of races, languages and traditions of American, European, and African origins (Departamento Administrativo Nacional de Estadística [DANE], 2007). While the majority of the population comprises an array of Hispanic mixes, the country recognizes three ethnic groups: Indigenous (including 87 nations), Black or Afro-Descendants (including Raizals, Palenque people, mulattoes, and Blacks), and Romani (DANE, 2007). The 2005 nationwide census indicated that 13.77% of the population identified as a member of an ethnic group. The largest ethnic group is the Black community and Afro-Descendants, with 4,311,757 people in the 2005 census (10.62% of the total population), followed by the Indigenous population (3.43%; DANE, 2007). The majority of the Indigenous and Black community members live in rural areas in the plains, mountains, and coasts of the *Chocó*, Amazon, and Andean ecoregions (West, 1957).

Ethnic groups have specific rights in Colombia.² Special constituencies exist for Indigenous and Black communities, each with two elected senators. Importantly, the country has constitutionally granted these groups a level of sovereignty that involves collective ownership of their territories and a large autonomy in land planning and management (Colombian Constitution, Law 70 of 1993). In the case of Indigenous communities, their territories are considered independent territorial entities—similar to municipalities—where they may exercise jurisdictional functions in accordance with their own rules and procedures, provided they are not contrary to the Constitution and laws of the Republic (Art. 246 of Colombian Constitution). The different ethnic groups represent 65 indigenous languages, 2 Creole, 1 Romani, and the most frequently used language,

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Spanish (Landaburu, 2004). These numbers indicate the additional ethnic diversity found within the Indigenous and Black populations.

Challenges and Opportunities in Climate Change Mitigation Communication

Colombia is a non-Annex I signatory of the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreements. The country is positioned to take advantage of international climate agreements to finance sustainable development initiatives through carbon markets for two primary reasons. First, Colombia is not considered a large GHG emitter. The country generates approximately 174.4 Mton of CO₂eq, which is 0.46% of the total global emissions quantified for 2010 (Government of Colombia, 2015). Second, the biogeographical characteristics of vast and highly productive forests, described in further detail in the section, COLOMBIA'S ETHNIC, CULTURAL, AND BIOLOGICAL DIVERSITY, are particularly advantageous in mitigating climate change through both GHG sequestration and emission reduction (Dixon et al., 1994).

In the 21st session of the Conference of the Parties to the UNFCCC (COP21) held in December 2015, the country assumed an Intended Nationally Determined Contribution (INDC) to reduce 20% of GHG by 2020 (Government of Colombia, 2015). This target is extremely ambitious, considering that the country's manufacturing and agro-industries are still undergoing a growth phase. To achieve this goal, the government needs to halt deforestation and agricultural expansion, which are responsible for the majority of the country's emissions (Instituto de Hidrología, Meteorología y Estudios Ambientales [IDEAM] et al., 2015).

Colombia possesses one of the largest forested areas in the world: 52% of the country's surface area still has forest cover, equaling approximately 53 million hectares (Departamento Nacional de Planeación, 2015). The majority of the forested areas lie within the Amazon and *Chocó-Darien* biomes. These biomes are characterized by tropical humid and hyperhumid forests, with a large capacity to store above- and belowground carbon (Asner et al., 2012). The country also contains large areas of the *páramo* ecosystem³ and extensive mangrove habitats that are important long-term carbon sinks (Alongi, 2012) and key for ecosystem-based adaptation measures (IDEAM, 2001). Despite the relatively good conditions of the country's forests, Agriculture, Forestry, and Other Land Use (AFOLU) accounts for 76.3 Mton of CO₂eq, or 42.8%, of the country's GHG emissions (IDEAM et al., 2015).

These good forest conditions present a significant opportunity for Colombia to participate in AFOLU carbon markets, both regulated and voluntary. Approximately 75% of the forest remnants lie within collective territories of Indigenous and Black communities (Ruiz García, 2006). As explained in "COLOMBIA'S ETHNIC, CULTURAL, AND BIOLOGICAL DIVERSITY", Colombia has constitutionally granted these ethnic groups a level of autonomy that involves collective ownership of the territories. For this reason, the national government is required to negotiate the design and inception of forestry mitigation projects, both their strategies and their implementation, with the communities. In addition, a significant

portion of the country's income from the carbon credits may directly benefit these groups. Therefore, implementing communication strategies that engage these different cultures is key to the success of national AFOLU initiatives in the country.

The primary cause of deforestation is land clearing to establish pastures (Departamento Nacional de Planeación, 2015). Pasture establishment is only occasionally surpassed by illegal crop planting (i.e., predominantly coca). The dominant triggers for deforestation and degradation can differ among regions. In the Colombian Amazon, deforestation is triggered primarily by agricultural expansion, illegal crop cultivation, internal migration, mining, and infrastructure development (Nepstad et al., 2013). Selective logging is rare in the Colombian Amazon, and even traditional communities clear forests to extract wood and open plots for agriculture. The majority of deforestation in the Colombian Amazon starts with the slow movement of small peasants, followed by appropriation by larger tenants to establish ranching areas. In contrast, the forests of the *Chocó* region are submitted to degradation that does not always end in deforestation but still represents large GHG emissions (BioREDD, 2015). The primary cause of both deforestation and degradation in *Chocó* is selective logging for the wood industry (García Romero, 2014), a traditional activity widely practiced by Black communities.

Market dynamics, consumer education, and value chains are strong variables that influence deforestation and degradation. Therefore, working on alternative sources of income, better production practices, and conservation incentives for ethnic communities and peasants is an element commonly found in cooperative and governmental projects that aim to mitigate climate change through an AFOLU approach. Communication strategies should incorporate elements that aid in those purposes.

Challenges and Opportunities in Climate Change Adaptation Communication

Colombia's vulnerability to climate change has been studied through direct evidence of temperature and rainfall fluctuations, as well as through projected climate scenarios. Evidence of climate change impacts is available in the agricultural sector (Centro Internacional de Agricultura Tropical [CIAT], 2014), biodiversity (Duque et al., 2015), health (Bouma et al., 1997; de la Mata & Valencia-Amaya, 2014; Poveda et al., 2000), and fisheries (Allison et al., 2009). The consequences of climate change for the country include losses of agricultural and biological diversity, an increase in the range of tropical disease vectors, and a reduction of fisheries. In addition, the National Planning Department leads a long-term research agenda on the implications of climate change and, in 2014, delivered a thorough analysis of the economic impacts for the country (Departamento Nacional de Planeación & Banco Interamericano de Desarrollo, 2014). The analysis predicted a negative impact on the country's economy, with average projected annual reductions of

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0.49% in GDP, represented in losses in the production of livestock, agriculture, fisheries, and transportation, with only the forestry sector benefiting from climate change.

The effects of climate change on the national economy include losses and damages caused by strong El Niño–Southern Oscillation (ENSO) events. Losses in the energy generation system are well documented for warm ENSO events in 1982–1983, 1992–1993, and 2014–2016 (Unidad Nacional para la Gestión del Riesgo de Desastres, 2014). Additionally, losses in housing, water and sanitation, public infrastructure, and productive sectors were reported for the cold ENSO event of 2010–2011 (Comisión Económica para América Latina y el Caribe, 2012). The latter study revealed that this extreme event resulted in 1,374 people dead, 1,016 people missing, 2,350,207 disaster victims with personal or property losses and damages of USD 6,052 million (5.7% of GDP), and losses of USD 1,118 million (0.4% of GDP).

The large economic and social impacts of extreme climate events should be the basis for a strong argument urging the government to consider climate change as a major driver in decision making. Although Colombia has significantly increased the number of policies designed to address adaptation and mitigation, its application of these policies is poor. The country has not yet established efficient strategies to mitigate or adapt to climate change.

Overview of Knowledge on Climate Change Communication in Colombia

Research on climate change communication in Colombia has experienced little progress. Few studies exist on the role of the government, academia, private sector, social organizations, or communities that take communication as a priority consideration. Progress regarding research on the role of the media in climate change communication is also slow. Studies show that the government is the media's primary source for communicating climate change issues, with experts on climate change a distant second as a source of information.

Specific efforts produced by diverse disciplines contribute to the understanding of climate change communication. Works edited by Ulloa (2011) and Ulloa and Prieto-Rozo (2013) gather cultural perspectives on climate and, more specifically, on climate change from various areas of Colombia. Although communication is not an explicit driver in these analyses, it is a crosscutting issue. Approaches and tensions or conflicts between communities, academia, experts, authorities, and policies are disclosed in the publications, and provide input for policies and projects in adaptation and mitigation. Similarly, Correa (2013) offers ideas for potential adaptation and mitigation measures, and addresses the tensions between traditional knowledge systems of various stakeholders by presenting an ethnographic examination of the relationship between culture and climate for the inhabitants of the islands of Providencia and Santa Catalina in the Colombian

Caribbean. These approaches open potential future pathways in the field of Communication Studies that can enrich other areas of the social and human sciences.

Some governmental agencies have tangentially examined climate change communication. Ruiz-Peña (2013) conducted a study for the Colombian Geological Service (Servicio Geológico Colombiano) on public understanding and appropriation of science in the communication between communities and authorities, with cases related to climate change. Similar efforts were carried out by the National Unit for Disaster Risk Management (Unidad Nacional para la Gestión del Riesgo de Desastres) and by the Medellín city authorities (López, 2008). In addition, the environmental authority of the Department of Antioquia provided an overview on the different issues related to climate change, developed in the context of the UN Intergovernmental Panel for Climate Change (IPCC) meeting in Paris in 2007 (Corantioquia, 2008). This work includes a chapter on climate change communication in Colombia that reviews the country's experience up to that date and explains some of its challenges, with special emphasis on mass media.

With regard to the media, little research has been conducted on the role of traditional and emergent media in climate change communication in Colombia. Arcila et al. (2015B) presented an analysis of the content from 97 Spanish-language media websites from 19 countries (one being Colombia) that published news on climate change during the UNFCCC meetings in Cancun (COP16, 2010) and Durban (COP17, 2011). The work examines the emphasis used by media to portray the events (framing theory) to detect the relevance of the topics on the agenda and the media's treatment of these topics. Unfortunately, the analysis does not specify which Colombian media were analyzed, and, indeed, the findings are not disaggregated by country. Its major finding is that politicians act as an important source of information for the media, while expert/scientist sources rank third. This finding is also discussed in Zamith et al. (2013).

Arcila et al. (2015A) used an approach based on content analysis, with emphasis on framing. The authors examined how information was treated in 30 digital media in Spanish during the UNFCCC meetings in Nairobi (COP12, 2006), Bali (COP13, 2007), Poznan (COP14, 2008), and Copenhagen (COP15, 2009). The study includes the Colombian web portals of *El Tiempo* (the most widely read newspaper in the country), *Semana* (the most widely read magazine in the country), and *El Universal* (the most important regional newspaper in the city of Cartagena). The findings are general for all the media analyzed and are not particular to the Colombian case. Similar to Arcila et al. (2015B), this study shows that politicians are the main source of information for the media, although in this case politicians were followed more closely by experts/scientists. Another important finding is that the majority of the news included in the portals originates from news agencies. Both cases prove how media communication in Colombia does not respond, in general, to the country's needs.

Zamith et al. (2013) analyzed media construction of climate change in national newspapers in the United States, Brazil, Argentina, and Colombia in 2009. The study addresses framing⁴ and analyzes the Colombian newspaper *El Tiempo*. Notably, *El Tiempo* was the

newspaper with the smallest number of news articles about climate change than any other newspaper in the sample. The results show that scientific controversy regarding climate change is much less important in Latin American than in U.S. newspapers. In addition, the informational approaches of the newspapers from Argentina and Colombia employed more alarmist language than those from Brazil and the United States, regardless of the fact that Argentina and Colombia are lower emitters than the United States. The recurrence of sensationalist discourses in the media is also noted in the study of Lima (2013) on *Noticias RCN*, the second most viewed television news program in the country. Similar to Arcila et al. (2015A, 2015B), Zamith et al. (2013) showed that government is the most accessed source of information and far exceeds other sources, including academia.

Despite some progress, the dearth of research on the relationship between media and climate change communication in Colombia is evident. The first reason behind this sparsity may be the lack of importance that researchers in fields such as Communication Studies have placed on this issue. This could be partially explained by the weak development of research on science in the media, within the subfield of Public Communication of Science and Technology (PCST⁵) (Arboleda et al., 2015; Pérez-Bustos & Lozano-Borda, 2011), which is a contrasting situation from what happens in other national contexts (see Schäfer & Schlichting, 2014). Indeed, works such as those by Arcila et al. (2015A, 2015B), which include Colombian media in their sampling, do not originate from researchers in the PCST subfield. PCST also does not address additional analyses of media and disasters in the Andean region (including Colombia; e.g., Miralles, 2009; Obregon et al., 2009, 2010). These works use approaches from Communication for Social Change or perform a critical analysis of journalism. They analyze climate change as it relates to disasters but not as a central issue.

Recognizing how climate change relates to other subjects, such as the economy or politics, reveals a particular relationship between environmental and scientific news in Colombian media. Although printed and online newspapers include independent sections that discuss environmental and science issues, these topics may overlap. It is therefore difficult to distinguish whether or not the medium is communicating with a science outreach approach (Arboleda et al., 2011). In addition, some analyses can naturalize the separation between environment and science when examining media and public perceptions, and so they sometimes mix such subjects. Interestingly, the public may be more interested in environmental issues than in issues explicitly considered scientific. When Daza (2009) registered the answers of people from Bogotá about their interest and/or knowledge related to science, the percentage of positive responses was low, but their stated knowledge increased significantly when science was associated with environmental issues, including climate change.

The second reason behind the lack of research on the role of the media in climate change communication in Colombia relates to the approaches and the schools of research adopted. Colombia has significantly advanced in what is referred to as the Social

Appropriation of Science and Technology (SAST) in the country. SAST is a research field (or subfield) of practices and research that has evolved with the support of Colciencias (the Administrative Department of Science, Technology and Innovation), which is closely related to the Public Understanding of Science field (Lozano-Borda & Maldonado, 2010; Pérez-Bustos & Lozano-Borda, 2011; De Greiff & Maldonado, 2011; Falla et al., 2016). SAST has slight differences from PCST that are related to the more important role Communication Studies plays in PCST (Hermelin, 2011; Pérez-Bustos et al., 2012). Both fields have been permeated by Social Studies of Science and Technology field (SST),—by approaches similar to those presented in Hackett et al. (2008),—and have barely been influenced by Communication Studies. Media studies, particularly those related to the environment and climate change, have not been a priority for either PCST or SAST studies in Colombia. Hermelin (2013) shows how combining the fields of Communication Studies and Social Studies of Science and Technology to study the relationship between disasters, media, and society enlarges the array of possible analyses. This combination of fields can be extended to analyze the relationship between climate change, media, and society, and PCST may become especially pertinent to this function.

A third reason for the research vacuum in climate change communication is that climate change is not an issue in the regular agenda (except when an active ENSO episode takes place) and as a result has not received much attention in Colombian media (particularly those with major audiences, such as television news). In the media agendas of the country, issues related to the armed conflict receive significantly more attention (Tamayo & Bonilla, 2014; Rey et al., 2005; Bonilla & Cadavid Bringe, 2004). Therefore, climate change is rarely featured in the news on the main broadcast television channels, and, in general, environmental programs are almost nonexistent. No such programs have been featured in the schedules of the highest rated channels, *Caracol* and *RCN*, which are private, or *Canal Uno*, which is public. Environmental programs only appear in national public channels with the lowest ratings, such as *Canal Institucional*, or in local channels, such as *Telemedellín* (which belongs to the city of Medellín). Only a cable channel of Colombian origin, NTN24, has tried to maintain a climate program (*Cli-Max*) that covers topics related to climate change.

In Colombia, television is the most popular medium and is where the majority of people report obtaining their scientific information (Daza-Caicedo & Lozano-Borda, 2014). Colombian newspapers and news portals contain sections on the environment, and some radio station programs occasionally address climate change. This coverage has resulted in an increase in the use of information and communication technology as a source of information on the environment and, in particular, climate change (Daza-Caicedo & Lozano-Borda, 2014).

One positive effort to deal with the absence of climate change on the country's agenda is the journalistic guide for the "green agenda" built by Organización Consejo de Redacción and the Konrad Adenauer Foundation (Valencia, 2015). The goal of the guide is to promote perspectives that will make climate change a relevant issue for journalists and their

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audiences, when addressing environmental issues. The guide uses a prescriptive discourse and promotes regional approaches to increase the interest of the general public or particular sectors of society. References to studies on the media and climate change communication are scant in this work, not only when referring to Colombia but in general. The publication is a good example of the lack of interaction between journalism and research on the role of media in PCST (Massarani & Ramalho, 2012), especially in relation to climate change. This interaction can be beneficial, as observed in Massarani et al. (2015) and Schäfer and Schlichting (2014), and it remains a pending agenda in Colombia.

Climate Change Communication as Addressed by Different Sectors in Colombia

Climate Change in Governmental Communication

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Colombia generates public policy documents in abundance, and climate change is not an exception. At least four of the country's public policy documents relate directly to the subject.⁶ Some of these documents briefly mention the importance of communication for the country's climate change mitigation and adaptation (e.g., the National Plan for Climate Change Adaptation), and one of them specifically deals with education (the National Strategy for the Education, Training and Sensitization of Audiences on Climate Change). The implementation of these communication strategies, however, is not as active as policy drafting. One of these documents, the *National Strategy for the Education, Training, and Sensitization of Audiences on Climate Change* (IDEAM, 2010B), includes a diagnosis of climate change communication from the government. This diagnosis may be the only overview that exists on the issue; however, it is not based on comprehensive data, but it is rather an informal and empirical exercise.

Although the government has indeed made some direct efforts to communicate through educational material (IDEAM, 2010B), the Colombian government has used three major channels for climate change communication: the media, documents and reports, and official websites. Media are reached through press releases, press conferences, and direct declarations. The manner in which the government communicates has a large influence on how the media communicate. Zamith et al. (2013) found that government was by far the primary source of information on climate change news published in the most-read Colombian newspaper, *El Tiempo*, as discussed in the later section, "CLIMATE CHANGE IN THE COLOMBIAN MEDIA."

Government documents and reports include information on mitigation and adaptation required by international agreements, policy documents, and guidelines. These materials make information available on emissions, vulnerability, scenarios, and measures for the country to address climate change. They target technical audiences in the government, NGOs and community organizations. The language is elaborate, demands at least a basic knowledge of the physics and ecology of climate change, and is rarely translated into accessible language. Ironically, the low readability of this material hampers any possibility of influencing decision making at the highest level, as Barkemeyer et al. (2015) noted when analyzing the readability of IPCC summaries.

Although sources that disclose Internet penetration differ greatly in the data they provide for Colombia, Internet use has certainly grown significantly in the country. For the period 2010–2015, the Ministry of Information and Communication Technologies⁷ produced statistics showing an increase in penetration from 7.3% to 23.9%, while statistics from Internet Live Stats⁸ exhibited an increase from 36.5% to 54.7% (Internet World Stats⁹ reports 26,000,000 Facebook users in June 2016, representing a 53.5% penetration rate, which confirms the notion that international stats may be a better reflection of reality than local statistics). Internet sites are a major source of information for the Colombian public. Some national government agencies have specific sites or microsites to communicate information about climate change. There are microsites dedicated to the topic housed within the website of the Ministry of Environment and Sustainable Development (Ministerio de Ambiente y Desarrollo Sostenible, MADS) and the Institute of

Hydrology, Meteorology and Environmental Studies (Instituto de Hidrología, Meteorología y Estudios Ambientales, IDEAM). The National Planning Department uses a webpage¹⁰ to publicize governmental documents related to adaptation and access to the Green Climate Fund. These documents are primarily policies, or guidelines to policies. The Ministry of International Relations also dedicates a webpage¹¹ that presents a thorough inventory of the main public policies developed by the country on the issue, as well as the international agreements that have been negotiated. An effort to translate climatic information into data useful for the productive sector has been undertaken by the Ministry of Agriculture and Rural Development, which dedicates a webpage to a virtual bulletin on agroclimatic issues. The bulletin was first published in December 2014 and was written with the technical support of CIAT.¹²

Both the MADS and IDEAM house microsites that include information related to climate change. The ministry has three different sites:¹³ one with general information on what climate change is, press releases, a calendar of events, and downloadable documents (policies and reports); a second with different versions of a GHG calculator; and a third with diverse information on international commitments, national policies, and institutional information related to climate change. The microsite within IDEAM¹⁴ provides access to the National Communications on Climate Change, policy documents, a limited inventory of adaptation projects in the country, and information on organizations and agencies that work on climate change. This microsite also has an area dedicated to children that features didactic games about climate change. Finally, there is a Colombian Environmental Information System,¹⁵ also managed by IDEAM, that includes simplified information on climate change extracted from government reports and policy documents. Despite government efforts to publicize technical information and policy documents, all governmental sites have technical problems, with nonfunctional links and outdated information.

Regardless of the channel, communication from the government is generally technical and uses a language that is confusing to the regular citizen. As Moser and Dilling (2012) have discussed, knowledge alone is not sufficient to motivate action, and the science behind climate change is of small interest to the majority of audiences. Governmental speeches, documents, and websites in Colombia are limited to describing measures to mitigate and adapt to climate change and to defining policies and actions from the governments and public agencies. In this manner, they alienate the individual from his or her responsibility. The governmental strategies for communicating climate change may trigger actions when conveying new regulations on the productive sector, but these strategies fall short in facilitating acceptance of regulations or in stimulating grass-roots action, which are crucial roles to encourage low-carbon lifestyles, according to Ockwell et al. (2009). More importantly, although the largest amount of knowledge that Colombia generates and communicates on climate change originates from the national government, a large gap remains between this information and decision making.

Case Study: National Communications to the United Nations Framework Convention on Climate Change

Colombia submitted its first and second National Communications (NCs) to the UNFCCC in December 2001 and December 2010, respectively; the country is expected to complete the third communication in the first half of 2017. The manner in which these documents were developed and communicated is a good example of the evolution in governmental climate change communication. NCs are built by IDEAM and are funded with resources from the Global Environment Facility, channeled through the United Nations Development Programme (UNDP). Therefore, these organizations, in addition to the MADS, are involved in product design, construction, and communication.

First communication: A USD 345,000 United Nations Development Programme/Global Environment Facility (UNDP/GEF) grant funded the development of the first NC. Although the project objective explicitly mentioned that the exercise was essential “to enhance general awareness and knowledge of climate-change related issues in the Republic of Colombia” (UNDP/GEF, 1999), none of the project components aimed to disseminate the final document or to create communication pieces that could reach nontechnical audiences. The final product delivered was a technical report that followed UNFCCC guidelines, but no evidence of any impact on the media or the general public was observed. The document included recommendations for constructing future NCs. However, these recommendations did not refer to gathering information or perceptions from the general public or to generating communication materials and strategies to engage the general public in actions aimed at climate change mitigation or adaptation. References to communication within the document were limited to mention of the need to improve information fluxes among research institutes.

Second communication: Funded through a USD 405,000 UNDP/GEF grant,¹⁶ the second NC delivered a technical document that evolved from the first. The document contained more accurate information and targeted technical audiences. It was communicated to the press and received some attention, with short notes included in a major national newspaper (*El Tiempo*) and an important regional newspaper (*El Colombiano*). No evidence was found of a communication strategy that engaged the general public in providing information for the report or in delivering calls to action that built on the results of NC 1.

Third communication: Expected to be delivered in the first semester of 2017, the development of the third NC was funded through a USD 2,000,000 UNDP/GEF grant. The exercise has involved strategies to gather information from the general public as well as to communicate results in a language that is more accessible to nontechnical audiences. The results of the NC have been released by topics as they are produced. Climate change scenarios were the first batch of information published in March 2015, and they were followed by the Green House Gas Inventory, published in May 2015.

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The pieces of the third NC that have been released are translated into less technical jargon through infographics and press releases. In addition, climate change models were run at both the national and regional levels, creating more opportunities for the information to influence decision making. Interestingly, the warm ENSO event of 2015 triggered the attention of the media on the NC, and information relating to the country's vulnerability to climate change was eagerly publicized.

Table 1. Evolution of communication strategies to gather information for and to convey information from the National Communications in Colombia to the UNFCCC

	Investment (thousands of US\$)	Communication strategies to gather input from the general public	Communication strategies to inform results to the general public
First National Communication	345	No evidence	Delivery of official communication to UNFCCC
Second National Communication	405	No evidence	Delivery of official communication to UNFCCC Media launch. Poor reception (two major newspapers, short notes) Children's story targeting highland, <i>páramo</i> populations Executive summary for teachers
Third National Communication (up to August 2016)	2,000	Survey on perception of vulnerability Regional workshops Communication pieces built by local communities	Special issues about GHG inventory in two main newspapers Fractioned communication of the report, dedicated to each topic Less technical infographics

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The development and outreach of NCs (see Table 1) exemplify the incorporation of communication strategies in gathering useful information from communities and focus groups. The evolution of the NCs also exemplifies how the government could be paying more attention to making information available to the general public by producing communication materials and channels that target nontechnical audiences. The mainstreaming of approaches like the ones used in the third NC is still to be determined, and their effectiveness remains to be studied.

No current studies analyze the evolution of governmental communications in Colombia. Since the government is the primary source of the information that finally reaches the general public, determining whether messages are triggering citizen actions is important, particularly considering the country's ethnical and biological diversity and its influence in mitigation and adaptation.

Climate Change in Academic Communication in Colombia

Colombia has a relatively high academic production in Latin America. Scopus data show that scientific production has risen considerably in the country over the past 50 years, with only 10 outputs published in 1965 but nearly 7,000 outputs published in 2015 (Figure 1A, source: Scopus). The number of scientific outputs related to climate change published by Colombian researchers in English-language academic outlets also increased tenfold between 2005 and 2015 (Figure 1A, Figure 1B, source: Scopus). Outputs related to climate change are those that contain the words “climate change” in the publication title, abstract, or keywords. Beyond Scopus and other recognized databases, an important catalogue for Spanish-language outputs is the Scientific Electronic Library Online (SciELO). SciELO is an open-access scientific database that aims to overcome distribution and dissemination barriers faced by scientific journals from Latin American and Caribbean countries. A SciELO search for “*cambio climático*” in the title and abstract fields revealed that Colombia-affiliated scientists have published 45 academic outputs since 2010 (source: SciELO). This figure does not include academic outputs that were included in the Scopus search. The results obtained here from the Scopus database are comparable to those presented by IDEAM (2016). IDEAM (2016) additionally reports low citation numbers of outputs related to climate change produced by Colombian researchers. This suggests that the potential communication of this knowledge beyond academia may be even lower.



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Figure 1. (a) Total academic production between 1965 and 2015 and number of scientific outputs that contain the phrase “climate change” in the publication title, abstract, or keywords and that have been published by Colombian-affiliated researchers in English-language academic outlets between 1997 and 2015 (*Source:* Scopus). (b) Percentage of outputs related to climate change by subject area.

Despite the relatively strong research on climate change being done in Colombia, academic products are seldom disseminated and communicated in a manner that decision makers easily understand and that has a clear influence on public policy. The comparison between academic outputs published in English versus Spanish scientific outlets suggests that Colombian scientists are far more inclined to publish their scientific products in English. This language difference poses a potential problem for climate change communication of

academic production to the media, decision and policy makers, and other stakeholders.

Some academic findings are incorporated into reports intended for Colombian policy makers, despite the language challenge. Consequently, this practice increases the potential for these findings to have a significant impact on decision making. For example, research conducted by the International Center for Tropical Agriculture (CIAT) on food security and climate change (Jarvis et al., 2010) was incorporated into a white paper intended for policy makers and presented a vulnerability assessment of agricultural systems and water resources in the Andean region of Colombia (CIAT, 2014). Such an assessment is one outcome of the project Regional Portal for Technology Transfer and Action against Climate Change in Latin America and the Caribbean from the United Nations Environmental Program. The CIAT (2014) report outlines the potential expansion of agricultural areas under current climate change, in particular, the potential expansion of high-altitude potato production areas into the *páramo* ecosystem as a result of global warming. The report also calls for strengthening policy around *parámo* conservation areas and for the design and implementation of payment schemes for ecosystem services.

The existence of white paper documents such as the document produced by CIAT (2014) shows that research institutes have made some effort to translate relevant academic findings into documents intended for nonscientific audiences. CIAT (2014) in particular often produces white papers that outline policy-relevant climate change information and

acknowledges the participation of members of the Ministry of Agriculture and Rural Development, the National Planning Department, and the National Meteorological Institute. Recognizing the participation of these governmental bodies suggests that research institutes like CIAT engage in an active dialogue with policymakers.

Despite these examples, the practice of translating academic findings into white papers is not widespread in Colombia. The country's higher education institutions or universities offer few incentives for researchers to engage with the general public (as suggested for other countries in Moser, 2010). Consequently, a large portion of climate change research produced by university-based researchers remains in the scientific journals and has minimal influence on decision or policymaking. When a dialogue takes place between policymakers and academics, it is often initiated by the researcher. Academics make use of government documents and reports to inform their research activities (e.g., Cadavid & Ospina, 2013). However, government officials seldom seek the advice or knowledge that academics can offer, unless a technical justification for a bill is needed. There is little evidence that policymakers consult the academic literature, perhaps because they are challenged by the specialized language.

Case Study: Environmental Risk Management and Academia in Medellín

An example of powerful cooperation between policymakers and academia involves the climate change risk management system for the Aburra Valley. The Aburra Valley is where Medellín is located, the second largest city in Colombia. Medellín accounts for approximately 23% of the country's GDP (source: DANE), and its investment in risk management between 2002 and 2008 averaged COP 14,712 per capita, or approximately USD 5 in September 2016 (Campos et al., 2011). Risk management in the Aburra Valley is largely steered by the Early Warning System for Medellín and Aburra Valley (*Sistema de Alerta Temprana de Medellín y el Valle de Aburrá*, SIATA). SIATA is a science and technology project created within the metropolitan authority that is also supported by the regional public water company (Empresas Públicas de Medellín) and a private electricity company (ISAGEN).

SIATA is an example of a productive collaboration between the government and academia, where communication with the general public is of paramount importance. The project is led and operated by a group of climate experts formerly or currently affiliated with local universities, along with computer scientists and physical engineers. SIATA manages early response systems for an array of environmental risks in the Aburra Valley. These risks include earthquakes, floods, landslides, and, recently, air quality.

Currently, SIATA focuses on air quality, as it is one of the most tangible environmental risks in the city of Medellín, but the project and current communication strategy are already in place and could be readily used for environmental risks related to climate change. Over the past 5 years, air quality has gained attention as an important environmental risk in Medellín owing to an accelerated increase of air pollutants. Reduced air quality in the Valley is linked to three main factors: topography, localized

fires, and vehicle pollution. Topography restricts the exit of air pollution from the valley due to steep slopes and narrow inlets and outlets, while localized fires inject large quantities of pollutants into the atmosphere over short periods of time.

SIATA and the metropolitan authority have developed a communication strategy that seeks to educate the general public about meteorology and air quality. The strategy includes a citizen science initiative where citizens take real-time measurements that are later incorporated into air quality estimates. In this way, citizens are encouraged to take responsibility for the improvement of air quality by using public transport and car sharing or alternative means of transport, such as bicycles. SIATA also uses social media as part of its communication strategy. Their Twitter account (@siatamedellin) has 13,300 followers who are updated on weather conditions, increases in river flow and flood risks, and citizen-collected air quality data. Finally, Clima 24/7 is a television program that is broadcast on the regional television channel as part of the Medellín Metropolitan Authority's communication strategy. Clima 24/7 disseminates messages related to weather, global events, such as ENSO, and the effect of weather and atmospheric conditions on public health (<http://clima247.gov.co/>).

Quantitative measures are not currently available to assess the efficacy of SIATA's communication strategy. However, public awareness of air quality issues has increased considerably since 2016. While the communication strategies for risk management in Medellín are still too recent to allow the assessment of their success, they do illustrate the potential of citizen engagement in climate change communication in Colombia. SIATA, with its roots in government-academia collaboration, has been successful in disseminating information on meteorology and air pollution. These mechanisms and communication strategies are already in place and could be used to disseminate information and manage environmental risks linked to climate change in the Aburra Valley.

Climate Change in the Colombian Media

Television, particularly the news, is the most popular medium in Colombia, as explained in the earlier section, “OVERVIEW OF KNOWLEDGE ON CLIMATE CHANGE COMMUNICATION IN COLOMBIA.” Both science and “natural” disasters have to be included when analyzing the relation between media and climate change communication in Colombia. Arboleda et al. (2011) and Hermelin (2013) have observed that during discussions of ENSO (which combines El Niño and La Niña events), the media indiscriminately use expressions such as “warm season” (*temporada de calor*), “drought season” (*temporada de sequía*), or “heat wave” (*ola de calor*) when referring to El Niño, and “rainy season” (*temporada de lluvias*), “winter season” (*temporada invernal*), “winter wave” (*ola invernal*), or “rainy wave” (*ola de lluvias*) when referring to La Niña. In addition, the media—particularly television news—refer to climate change either as something similar to El Niño or La Niña events or as if these events were the cause or consequence of climate change. As described in the section, “OVERVIEW OF KNOWLEDGE ON CLIMATE CHANGE COMMUNICATION IN COLOMBIA”, sources and testimonies used by the Colombian media to treat El Niño do not originate from researchers or climate experts (Arcila et al., 2015A, 2015B; Zamith et al., 2013; Arboleda et al., 2011). This is particularly relevant because it has taken time and research for Colombian scholars to refer to direct correlations between ENSO and climate change (Ochoa, 2016); however, the media often “naturalize” these correlations. In discourse analysis, this naturalization corresponds to the *didactité* effect (Moirand, 1997): that is, when a subject is mentioned repeatedly by the media, it is assumed that this subject is comprehensible for the audience. In this case, when the media repeat the correlation between ENSO and climate change, the audience will assume such a correlation is an indisputable fact.¹⁷

The *didactité* effect is a recurrent trait in the way the Colombian media address “natural” disasters (Hermelin, 2007). In fact, when insisting on calling them disasters and using the adjective “natural,” the media omit anthropogenic causes and responsibilities. The media even use expressions, such as “divine punishment” or “the Earth is alive,” that reinforce such an omission, often unintentionally. Use of the adjective “natural” when referring to disasters deserves a special note, particularly considering the fact that the majority of human losses during disasters in Latin America are related to hydrometeorological phenomena that can arguably be related to climate change (as suggested by García Acosta, 2008). By attributing disasters to a higher force, the media miss the opportunity to suggest ways to prevent the harmful effects of climate change and to help make mitigation and adaptation part of the citizen agenda.

Case study: Climate change in Noticias Caracol

Arboleda et al.’s studies (2011, 2015) provide an interesting case illustrating climate change communication in the Colombian media. Both studies analyze productions from *Noticias Caracol*, the prime-time television news program with the largest audience in Colombia. The first set of raw information from the broadcasts includes 6-month data from April 2009 to March 2010, and the second set of information includes one-year data from

September 2009 to March 2010. Both are based on a protocol explained in detail by Massarani and Ramalho (2012), which aims to identify news related to scientific research with proposals of science outreach and science policy. The sample used the constructed week sampling methodology (Krippendorff, 2004). None of the studies found a large number of references related to climate change, and the majority of television news broadcasts were linked to the Copenhagen UNFCCC COP15 in December 2009. The results confirm that sources are mostly political and rarely scientific, which Arcila et al. (2015A) identified earlier when analyzing media responses to four different international summits, including COP15. This tendency is common in other countries, as Painter (2011) shows in a comparative study of media in six countries. Interestingly, the Copenhagen COP15 was an important influence on the Colombian media's agenda, and this impact was greater than in previous and following COPs. The data show that climate change was on the media's agenda, but such an agenda did not take into account discourses from PCST perspectives.

Between April 2010 and April 2011, Colombia experienced the effects of one of the strongest La Niña events ever recorded, with estimates of over 3.2 million (7% of the population)¹⁸ victims, according to official sources. The television news program *Noticias Caracol* dedicated the most airtime to this long event and even developed a campaign to support victims as part of its Corporate Social Responsibility strategy. The government made a call for public and private resources to create the National Fund for Disaster Risk Management, and established two different funds for immediate and long-term attention to the disaster (*Colombia Humanitaria* and *Fondo Adaptación*, respectively). The risk management system was modified, creating the National Unit for Disaster Risk Management (in lieu of the National Office for Disaster Prevention). Media, government, the private sector, and society adopted the same agenda: a strategy to face these phenomena, mitigate their effects, and adapt to them. However, the media, in particular *Noticias Caracol*, insisted on using climate change as a synonym for the La Niña phenomenon. This case exemplifies how the media's interest in communicating climate change does not necessarily trigger their interest in understanding climate change; including issues on the news agenda does not mean that media and audiences will have a better understanding of them or will have more information to contribute to adaptation, mitigation, and risk management.

In conclusion, political sources prevail in Colombia's media (Arboleda et al., 2011, 2015; Arcila et al., 2015A, 2015B; Zamith et al., 2013). At the same time, some media agendas lack scientific sources, do not help to strengthen ideas of scientific controversy, and dramatize subjects that can be related to climate change issues (Hermelin, 2007, 2013; Arboleda et al., 2011, in Colombia, and O'Neill & Nicholson-Cole, 2009, in a more general context). Media may not have sufficient power to drive the Colombian citizen agenda, but they do have a privileged position whereby they can influence such an agenda (Bonilla et al., 2012). What happened between April 2010 and April 2011 calls for more complex approaches to the relation between the media and the environment and, in particular, to the media's role in climate change communication in Colombia. The latter should increase the interest of

disciplines ranging from Communication Studies (PCST), Social Studies of Sciences and Technology, to Risk Sociology. The task, though complex and demanding, is a priority. Colombian media could have important contributions to make in reducing the effects of climate phenomena related to climate change whose anthropogenic causes must not be omitted. For this purpose, the media should approach other actors, particularly government, academia, and NGOs, not only to improve their sources of information but also to strengthen their role as climate change communicators.

Nongovernmental Organizations (NGOs) and Climate Change Communication

NGOs have engaged in efforts to communicate climate change in Colombia and have attempted to prioritize climate change as part of the country's development agenda. The challenge involved in these tasks is that of engaging a diverse set of communities and the public.

Colombian NGOs, like all NGOs, (1) have legal standing; (2) are nonprofit associations; (3) cooperate with other audiences, such as government, media, and academia, to obtain resources, media coverage, or political recognition; (4) have mainly social or environmental objectives; and (5) serve as a key channel for the general public to make their voices heard. In other words, NGOs function as a platform for the general public to connect with other persons or institutions that share similar beliefs, ideas, values, and convictions (Arroyo & Martin, 2011). When communicating, NGOs not only have to consider their objectives, but also must find sympathetic donors to be able to continue their work.

Environmental NGOs have an additional intrinsic characteristic: they are perceived as trusted and credible (O'Neill & Nicholson-Cole, 2009), independent from political and private sector interests. Communications should then be a delicate, important element in an environmental NGO strategy; nonetheless, the majority of NGOs are not experts in communicating their issues, activities, and mission (Arroyo & Martin, 2011).

Because NGOs need to constantly address different geographic, cultural, political, and environmental contexts, their experience in communicating climate change is important, given the paucity of research on this important issue in Latin America. Although climate change has not been studied in Colombia, publications covering similar contexts are available. For example, Arroyo and Martin (2011) explored the climate change communication strategies of 26 NGOs in Argentina and Spain, using public recognition and international/national work as criteria for selecting the organizations. Surveys and interviews with communication directors or staff revealed that 80% of NGOs had a communication department, but only 37% of them had a media plan or communication strategy in place (Arroyo & Martin, 2011). Organizations that did have a communication strategy did not consider which audiences or publics were most important for their work

or what channels were most effective for impacting their donors, and the mission of their strategy was to find resources.

In the case of online presence, at least 90% of the organizations in the study had a webpage, but they did not upload new information or content about their issues on a regular basis. Furthermore, social media strategies (Facebook, Twitter, LinkedIn) were nonexistent, particularly in Argentina. NGOs had social media accounts, but little new content was being shared (Arroyo & Martin, 2011). The authors recommended that NGOs use Internet platforms to reinforce their links with communities; they also recommended that they share content about what they do, how money is invested, and their views on their organization's mission to raise the visibility of their work and to show how communities can support their cause (Arroyo & Martin, 2011).

In addition, some NGOs have effectively used communication strategies to promote their issues. For example, Greenpeace, an organization that has been active in Colombia since 2009, has five strategies for achieving its goals: reporting on scientific topics, engaging in government lobbying, working with industries, providing information to academia and media, and producing public campaign literature (Doyle, 2007); therefore, communication is a strong element in their efforts. The Greenpeace communication strategy has two main goals: to document environmental destruction and to convey the visual beauty of nature which is at risk through nonviolent direct actions (Doyle, 2007). Since 1974, this international NGO has investigated and communicated the consequences and risks of climate change to a broad audience; climate change was the issue they used in their opening campaign in Colombia. The organization has a centralized media plan, and all materials, pictures, slogans, and colors must be approved by Greenpeace's international office (Doyle, 2007). According to Doyle (2007), Greenpeace has successfully drawn attention to climate change but has reduced it to a single moment: that photo, that day. Greenpeace has had to "work against time" to make climate change meaningful as a real and present threat before its impacts can be seen. To the organization's credit, from its very beginnings, Greenpeace has historically sought to present climate change as a current threat (Doyle, 2007). The invisible nature of climate change has proven difficult to communicate (Doyle, 2007), but Greenpeace's communication materials have helped to explain and illustrate its effects.

In Colombia, Greenpeace has a campaign to protect *páramos*—high-altitude ecosystems responsible for providing water resources to urban areas and provide habitat for 4,700 plant species (Greenpeace, 2009) but highly vulnerable to climate change. If temperatures rise, as is expected in current climate change scenarios, key species will disappear, which, in turn, will impact hydrological regulation (Greenpeace, 2009). To communicate this relationship, Greenpeace staff write reports about the consequences of climate change for moor ecosystems, posting shocking or beautiful pictures on Facebook and Twitter, constructing social media campaigns, and publishing videos that illustrate the dangers of mining and agricultural activities in *páramos*.

In contrast to Greenpeace's strategy, other NGOs have used a scientific approach to communicate climate change. In this model, the NGOs believe that the public is in need of education from experts (Nerlich et al., 2009; Schäfer & Schilictin, 2014). It is assumed that more effective public engagement on the part of scientists (Nerlich et al., 2009) will increase knowledge and consensus, and people are expected to take action to mitigate their contribution to climate change. In Colombia, climate change communication often takes the scientific approach. Environmental NGOs that use this approach commonly produce and publish reports that are coherent and compelling and describe research results. These NGOs also produce digital pieces such as videos and Facebook posts that generate dialogues on the web. However, the language they use often employs technical jargon.

On the negative side, this scientific approach may present climate change in a manner that is too complex for the general public, despite the fact that the public must be the primary actors in climate change matters (Schäfer & Schilictin, 2014). Corner and Groves (2014) observed that improved scientific literacy can actually increase polarization rather than consensus among ideologically opposite groups, since the individual assimilates knowledge of climate change through his or her ideas, values, and perspectives. Corner and Groves also note that, even if the scientific approach were to advance a simplified message, the approach would finish in a deadlock because a fundamental tension exists between the scientific approach and the social institutions that make decisions.

The degree to which the Colombian public accesses academic production has not been quantified. However, the increase in scientific production observed in Colombia over the past 15 years (Figure 1A) has had little effect on GHG emission reductions or climate change mitigation. Nerlich et al. (2009) noted that climate change communication must move from one manner of communication to dialogue and reflexive engagement. The scientific communication "recipe" needs to shift from a "one-size-fits-all" to a "tailor-made" approach for specific people. The NGOs' climate change communication should form a bridge between scientific and government approaches and the general public. This effort involves cognitive, affective, and behavioral dimensions, with people grappling mentally with and gaining understanding of the issue, experiencing an emotional response, such as interest, concern, or worry, and responding by making changes in climate-relevant behavior or political action (Moser & Dilling, 2012). In other words, the success of climate change communication depends on how well it achieves public engagement.

Because of their proximity to the public, NGOs have a better opportunity to convey climate change using a customized model, where the audience is the most relevant driver instead of the message itself. According to Moser and Dilling (2012), understanding which audience is going to receive the message, what the audience knows about climate change, what channels the audience uses to inform itself, which messengers are credible, and what the audience believes in will allow communicators to create a successful

message. The closer the message is to audiences, the greater the probability of generating action.

In Fiji for example, one strategy was to place a high value on oral narratives. This action facilitated the spreading of key messages to the communities in a way that was more effective than Internet information, workshops, or meetings because oral narratives were and are part of Fiji's cultural values (Janif et al., 2016). In an experiment conducted in the United Kingdom, diverse individuals participated in focus groups designed to evaluate the impact of both visual images of climate change and actions for fighting against climate change (O'Neill & Nicholson-Cole, 2009). The results of the experiment indicated that images similar to their communities and neighborhoods empowered them to do something about climate change. In contrast, photos of disasters in other regions of the world, even the ones that are representative of issues such as floods or droughts, gave them a sense of helplessness, remoteness, and lack of control (O'Neill & Nicholson-Cole, 2009). This idea is supported by the theory of how people learn. Vella (2002) cites 12 principles a professor or facilitator must follow to make people learn something new, based on the immediacy of the learning, praxis, and ideas connected with feelings and actions, and not on the content itself. "We know that learning involves more than cognitive material (ideas and concepts). It involves feeling something about the concepts (emotions) and doing something (actions)" (Vella, 2002, p. 18). In addition, a study in the United Kingdom ascertained that one of the largest barriers to people mitigating climate change was that they were not engaged with the issue, as information and hard data are not sufficient to motivate citizens to take action (Lorenzoni et al., 2007). Then, it is not an overstatement to say that it is necessary that climate change communication seeks a better connection with peoples' hearts and actions.

Another concept that should be applied to climate change communication is the importance of the language chosen to transmit ideas. Words, adjectives, and stress on certain concepts make a difference. In mass media, language about climate change is urgent, apocalyptic, and beyond human control (O'Neill & Nicholson-Cole, 2009). Alternatively, metaphors can be used to bring climate change closer to people; words and their meaning can be the difference between positive or negative ideas.

Connecting to people's feelings and choosing words appropriately could help improve communication in the mission to encourage action on climate change. Effective communication strategies are a mixture of modes, channels, and audiences. As *Fondo Acción's* climate change communication strategy shows, NGOs experience a significant challenge when they are faced with such diversity. This problem is particularly relevant in a country such as Colombia, whose high degree of biological, geographical, and cultural diversity adds an extra layer of complexity to the development of climate change communication strategies.

Case Study: Fondo Acción's Climate Change Communication Strategy

Fondo Acción is an example of an NGO that approaches climate change communication in alternative ways. This organization was founded in 2000 as a private nonprofit with the objective of managing and executing the resources that Colombia had gained through a debt-for-nature swap with the United States. The NGO has grown beyond the administration of these funds and currently has approximately 20 donors.

In Fondo Acción, climate change projects are based on the premise that moving hearts and creating awareness lead to action. Regular news reports and statements are framed by hopefulness regarding the consequences of this phenomenon. This approach challenges the traditional idea of delivering information as facts and enables a different perspective on learning (Vella, 2002). The process for generating campaigns, messages, or communication strategies on climate change begins with a multidisciplinary analysis. This analysis consists of a discussion between the communications team made up of professionals from each environmental project and the public policy area. The multidisciplinary team jointly examines the information to be communicated (Figure 2). The team also examines how, to whom, what for, and the goals they want to be achieved with the message. Depending on the project, other government organizations, NGOs, private companies, or children's groups may be invited to participate in the dialogue and construction of the campaign. The innovation that results from interdisciplinary and interinstitutional teams has been a lesson learned by Fondo Acción. A first step in the interdisciplinary work is to ensure that the needs from each area are identified and the objectives are stated. Needs, objectives, and expected results may be determined by the individual project and can generate calls for action from a particular audience or activate conversations and dialogue on policies. Once needs and objectives are identified, the multidisciplinary team proposes options for addressing these needs, thereby allowing the different visions for a common goal to converge. The presentation of competing arguments allows for a greater richness in the campaigns and, most of all, a broader and more comprehensive look at the situation.

An important moment in the exercise is to synthesize a key or umbrella message: the focus of the communication campaign. One of the lessons that Fondo Acción has learned is that this key message must meet three objectives: be sexy; give a general and clear idea of what is to be transmitted; and cover most of the issues that may rise in the framework of the campaign. Additionally, the team considers the audience to whom the message should be addressed. The question becomes relevant when considering that the audiences are active subjects in the campaign: they work on improving their ability to share their points of view live and instantaneously, due to social networks and other technological advancements. This permits placing oneself in the audience's shoes, quitting the traditional roles in which one works and imagining how the audience will react when receiving the contents, materials, or information. Once the requirements of the communication strategy have been defined, responsibilities are assigned, and the schedule and budget are prepared. Strategies are revised regularly during the length of the projects in order to adjust them to the evolving contexts. Community workshops,

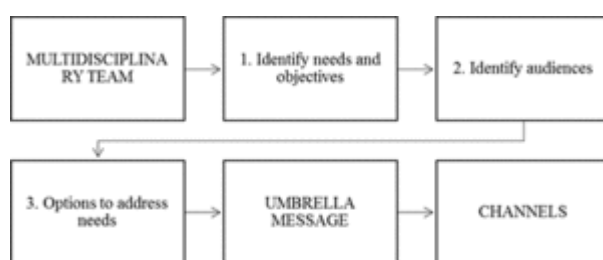
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regional or national events, puzzles, songs, poems, manuals, and policy papers are some of the alternatives that give life to each action. This approach allows the NGO to learn with the communities. Additionally, other institutions that work with relevant topics are engaged in the dialogue. This way, knowledge is not one truth that is unidirectionally provided, but an exercise of reflection, change, and transformation in which different actors participate and have a voice.

As a tangible example, to communicate climate change in the *Chocó* region of Colombia, the organization connects to the river, the forest, and the community that inhabit the area as key elements. In contrast, in the Amazon region, connection is more closely related to farming, the indigenous legacy, and the forest. This audience classification allows communication teams to think of diffusing products and materials that are appropriate for each audience and is a particular benefit of multidisciplinary teamwork.

“Identification requires that we forget ourselves and become the other—that we assume for ourselves the identity of the target of our identification” (Cohen, 2001, p. 247). This practice has an implicit value: it recognizes that the audience is not naïve (Ottaviani & Squintani, 2006), and it acknowledges that the communication process is multidirectional.

Fondo Acción has learned that the efforts to create the best and most effective campaigns are born in teams and that the NGO must also seek advice from experts as well as from the people who live the problems, and consequently generate ideas to solve them. Empathic listening is one of the qualities that helped this NGO to enhance its projects. This concept or ability seeks to transform the way humans communicate. The premise behind this concept is that listening and asking the correct questions is even more useful than the answer (Covey, 1990). For NGOs, the ability to listen enables identification of a community’s needs, expectations, and concerns. This approach also allows NGOs to take into account the type of territory a community inhabits and the type of resources they have. Most importantly, it allows them to listen to stakeholders instead of telling them what to do (Sirolli, 2012).



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Figure 2. Communication strategy from Colombian NGO Fondo Accion. Chart developed using Piktochart®.

Conclusion

The characteristics and evolution of climate change communication in Colombia still are not well known. Studies that examine the issue are scarce. However, the current evidence reveals a lost opportunity in triggering actions and decisions from the general public and decision makers. A close but noneffective connection is present between the media, the source of information for most Colombians, and the government. While the media use the government as their main source of information, the government communicates in a technical fashion that addresses the needs of the international agreements but not its own needs to stimulate adaptation and mitigation. Therefore, neither the government nor the media, as its voice, generates calls for actions or decisions from the respective stakeholders.

This relationship is not filtered by academia, where the production of publications is growing but where only small efforts have been made to translate scientific language to communications that are accessible to the general public and that gather media attention. The media also more often look for experts in the government than in academia, likely seeking charismatic rather than knowledgeable personalities. The relation is also not filtered by NGOs, which tend to generate communication material for their direct use with communities and projects on the ground. The NGO sector produces more customized communication material than other sectors, using strategies that consider cultural, institutional, and environmental contexts.

These conditions generate at least three communication shortcomings. First, the sector that generates the most knowledge is not the one whose communications influence decision making or citizen action. Second, the government is communicating technical facts in a fashion that does not contribute to its own mission of generating change in social and economic decisions. Third, rather than creating a learning process for the general public, the media may be leading their audience into a cycle of confusion on climate change issues. Customized approaches applied in the NGO's communication strategies may fall out of such a cycle of confusion.

Advancing the research agenda on climate change communication in Colombia is important to critically improving communication. Research should look deeper into climate change perception, for instance, (1) independently estimating the percentage levels of climate change understanding among the Colombian public; (2) assessing the efficiency of the messages that emerge from the government and academia; and (3) translating the communication strategies generated by NGOs into models that can be used by other practitioners. Such an agenda should understand the gaps that do not allow different sectors to trigger actions from the general public. Research should also investigate how climate change could be integrated in the media agenda and should analyze whether governmental, academia, and media communication strategies could benefit from learning about the NGO approach and be more assertive in triggering actions. Understanding the challenges of climate change communication in Colombia

necessitates a grasp of the country's extremely rich and diverse characteristics. The need to address communication differently in the country's context would become evident through a comparative analysis between climate change communication in other countries and in Colombia. Ethnic, cultural, and biogeographic settings may vary in Colombia within very short geographical distances. This variability should dictate the risks, opportunities, and approaches for climate change communication.

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Notes:

(1.) "Black communities" is the term most frequently used in the Colombian Constitution of 1991 and subsequent regulations. It is not considered racist. The terms "Afro-Colombian" and "Afro-Descendant" are less used and were only introduced around the 1990s. There is still debate among community members as to which term they consider more appropriate, and there are strong defenders of both lines. Out of respect for those communities with whom we work, who feel proud to be Black and do not identify with the term "Afro-Colombian," we will use the term "Black."

(2.) Individuals do not register their ethnicity in Colombia. Rights granted out of ethnicity are not individual but collective.

(3.) Humid and dry above-treeline steppes, often growing on highly organic peat substrates.

- (4.) See Nisbeth (2009) for further references on approaches to framing.
- (5.) See Bucchi and Trench (2014) for a compilation of approaches from this subfield.
- (6.) Rather than one single policy, the country has developed a portfolio of documents, which include: (1) the Institutional Strategy for the Articulation of Policies and Actions Regarding Climate Change in Colombia (2011), (2) the National Plan for Climate Change Adaptation (2012), (3) the Financial Strategy to Reduce the Country's Fiscal Vulnerability before Natural Disasters (2012), and (4) the National Strategy for the Education, Training and Sensitization of Audiences on Climate Change (2010). There are also nonadopted white papers with guidelines for policies, including the Guidelines for a Climate Change Policy, developed in 2002, and the Framework for the Colombian Strategy on Climate Financing, developed in 2016.
- (7.) <http://colombiatic.mintic.gov.co/estadisticas/stats.php?&pres=content&jer=1&cod=&id=25#TTC>.
- (8.) <http://www.internetlivestats.com/internet-users/colombia/>.
- (9.) <http://www.internetworldstats.com/south.htm#co>.
- (10.) <https://www.dnp.gov.co/programas/ambiente/CambioClimatico/Paginas/Cambio-Climatico.aspx>.
- (11.) <http://www.cancilleria.gov.co/cambio-climatico-0>.
- (12.) https://www.minagricultura.gov.co/Cambio_Climatico/Paginas/Cambio-Climatico.aspx.
- (13.) <http://cambioclimatico.minambiente.gov.co/>; <http://calculadora2050.minambiente.gov.co/>; <http://www.minambiente.gov.co/index.php/ambientes-y-desarrollos-sostenibles/cambio-climatico>.
- (14.) The microsite can be accessed through the addresses <http://www.cambioclimatico.gov.co/> and <http://www.ideam.gov.co/web/cambio-climatico/>.
- (15.) www.siac.gov.co.
- (16.) According to submission note FCCC/SBI/2012/MISC.15 to the UNFCCC, reporting on donations involved in the preparation of National Communications, projects other than the cited generated information that was used in the communication. Those resources are not accounted for here.
- (17.) Semidiscursive approximations for similar subjects from De Cheveigné (2000) and CEDISCOR (1992) can also be considered.

(18.) Data reported by the agency temporarily created to address this long-term disaster. See http://www.colombiahumanitaria.gov.co/FNC/Documents/2014/estudio_caso.pdf. (Consulted August 25, 2016.)

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