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Nationally Determined Contributions: Material climate commitments and discursive positioning in the NDCs

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Abstract

In the lead-up to the 2015 Conference of Parties meeting in Paris, 186 countries, representing over 95% of global emissions, submitted Nationally Determined Contributions (NDCs). The NDCs outline national goals for greenhouse gas emission reductions and identify financial needs for unfolding mitigation and adaptation efforts. In this study, we review various analyses of the NDCs that cover the aggregate impact and strength of emissions reduction commitments and discuss recent literature on the adequacy and sectoral focus of the NDCs. We then argue that the NDCs are more than just goal setting reports; they are important discursive documents that are contested, negotiated, and ongoing. To supplement the existing literature, we examine the discursive narratives embedded in the NDCs from the 19 founding nations of the Climate Vulnerable Forum and the top 10 greenhouse gas emitters. Our literature review of quantitative and sectoral aspects of the NDCs highlights the inadequacy of the NDC commitments in the context of limiting warming to 2°C, discusses the uncertainties in the promised mitigation strategies, and identifies the reliance of many countries on policies such as those on forests or renewable energy. Our own analysis of the discourses in the NDCs adds critical depth by highlighting the stark contrasts in NDC discourses between North and South, as well as between historical emitters and emerging economies. These contrasts reflect deeper debates regarding justice and equity between nations within the UNFCCC negotiations.

This article is categorized under:

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KEYWORDS

adaptation, discourse, environmental governance, mitigation, Nationally Determined Contributions

1 | INTRODUCTION

One of the key mechanisms for implementing the international response to climate change under the UNFCCC Paris Agreement of December 2015 are voluntary commitments to emission reductions and other actions by countries called Nationally Determined Contributions (NDCs) (United Nations Framework Convention on Climate Change, 2016). NDCs, which are submitted to the United Nations Framework Convention on Climate Change (UNFCCC), outline steps that a country is

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undertaking to reduce emissions at the national level, with the option to also discuss other actions such as adaptation. All countries are expected to deliver NDCs. Prior to the Paris Agreement coming into effect these commitments were termed Intended Nationally Determined Contributions (INDCs). Previous agreements, such as the Kyoto Protocol, included legally binding emission reduction pledges identified as Quantified Emissions Limitation and Reduction Objectives or Nationally Appropriate Mitigation Actions (Gupta, 2014).

One hundred eight-six countries submitted INDCs in advance of the Paris conference with the option to revise them following ratification of the Paris Agreement, which occurred in October 2016. The UNFCCC agreed at COP20 in Lima that INDCs could include commitments to emission reductions and removals including base year, time frame, and accounting methods. The UNFCCC also offered that countries could discuss how its INDC is fair and ambitious, how it contributes to preventing dangerous climate change, and issues related to adaptation. Additionally, least developed countries and small island developing states could choose to focus on low carbon development rather than emission reductions. Countries are expected to revise and resubmit NDCs before 2024 as a central part of the UNFCCC process.

The emerging literature on the NDCs focuses on their material significance in terms of overall emission trajectories and their commitments in particular sectors such as energy or land use. While the NDCs can be assessed as expressions of political commitment to real emission reductions, they are also narrative documents that can be read as persuasive discourses that reveal deeper tensions, ideas, and values about international climate policy, national identities, and aspirations. For example, NDCs may engage with questions of responsibility and fairness or emphasize vulnerabilities and adaptation; they may focus on land use and biodiversity or provide extensive technical detail on energy policy and technology.

This study summarizes the aggregate impact and strength of emission reduction commitments made in the NDCs based on recent reports and discusses the literature on the adequacy and sectoral focus of the NDCs. Because most of these reports and literatures tend to take the NDCs at face value, reporting quantitative elements or counting mentions of sectors and strategies, in this study we seek to add critical depth by analyzing the discursive narratives that can be observed in an emblematic set of NDCs from the 10 top greenhouse gas emitters and the founding countries of the Climate Vulnerable Forum (CVF). Discourse analysis allows us to analyze the NDCs for statements that reveal the intentions and aspirations of different actors beyond their specific commitments to mitigation and adaptation, reflecting the broader politics of international climate responses. Our analysis thus contributes to qualitative research in climate governance that illustrates the techniques and rationalities that underpin international efforts to respond to climate change.

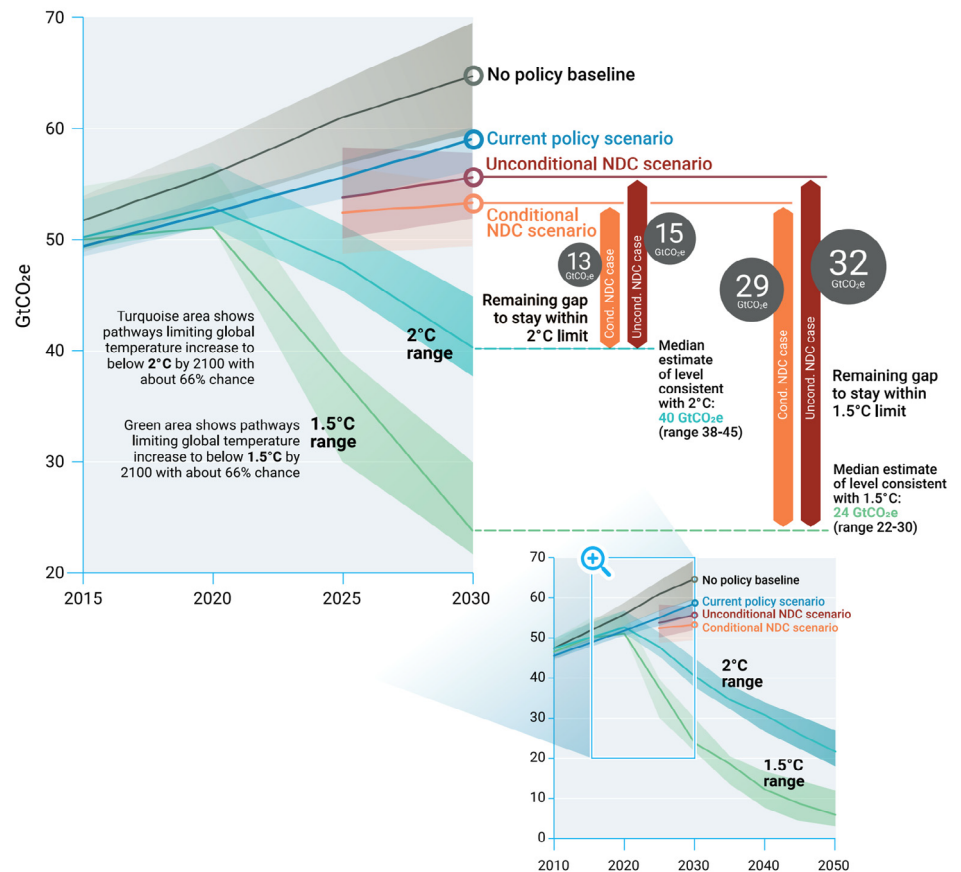
First, we review the literature on the aggregate quantitative impacts of NDCs on emissions and temperature. Second, we review the sectoral analyses of NDCs. Third, we undertake original analysis of the NDCs to uncover some of the key discursive narratives and tensions in climate policy that they reflect.

2 | AGGREGATE ASSESSMENTS OF THE NDCs: GLOBAL TEMPERATURE, AND EMISSION GAPS

Organizations that regularly report on the nature and material significance of the NDCs include the UNFCCC, UNEP (United Nations Environment Program) and the World Bank (indc.worldbank.org). The UNFCCC maintains a registry of the NDCs with the submissions from 171 parties and any updates (unfccc.int) with an analysis of their content (United Nations Framework Convention on Climate Change, 2016). UNEP has published nine Emission Gap Reports, which from 2015 have included analyses of the INDCs and NDCs. The 2018 report (United Nations Environment Program, 2018) concludes that the NDCs would result in 53–56 GtCO_{2e} of global emissions in 2030, whereas to keep warming below 2°C emissions should be less than 40 GtCO_{2e} by 2030 (Figure 1). For a 66% chance of keeping warming below 1.5°C in 2100, the report concludes, emissions in 2030 should not exceed 24 GtCO_{2e}, much less than the NDC projected emissions of 53–56 GtCO_{2e}. NDCs include both unconditional commitments and commitments that are conditional on the action of other countries and/or financial or other types assistance. Implementing the unconditional NDCs with no further action would mean a warming of more than 3.2°C by 2100 compared to pre-industrial levels (United Nations Environment Program, 2018, p. 10). The overarching conclusions of the report are that “Current commitments expressed in the NDCs are inadequate to bridge the emissions gap in 2030. Technically, it is still possible to bridge the gap to ensure global warming stays well below 2 and 1.5°C, but if NDC ambitions are not increased before 2030, exceeding the 1.5°C goal can no longer be avoided. Now more than ever, unprecedented and urgent action is required by all nations” (p. 4).

Contributors to the UNEP reports include scientists who have published on the implications of the NDCs, and maintain websites to track and evaluate commitments. For example, climateactiontracker.org is maintained by a consortium that includes nonprofits, consultancies and research institutes which rates and analyses the climate implications of NDCs and other climate commitments in relation to fair share efforts. Climate Action Tracker estimates that only seven countries have made

FIGURE 1 Global greenhouse emissions under different scenarios and the emissions gap in 2030 (Source: United Nations Environment Program, 2018, p. 9)



commitments compatible with a 2°C limit (Bhutan, Costa Rica, Ethiopia, the Gambia, India, Morocco and the Philippines) and evaluate the commitments of the Russian Federation, Saudi Arabia, Turkey, the USA and Ukraine as “critically insufficient” and on a path that would lead to a 4°C warmer world (Climate Action Tracker, 2018; Höhne, Fekete, den Elzen, Hof, & Kuramochi, 2018). Notably, the consortium decided not to include emissions or commitments relating to land use in their quantitative estimates because of data and accounting uncertainty as well as the importance of decarbonizing the energy system. Other such sites include Climate Analytics (climateanalytics.org), the World Resources Institute (cait.wri.org/indc), and Carbon Brief. Pauw et al. (2017) have also created a useful database of the NDCs (<https://klimalog.die-gdi.de/ndc>) with categories reflecting the focus and detail of each NDC.

Assessments of the NDCs range from the enthusiastic and positive to the concerned and skeptical. Positive assessments point to their universality, clarity, fairness, and reflection of input from smaller and vulnerable countries (Mead, 2015; Mercer, 2015; Morgan & Northrop, 2017; Schellnhuber, Rahmstorf, & Winkelman, 2016) and to their role in advancing national climate policies and non-state action (Höhne, Kuramochi, Warnecke, & Röser, 2017). More optimistic assessments express hope that revised NDCs will ramp up ambition or note that many NDCs are conservative estimates with some countries already exceeding their commitments as a result of faster decarbonization or the role of non-state actors.

The main concern is that despite the widespread adoption of the NDCs, the current commitments are inadequate to meet temperature targets. Rogelj et al. (2016) model the temperature outcomes of the NDCs and show that although they result in cooler temperatures than business as usual scenarios, they still result in warming of 2.6 to 3.1°C by 2100 missing the 2°C target unless the NDCs are made more ambitious. They observe that the omission of international aviation and marine emissions, the uncertainty in land uses, the optimism about economic growth, and the lack of discussion of non-CO₂ gases increases the chance of even higher temperatures. Similar conclusions are reached by Hare, Ancygier, de Marez, and Parra (2017) who project NDC outcomes of 2.8°C warming by 2100 and emphasize the need for NDC revision and increased ambition, especially in the light of the rapidly declining cost of renewables. Knopf et al. (2017) show that the INDCs absorb most of the remaining carbon budget that limits warming to 2°C and exceed that needed for 1.5°C. They argue that negative emissions—including land use changes such as reforestation or bioenergy to take up carbon or carbon capture and storage (CCS)—are indispensable to a 1.5°C goal and need to be included in country commitments and investments.

Other analyses of NDCs show the importance of early action and increased ambition to have any chance of meeting temperature targets (Boyd, Turner, & Ward, 2015; van Soest et al., 2017) and that reliance on reforestation, forest protection, land use, or bioenergy in NDCs is problematic and uncertain (Climate and Development Knowledge Network, 2015). Although most current NDCs do not mention CCS, the reliance on such “negative emissions” is a source of skepticism for Geden (2016) who argues that such “magical thinking” resulted in the Paris Agreement managing “to adopt a 3°C agreement with a 1.5°C label” (p. 783) and for others who argue that negative emissions will not deliver (Anderson & Peters, 2016; Geden, 2016; Larkin, Kuriakose, Sharmina, & Anderson, 2017; Vaughan & Gough, 2016).

The fairness of the NDC process and voluntary nature of the commitments is another area of concern (Bretschger, 2017; Holz, Kartha, & Athanasiou, 2018; Iyer et al., 2016). For example, Oxfam and Holz et al. suggest that the NDCs do not reflect fair shares of the global carbon budget that would reflect historical responsibility and capacity (Holz et al., 2018; Oxfam, 2015). They argue that although reduction commitments from China and Indonesia might be considered fair, those of the United States, the European Union, and Japan should be much larger. Pan, den Elzen, Höhne, Teng, and Wang (2017) compare six equity approaches to evaluate the NDCs (combinations of responsibility, capability, and equality) and find that while India's NDC has ambition consistent with equity, the United States and the European Union lack equitable ambition. In order to look at the overall credibility of NDC commitments, Averchenkova and Bassi (2016) assess the NDCs based on indicators such as the presence of rules, organization, public concern, and past performance; and find that within the G20, the European Union has the highest credibility and Canada and India the least. Winkler et al. (2018) provide an interesting evaluation of how the NDCs represent issues of equity and adaptation, finding that countries use a range of expressions to underline their “small share” and low per capita emissions but often do not substantiate these claims with specific data or verification by independent sources.

Several authors have attempted to assess the costs of meeting the NDCs. For example, Hof et al. (2017) use the IMAGE model to compare the costs of the NDCs in comparison to those of temperature targets. They find that, depending on assumptions about development paths and conditionality, the overall costs of meeting the conditional NDCs by 2030 range from \$40 billion to \$135 billion and up to six times higher to meet the 1.5 goal. For key economies, these costs are less than 0.4% of GDP, with emission trading reducing costs by 50%. Liu, Wang, and Zheng (2017) find that an immediate carbon price would result in less costly emission reductions for key countries compared to the NDC planned actions to 2030 which, although more equitable, place burdens on future action. Rose, Richels, Blanford, and Rutherford (2017) explore scenarios for ambition and participation and find that costs of reductions could reach as high as 8.5% of GNP by 2100 if there is no CCS and NDC commitments remain on the current path after 2030. Fragkos et al. (2018) conclude that the overall costs to GDP of meeting the NDCs are not prohibitive but are high for fossil fuel producing countries.

3 | ASSESSING THE NDCS BY SECTOR

Another substantial area of research on the NDCs, largely presented in gray literature, is examining how NDCs treat key mitigation sectors including those in forestry, agriculture, and renewable energy. These reports analyze the material commitments to reductions in a specific sector, often for a subset of countries. For example, Forsell et al. (2016) found that land use, land use change, and forests (LULUCF) are expected to contribute up to 20% of total emission reductions, with Brazil and Indonesia making the most substantial pledges in this sector. These commitments, however, are tempered by the large uncertainties surrounding how mitigation via LULUCF is estimated, modeled and monitored (Forsell et al., 2016) and the lack of common rules of LULUCF accounting undermines the mitigation commitments in this sector. In an analysis of non-Annex 1 NDCs, Hargita and Ruter (2016) find that countries have exploited the lack of accounting rules by designing their LULUCF mitigation strategies in diverse ways, jeopardizing the transparency, attainability, and comparability of land use mitigation actions.

Agriculture is a key sector in the NDCs for both adaptation and mitigation actions. One hundred forty-eight countries included agriculture (crops and livestock) among their mitigation actions. Agriculture is also plagued by challenges in emission reduction estimation, monitoring and enforcement (Strohmaier et al., 2016). Agriculture was the foremost sector identified for adaptation in the 131 countries that discussed adaptation in their NDCs with 94 of these countries providing details on agricultural goals that will be implemented. The agricultural adaptation mitigation and adaptation goals tend to focus on agricultural technologies over incentives and services that support uptake (Richards et al., 2015). Kuramochi et al. (2017, p. 15) are pessimistic about mitigation in agricultural production, finding that mitigation opportunities were “scattered and potential is limited” and that transitioning diets towards less carbon intensive options had a greater potential for reducing emissions.

Stephan, Schurig, and Leidreiter (2016) analyze the potential of renewable energy to meet mitigation finding that 108 countries plan on increasing renewable energy. China and India plan the highest rates of renewable expansion and eight countries

(including Costa Rica, Cabo Verde, Cook Islands, Fiji, Papua New Guinea, Samoa, Tuvalu, and Vanuatu) are planning to completely decarbonize their energy matrix. Seven countries include “clean coal” as a mitigation strategy and nine countries plan to increase nuclear power generation.

4 | NDCs AS DISCURSIVE TEXTS

The literature and reports, reviewed above, view NDC commitments in terms of their promised material contributions. While this literature sometimes expresses skepticism about the likely fulfillment of the expressed goals, for the most part they do not explore the ways in which the commitments are presented or discussed in the context of the way language is used, political positions defined, or certain issues are avoided.

The NDCs varied widely in their content, length and style and can be read as discursive documents that reveal deeper tensions, ideas, and values about international climate policy, national identities, and aspirations. Environmental discourse analysis has been used to understand ideas underpinning many aspects of climate and environmental governance (Bäckstrand & Lövbrand, 2016; Fløttum & Gjerstad, 2017; Hajer & Versteeg, 2005; Hulme, 2008; Liverman, 2009; Okereke, Bulkeley, & Schroeder, 2009). *Discourse* has varying definitions, but in this analysis, we understand discourse as the language that shapes views of the world, revealing how different actors impose frames on discussions of addressing climate change, explaining how some ideas and people come to dominate the discussion and delimit what is acceptable as policy, and creating opportunities for more democratic knowledge and practices (Feindt & Oels, 2005; Hajer & Versteeg, 2005). In particular, we draw on critical discourse studies to emphasize the relationship between language and power (Wodak & Meyer, 2001), highlighting how the discourses in NDCs “enact, confirm, legitimate, reproduce or challenge relations of power and dominance” in relation to climate change governance (Calliari, 2018, p. 728).

For example, several scholars have shown how discourse on deforestation as a solution to climate change resulted in successful proposals to include Reducing Emission from Deforestation and Forest Degradation (REDD+) in the international climate negotiations (Aicher, 2014; Bäckstrand & Lövbrand, 2006; Di Gregorio, Brockhaus, & Cronin, 2013; Leipold, 2014; Nielsen, 2014). Debates about other climate policies such as carbon offsets or geoengineering are also shown to engage powerful discourses about markets, responsibilities or technology (Anshelm & Hansson, 2014a, 2014b; Cairns & Stirling, 2014; Lovell, Bulkeley, & Liverman, 2009). Claims of vulnerability and needs for adaptation are also made using powerful narratives and stories (Arora-Jonsson, 2011; Cannon & Müller-Mahn, 2010; O'Brien, Eriksen, Nygaard, & Schjolden, 2007; Popke, Curtis, & Gamble, 2016; Webber, 2013) with some of the most contested discourses being those about climate refugees and migrants (Arnall & Kothari, 2015; Detraz & Betsill, 2009; Farbotko & Lazrus, 2012; Hartmann, 2010; Kothari, 2013; McNeill, 2013). Climate justice and fairness claims, in policy and activism, have also proved a rich source of contrasting and passionate discourses (Audet, 2013; Bulkeley, Carmin, Castán Broto, Edwards, & Fuller, 2013; Popke et al., 2016; Schlosberg, Collins, & Niemeyer, 2017).

There is little published literature to date that uses a discourse analysis to examine the NDCs. Tobin, Schmidt, Tosun, and Burns (2018) use discourse network analysis to cluster countries and assess shared interests within existing interest groups. Their analysis uses a content analysis of statements in the NDCs, identifying key approaches to mitigation, and finds that non-European Union developed states and OPEC have the most internal similarity in their NDC statements about emission reduction targets, land use, and adaptation. However, they do not analyze the style or framing of what is said within the NDCs as discourses. To fill this gap and show the role of NDCs as discursive texts where countries assert political positions and values, below we provide an initial analysis of discourses in a subset of the NDCs.

We conducted a review of the NDCs in order to analyze the discourses employed by the founding nations of the CVF ($n = 19$) as well as the top national greenhouse gas emitters ($n = 10$). We included CVF nations because these countries constitute an important negotiating block with the UNFCCC process, positioned as a highly visible Global South partnership, that is, “highly vulnerable to a warming planet.” We chose to also include the top 10 greenhouse gas emitters because these nations provide an important counterpoint to the CVF. These top emitters are key players in the UNFCCC negotiations and include both emerging economies such as India and China as well as large historical emitters such as the United States and the European Union.

In order to structure our review, we chose *a priori* analytical categories that we identified based on an initial reading of the NDC texts and relevant literature on the discourses of international environmental governance. We conducted discursive coding of selected NDCs using NVivo qualitative analysis software (QSR International) examining and comparing the compiled passages for each discursive category across NDCs. We coded NDCs three times for consistency. We illustrate the discourses with some quotations from illustrative NDC texts. For more details on our methodology, see Appendix 1.

4.1 | The blame game: Responsibility for emissions

The assignment of responsibility for causing climate change is a highly political aspect of the NDCs and the discourse of responsibility is highly differentiated between the CVF and high emitters. Almost all CVF countries address the issue of responsibility by highlighting their insignificant contribution to global greenhouse gas emissions (using quantitative data) and calling on large historical emitters to both reduce emissions and financially support adaptation in CVF countries. St. Lucia exemplifies this discourse stating, “(Our) greenhouse gas emissions are miniscule in global terms, with the country having contributed approximately 0.0015% of global emissions in 2010 at a per capita rate of 3.88 tCO₂-eq” (pp. 1–2).

In contrast, high emitters the European Union, Russia, and Indonesia do not mention the issue of responsibility. The United States does so cursorily by claiming that their target is “fair and ambitious” while not directly addressing historical emissions. Canada highlights that they have the cleanest energy supply in the G7 and G20 and only account for 1.6% of global emissions without mentioning historical responsibility. Only Japan acknowledges its role as a major historical emitter. Among the top emitters, the emerging economies of China, Brazil, and India all directly blame historical emissions for climate change. India states: “India, even though not a part of the problem, has been an active and constructive participant in the search for solutions. Even now, when the per capita emissions of many developed countries vary between 7 and 15 metric tonnes, the per capita emissions in India were only about 1.56 metric tonnes in 2010. By enhancing their efforts in keeping with historical responsibility, the developed and resource rich countries could reduce the burden being borne by developing countries.” Brazil echoes this discourse in advocating for national reduction contributions to be pegged directly to historical emissions. Brazil suggests their NDC is “far more ambitious than its marginal relative responsibility to the global average temperature increase.”

4.2 | (Over)relying on renewables and land use for mitigation

Many of the NDCs focus on renewables and/or land use to meet their emission reduction commitments. While solar and wind are the most frequently mentioned technologies, biomass, nuclear, and hydropower are also discussed. Renewables are seen as a mitigation and low carbon development option for the CVF. Vanuatu, for example, sets a goal for 100% renewable energy contingent on financial and technical support with specific mega-watt generation goals for different renewable technologies.

High emitting emerging economies of India, Indonesia, and China highlight their ambitious quantitative goals for renewable energy use. India asserts that they have “largest renewable expansion program in the world” while Brazil emphasizes their large, successful biofuel program.

Many NDCs discuss halting deforestation or bolstering reforestation to reach their mitigation goals. Among the high emitters, Russia places forests at the center of their mitigation strategy, “Limiting anthropogenic greenhouse gases in Russia to 70–75% of 1990 levels by the year 2030 might be a long-term indicator, subject to the maximum possible account of absorbing capacity of forests [...] forest management, is one of the most important elements of the Russian policy to reduce GHG emissions.” Indonesia, Brazil, and India suggest that REDD+ programs are a key means of reaching land use mitigation goals. Among the CVF countries, nine countries plan on using REDD+ to reach land use mitigation goals. Bhutan, states that the “vast forest sink of Bhutan will form the cornerstone of their commitment to remain carbon neutral” and Costa Rica proposes to become a carbon neutral economy by “compensating its emissions through the removal or offsetting by the forest sector” including using market mechanisms. However, despite the heavy reliance on land use, countries do not discuss the uncertainties, present robust monitoring schemes or discuss the social and environmental limitations of REDD+ discussed by many scholars (Di Gregorio et al., 2013; Larson et al., 2013; Schroeder & McDermott, 2014).

4.3 | We are exceptional: Arguing for extreme vulnerability

Vulnerability is referred to extensively throughout the NDCs, but without any clear definition. Across NDCs, countries position themselves as being uniquely vulnerable to climate change based on their biophysical traits and socioeconomic challenges. Island states such as Indonesia, Tuvalu, Vanuatu, St. Lucia, Philippines, Madagascar, Maldives, Kiribati, and Barbados explain their vulnerability as being as an inherent trait as low-lying islands. Vanuatu states that they are “one of the countries most vulnerable to climate change among the other Pacific island nations” positioning themselves as being unusually vulnerable among island states. Mountainous countries such as Nepal and Bhutan also position themselves being vulnerable because they are land-locked and mountainous with Nepal claiming that “its development agenda is constrained by the fact that it is one of the most vulnerable countries to the adverse effects of climate change.”

Beyond these biophysical factors shaping vulnerability, countries also refer to social determinants of vulnerability. Indonesia states, “the poorest and most marginalized populations tend to live in high-risk areas that are prone to flooding, landslides,

sea level rise, and water shortages during drought.” Socioeconomic drivers of vulnerability were mentioned uniformly across CVF countries and several high emitters although Russia, the United States, the European Union, Canada, and Japan do not explicitly mention vulnerability despite considerable vulnerability within their countries.

The discourse of exceptional vulnerability is pervasive across the NDCs of CVF countries as well as emerging economies. Countries draw on various indices and narratives to exemplify their unique vulnerability. As a prime example, Bangladesh claims their exceptional vulnerability based on their disaster risk, “Bangladesh, one of the world's most disaster-prone climate vulnerable countries, has faced dozens of major disasters over its short history as a nation...the Climate Change Vulnerability Index (CCVI-2011) reveals that Bangladesh is the most vulnerable country to climate change.” Tuvalu's NDC states, “Tuvalu is the world's second lowest lying country and sea level rise poses a fundamental risk to its very existence” joining Kiribati in highlighting the existential threat to their nation. These passionate claims to vulnerability support the efforts of CVF and emerging economy countries to induce financial and technical supports from donor countries.

4.4 | Only if: Conditionality of commitments

The CVF NDCs almost uniformly emphasize that their mitigation commitments are conditional on the developed countries taking significant action and international support through financial resources, technology transfers, and capacity building (see Table 1). Kiribati clearly defines its two requisite conditions for achieving its conditional emission reduction target, “All commitments are premised on: (a) a fair and ambitious agreement being reached, reflecting Common but Differentiated Responsibilities and Respective Capabilities and (b) timely access to international climate change financing, capacity building, and technology.”

Four of emerging economies (Mexico, India, Brazil, and Indonesia) include both a conditional and unconditional reduction target (see Table 1). Mexico explains this distinction,

The unconditional set of measures are those that Mexico will implement with its own resources, while the conditional actions are those that Mexico could develop if a new multilateral climate regime is adopted and if additional resources and transfer of technology are available through international cooperation. This is unprecedented, since it is the first time Mexico assumes an unconditional international commitment to carry out certain mitigation actions.

The use of both conditional and unconditional commitments by emerging economies represents their acknowledgement of their role as a significant emitter now and into the future as well as their desire to hold historical emitters responsible for past contributions to climate change. For example, India ties its NDC to the “availability and level of international financing and technology transfer” and expects that “developed countries would recognize that without means of implementation and adequate resources, the global vision is but a vacant dream.”

4.5 | Show us the money: Climate finance

Many NDCs note that mitigation pledges and adaptation needs will require considerable financial resources to realize. Many CVF countries explicitly enumerate their mitigation and adaptation finance needs and some even itemize priority projects with associated price tags (see Table 1). Many CVF countries use NDCs to demonstrate their readiness to receive international financial support either through existing adaptation funds or their experience with large multinational climate funds. Afghanistan explicitly identifies who they view as crucial sources of climate finance, “Afghanistan requires the UNFCCC, the Global Environmental Facility (GEF), the Green Climate Fund (GCF), and other international institutional arrangements to provide the extra finance and other support needed to successfully implement LEDS across all sectors of its economy without compromising socioeconomic development goals.”

Among the top emitters, Mexico, Brazil, and China all emphasize the importance of South–South cooperation. China is the only country among top emitters who explicitly mentions creating a South–South fund to support other developing countries. Significantly, other donor countries such as the United States, the European Union, Japan, and Canada do not mention financial commitments for climate aid in their NDCs.

TABLE 1 The conditional commitments, unconditional commitments, and climate finance mechanisms as stated by the top emitters and Climate Vulnerable Forum countries

Top 10 emitters	Conditional commitments	Unconditional commitments	Climate finance mechanisms
Brazil	37% by 2025 and 43% by 2030 below 2005 level	19% reduction by 2025	Supports South–South cooperation to increase tech transfer particularly to Portuguese speaking countries
Canada		30% by 2030 below 2005 level	
China		Lower CO ₂ per unit GDP by 60–65% by 2030 below 2005 level	Will establish a South–South cooperation fund to provide support to other developing nations. States that developed countries should support adaptation efforts
European Union		40% reduction by 2030 below 1990 level	
Japan		26% by 2030 below 2013 level	Refers to the importance of Japanese tech for low carbon tech
India	20–25% by 2020 and 30–33% by 2030 below 2005 level		Estimates India will need \$2.5 trillion USD for adaptation. Has national adaptation fund and states that a study of international finance needs is required
Indonesia	41% by 2020 below BAU	26% by 2020 and 29% by 2030 below BAU	
Mexico	40% by 2030 below BAU	25% by 2030 below BAU	States that they require international support for development, highlights importance of South–South cooperation
Russian Federation		25–30% by 2030 below 1990 level	
United States		26–28% by 2025 below 2005 level	
Climate Vulnerable Forum			
Afghanistan	13.6% by 2030 below 2005 level		Requests \$17.045 billion USD (\$10.785 billion for adaptation, \$6.62 billion for mitigation) from UNFCCC, Global Environmental Facility, the Green Climate Fund, and other “institutional arrangements”
Bangladesh	15% by 2030 below 2011 level	5% by 2030 below BAU level	Created Bangladesh Climate Change Resilient Fund. Estimates adaptation cost at \$55.167 billion USD with recurrent cost of \$112 million USD. Uses World Bank finance estimates for adaptation and mitigation
Barbados	44% by 2030 below BAU		States that grant and loan mechanisms will be “imperative”
Bhutan			Created Bhutan Trust Fund for Environmental Conservation and will require large levels of international support but does not quantify needs
Costa Rica		25% by 2021 below 2012 level; zero emissions goal by 2085	Identifies pre-2020 as a crucial time for investment. Has used the Green Climate Fund and hopes to co-invest. does not quantify needs
Ethiopia	64% by 2030 below BAU		Green Economy Strategy requires \$150 billion USD before 2030. Has a national fund and hopes to blend climate financing and public funds to attract private funds
Ghana	Additional 30% by 2030 below BAU	15% by 2030 below BAU	Needs \$22.6 billion USD (\$9.81 billion for mitigation and \$12.79 billion for adaptation), \$16.3 billion USD will come from international support. Lists sources of finance

(Continues)

TABLE 1 (Continued)

Top 10 emitters	Conditional commitments	Unconditional commitments	Climate finance mechanisms
Kenya	Lower emissions by 2030 below BAU		\$40 billion USD is needed for mitigation and adaptation by 2030 with international support such as finance, investment, tech development and transfer and capacity building. Has a dedicated Kenya Climate Fund
Kiribati	60% by 2030 below BAU	13.7% by 2025 and 12.8% by 2030 below BAU	Needs aid primarily in the form of grants, \$75 million USD is needed by 2023
Madagascar		14% by 2030 below 2030, 32% with land use	\$42.099 billion USD is needed (\$6 billion for mitigation), Madagascar will pay 4% of NDC costs
Maldives	24% reduction		Will create a Maldives Climate Resilient Fund, does not quantify costs but points to the key role of international investment
Nepal	No quantitative goal		Requires bilateral and multilateral grant support to reach listed goals, no quantified needs
Philippines		70% by 2030 by BAU	Asserts that funding from international sources is critical, does not quantify needs
Rwanda	No quantitative goal		\$24.15 billion USD cost of implementing NDC before 2030
St. Lucia	16% by 2025 and 23% by 2030		\$218 million USD is needed for mitigation before 2030 and requires international support. Will seek adaptation funding through economic and fiscal incentives, regional agencies, bilateral processes, concessional funding from private sector, civil society and the general public
Tanzania		10–120% by 2030 below BAU	\$150 million USD needed to build adaptive capacity, \$500 million USD for adaptation and resilience by 2020, increasing to \$1 billion by 2030, \$60 million is needed for mitigation by 2030. These actions “strongly” depend on international finance and tech support
Tuvalu	Zero carbon development pathway by 2050	40% by 2025 below 2010 level	International support is “crucial for future action” but does not quantify needs
Vanuatu	100% below BAU for electricity subsector and 30% for energy sector as a whole		NDC interventions need \$180 million USD of external funding as well as substantial technology transfer and institutional support and training. Details about accreditation and funding process
Vietnam	25% by 2030 below BAU	8% by 2030 below BAU	Requires international support for and also encourages private sector investment, does not quantify needs

Abbreviations: BAU, business as usual; GDP, gross domestic product; NDC, Nationally Determined Contribution.

4.6 | Adaptation is not optional

While the NDCs are principally envisioned as plans for how nations will reduce national greenhouse gas emissions, nearly all the analyzed NDCs also mention adaptation as the essential partner of mitigation. Across both the top emitters and CVF countries, adaptation is labeled as “essential” and “inevitable.” China places adaptation and mitigation on “equal footing” and includes adaptation plans that target specific actions. Kiribati and many other low-lying Pacific states position adaptation as a means of survival, “For Kiribati, where climate change threatens the very existence of the nation and population, adaptation is not an option—but rather a matter of survival.” In the CVF countries, adaptation eclipses mitigation in the NDC discourses because the potential for significant emissions reductions is minimal and the NDCs provide an opportunity to showcase projects, make plans, and request support.

Despite the prominence of adaptation within NDCs, no country defines adaptation although some countries offer detailed lists of adaptation actions. Many CVF countries that are also least developed countries refer to their National Adaptation Plans for more details. The diverse and imprecise treatment of adaptation is likely because adaptation was a vague option offered by the UNFCCC in their instructions for the NDCs as compared to the more explicit instructions on mitigation.

4.7 | Carbon markets: At what scale and in what form?

Market mechanisms, such as carbon offset markets, was explicitly addressed by a subset of the nations reviewed. Brazil, China, Costa Rica, Ethiopia, Kenya, Rwanda, Nepal, and Santa Lucia mention that an emission trading scheme will be (or should be) part of their mitigation approach. However, only China and Costa Rica extensively outline how and at what scale they envision their carbon market operating. The scale and type of carbon offset market varied among nations. For example, Rwanda stated its intention of selling carbon credits in an international market place while St. Lucia proposes a national cap-and-trade market. Other countries, such as Brazil, mention that they simply want the option of employing market mechanisms to achieve their mitigation goals.

4.8 | Silences in the NDCs

While we focus on the prevalent discourses within the NDCs, we also note some themes in climate governance that are absent. For example, very few NDCs discuss science or use scientific evidence to make their case. This absence is particularly notable because climate science has been central to the UNFCCC negotiation process where climate modeling efforts established the warming degree thresholds and associated emission targets that underpin the NDCs. However, 10 countries in the sample used future climate impact estimates established through scientific studies to target their adaptation efforts and nine countries in the sample identify research institutes, further climate risk assessments, and other science-based efforts as important components to adaptation and mitigation efforts. For example, the Philippines highlighted the importance of “science-based climate/disaster risk reduction” in development plans. Within the top emitters, only China and India explicitly mention supporting climate research institutes as integral parts of their NDCs.

Another enormous gap is the lack of any discussion of embodied emissions or the emissions created through the production, processing, or transport of goods. Even China, where a large share of emissions is in exported goods, does not raise this issue.

Gender is mostly raised in the NDCs as a determinant of social vulnerability or as an overall development goal with only Costa Rica and Mexico mentioning gender in relation to mitigation goals. Gender is not mentioned by China, the European Union, Canada, the United States, Japan or Russia. Only a handful of countries briefly mention indigenous peoples (Brazil, Indonesia, Mexico, Nepal, Philippines) or human rights.

5 | DISCUSSION AND CONCLUSIONS

The NDCs submitted to the UNFCCC are important socio-political documents that offer important insights into the politics, needs, and priorities of each nation. First, they express the magnitude and strategies of promised emission reductions. Second, they reveal some of the underlying values and political positions of countries regarding responses to climate change. The broader literature on the quantitative and sectoral aspects of the NDCs offers critical perspectives by highlighting the inadequacy of the current NDCs in the context of the goal of limiting warming to 2°C, discussing the uncertainties in some of the promised mitigation strategies, and identifying the reliance of many countries on certain policies such as those on forests or renewable energy. Our own analysis of the discourses in the NDCs provides added critical depth by showing the ways in which the issues of climate change mitigation and adaptation are framed, uplifting some narratives and obscuring others. These discourses reflect the major tensions in the debate over climate change and our collective future.

While the 160 NDC submissions were prepared with a common template, and often with the advice of consultants, there remain substantial differences between them. The discourses embedded within the NDCs present the national circumstances of each nation and how nations construct their own vulnerability, readiness for climate finance, good will, and culpability (or lack thereof) for climate change.

We do find stark contrasts in NDC discourses between North–South as well as historical emitters and emerging economies, reflecting deeper debates regarding justice and equity between nations within the UNFCCC negotiations. For example, the CVF countries devote substantial space to the discussion of their vulnerabilities and with scant information on mitigation

unless it is linked to external assistance. Several top emitters do not discuss responsibility or make commitments to provide assistance and climate finance. The discourses embedded in the NDCs outline the contours of an ongoing debate about who will pay for global mitigation and adaptation efforts, the readiness of nations to receive aid, and the relative responsibility of international aid, private sector, and the public sector in supporting NDC actions.

While some actors, such as the European Union, present brief statements, others include long discussions of responsibility or vulnerability. Because of the varying lengths of the NDCs it is difficult to weigh the significance of different ideas or sections of text but in general we observe that while all countries were asked to include explicit mitigation goals, CVF nations prioritized discourse around their vulnerability, adaptation needs and financial readiness. Among the emerging economies in the top emitter's sample, there is a substantial discourse regarding their willingness to contribute to reducing emissions despite minimal historical responsibility. Large historical emitters such as the European Union and the United States submitted relatively brief NDCs that present quantitative goals without much sectoral specificity or discussion on equity or climate finance.

Despite their importance during negotiations, the NDCs include little on robust monitoring or accountability structures, perhaps because of the highly political and contested nature of monitoring and evaluation in the UNFCCC negotiations. Nations agreed on the NDC process because these documents are non-binding and flexible, but in turn, this fosters limited action, measurement and accountability. The flexibility of these socio-political documents is reflective in the vague discursive positioning of many nations' NDCs on issues such as providing climate finance or monitoring mitigation efforts in the land use sector. While some nations are more specific about how they will reach their emission reduction goals, most are not. Nations largely signal that increased renewables and land use change will enable emission reduction goals to be attained, but do not acknowledge the challenges and uncertainty of forest protection. Some NDCs seek to use market mechanisms, including REDD+ and carbon trading to achieve their reductions, whereas others do not discuss trading or markets at all. Few discuss the role of the private sector or address gender and human rights, despite their inclusion in the Paris Agreement. Although many NDCs identify possible policies, they do not address the challenges and timing of implementation.

To conclude, our discourse analysis of the NDCs coupled with the review of existing literature highlights many critical fault lines and silences in the NDC process that are central to understanding the current landscape of global climate change (in)action. The different national perspectives and concerns we find in the review of the NDCs' material commitments and discursive positioning contributed to the deferral of many challenging NDC decision points in the Katowice Rulebook approved at COP24 in 2018. For example, rule setting for the NDCs was deferred without a firm deadline and a decision on Article 6 regarding market mechanisms was postponed to COP25. Despite these deferrals, it was agreed that in the second NDC iteration, countries will need to: (a) include information on the reference/base year/period information for mitigation targets, (b) clarify whether the emissions reduction targets are single or multi-year, (c) include the mitigation co-benefits of proposed adaptation actions, and (d) explain why the NDC is fair and ambitious. Additionally, NDC accounting will be mandatory in the next iteration via a biennial transparency report to avoid double counting. These newly agreed upon provisions will add rigor to the NDC process but do not address many of the problems identified in the literature and in our analysis.

As other scholars have noted, the Paris Agreement with its national commitments to climate action was an important landmark in global efforts to address climate change. We agree that despite some opposition to emission cuts by certain countries, including the planned withdrawal of the United States and Brazil from the Paris Agreement, the NDCs remain an important guidepost in an ongoing process of global cooperation on climate change. However, our analysis illustrates that NDCs should be read as important statements, not only on material action, but on the discursive positioning of countries in global climate policy debates.

6 | APPENDIX 1: DISCOURSE ANALYSIS METHODOLOGY

We conducted a review of the NDCs in order to analyze the discourses employed by the founding nations of the CVF ($n = 19$) as well as the top national greenhouse gas emitters ($n = 10$). To being, we downloaded the sample of 19 NDCs in October 2016 from the UNFCCC NDC database. All NDCs were then uploaded in the NVivo 11 qualitative data analysis software (QSR International) for analysis.

To initiate our discourse analysis, we identified a priori analytical categories based on our initial review of the current literature on NDCs. In particular, we drew on many of the categories identified by the scholars at NDC Explorer (Pauw et al., 2018). We aggregated and condensed analytical categories identified by NDC Explorer to include the following analytical categories: vulnerability, agriculture, water, renewable energy, health, ecosystems, market mechanisms, land use, forestry, monitoring and review, conditional mitigation targets, unconditional mitigation targets, costs of adaptation, adaptation finance,

adaptation actions, mitigation finance, technology transfer, capacity building, section on fairness, responsibility, gender, human rights, and REDD.

After a preliminary analysis of the 29 NDC documents, we then refined the analytical codes based on preliminary results. We added secondary analytical categories such as: use of science, non-state actors, embedded emissions, and carbon neutrality based on our initial findings. We also aggregated particular themes, creating an umbrella category for adaptation, funding mechanisms, and vulnerability. We then recoded the NDC documents to account for these refined analytical categories. Following this secondary analysis, we dropped the sectoral analytical categories that did not yield relevant discursive findings such as water and health. These categories were dropped because they were highly varied and dispersedly covered within the NDCs. We then recoded the NDCs a third and final time, focusing on analytical codes that were largely absent in the NDCs to ensure that these codes were not missed in earlier analyses. These analytical categories include gender, use of science, human rights, and embodied emissions.

All coding was done in NVivo 11 qualitative data analysis software. The .pdfs of the case study NDCs were coded by both authors. Passages relating to an analytical category were highlighted and saved in a common folder with all passages related to that analytical category from all the analyzed NDCs. We then analyzed each analytical category by country, identifying converging and diverging discourses within an analytical category. This information was compiled in a Microsoft Excel database and this database was used to identify the most prominent discourses.

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CONFLICT OF INTEREST

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FURTHER READING

Pauw, W. P., Klein, R. J. T., Mbeva, K., Dzebo, A., Cassanmagnago, D., & Rudloff, A. (2018). Beyond headline mitigation numbers: We need more transparent and comparable NDCs to achieve the Paris Agreement on climate change. *Climatic Change*, 147(1–2), 23–29. <https://doi.org/10.1007/s10584-017-2122-x>

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