Restricting fossil fuel supply

Examining and amplifying the role of the Least Developed Countries' Group in the United Nations Climate Negotiations

by

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Author's Declaration

"This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Statement of Contributions

This dissertation consists of five chapters. I am the sole author of Chapter 1 (Introduction) and Chapter 5 (Conclusion). Chapters 2, 3, and 4 are three manuscripts. Chapter-2 (Manuscript-I) is co-authored with my advisor, Dr. Angela Carter, who offered intellectual support, feedback, and editorial changes. I am also the sole author of the Chapter 3 (Manuscript-II) and Chapter 4 (Manuscript-III). Apart from the Chapter-2, my supervisor also offered intellectual feedback and editorial changes for other chapters.

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Abstract

The demand for restricting fossil fuel supply—exploration, extraction, and transportation—has intensified recently and become the cornerstone of the global climate debate. Notwithstanding numerous impressive contributions of fossil fuels to socioeconomic developments, this demand has escalated. This is mainly due to the principal role of fossil fuel-based greenhouse gas emissions in pushing the Earth's climate system outside of the safe boundary and stable state, thereby creating and worsening the cataclysmic consequences of climate upheaval worldwide. In the broader landscape of growing demand for constraining global supply of fossil fuels, the United Nations (UN) climate summit—Conference of the Parties (COP)—has become an important site to confront fossil fuel-producing countries and restrict their fuel supply. In COP climate negotiations, the Group of 46 Least Developed Countries (LDCG), a negotiating bloc of the United Nations Framework Convention on Climate Change (UNFCCC), finds itself in a unique position to challenge fossil fuel incumbents, thereby developing international policies to limit fossil fuel supply, which is widely known as *supply-side climate policies* (SSCPs). To analyze this position, this dissertation seeks to explore—and amplify—the role and capacity of the LDCG in UN climate negotiations to advance SSCPs. To do so, this dissertation sets and resolves three distinct interconnected questions, which have been addressed in the three manuscripts.

Manuscript-I asks and addresses what the paradox occupied by the LDCG looks like and to what extent this paradoxical position can be justified by the global distributive justice lens. Drawing on existing scholarship, this study examines the LDCG's paradoxical political position and argues that LDCs call for G20 states in COP negotiations to phase out fossil fuels while expanding their own fossil fuel supply-related projects with support from the same G20 nations. By calling for G20 states to phase out their fossil fuels, the LDCG has been playing a vitally important role in developing international SSCPs through UN climate negotiations. However, the continued expansion of fossil fuel supply projects in LDCs has resulted in diverse inherent concerns, while this extension is supported by the global distributive justice lens due to their fragile socioeconomic conditions, developmental needs, less access to energy, and negligible contribution (0.4%) to global CO_2 emissions. These concerns are related to resource curse risks

(e.g., corruption, violence, and conflicts around controlling fossil fuels), emissions growth, uncertainty around staying below 1.5°C of warming, and obstacles to achieving sustainable development goals and the net zero target. Therefore, the analysis suggests that G20 states' investments for fossil fuel expansion in LDCs should be redirected toward developing the low-carbon energy system. Likewise, the analysis focuses on reinforcing LDCs' efforts to press G20 states to begin phasing out fossil fuels globally.

Manuscript-II provides answers to the questions of how the coalition of LDCs is strategizing to confront fossil fuel incumbents (producers and consumers who have benefitted from fossil fuels and prevent decisions in negotiations related to the transition from fossil fuels) and their norms and practices, and to what extent the coalition has the capacity to do so. Drawing on oral interviews and the strategic power approach, this study argues that while negotiators use "soft" strategies in climate negotiations to call upon incumbents to cut fossil fuel consumption, observers undertake "hard" strategies at side events to pressurize incumbents to phase out production. The results demonstrate that the coalition is ill-equipped to challenge fossil fuel incumbents for the transition from fossil fuels. This fragility mainly lies in the coalition's strategic capacity, which is deeply obstructed by weak strategies of negotiators, diverse interests and fragmentation in the coalition and the G77+China (a negotiating group of developing countries), interstate relations between LDCs and incumbents influenced by colonial legacy and political-economic factors. The findings finally suggest that as the coalition's capacity to challenge incumbents is very fragile, it needs to be upheld to facilitate the development of SSCPs through COP negotiations.

Manuscript-III resolves the questions of how the LDCG can advance SSCPs in climate negotiations and how the Group can reshape international mitigation policymaking through the UNFCCC. By addressing these questions, this study spotlights the compelling need to pinpoint strategic pathways to improve the LDCG's capacity to play stronger roles in negotiations, which are very vital to accelerate the advancement of restrictive policies on the supply of fossil fuels. Drawing on interviews with negotiators and observers, this study offers politico-economic, institutional, and nonmaterial (e.g., knowledge and argumentative power) strategic pathways

that would improve LDCs' negotiation capacity to argue with producing states to curtail extraction, enable the LDCG to play more robust roles in negotiations and help address barriers that LDCs face while developing policies to constrain fossil fuel supply. The analysis suggests that the application of these strategies is crucially important for the LDCG to reshape the development of climate mitigation policies via the UNFCCC. This is because these strategies would help the LDCG facilitate the advancement of a consensus on transitioning from fossil fuels, the equitable development of supply-side policies in negotiations as compared to demand-side policies, and the diminution of the influence of fossil fuel corporations on climate negotiations.

In short, the findings presented in the above three manuscripts—and/or this dissertation—stand to make novel contributions to the scholarly fields of supply-side climate politics, SSCPs, and politics in UN climate negotiations. In addition, the results also enrich the theoretical literature by expanding the realm of distributive justice, enhancing the usefulness of strategic power, and materializing the logic of supply-side climate policies.

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List of Acronyms

AFFN	Anti-Fossil Fuel Norms
AGNCC	African Group of Negotiators on Climate Change
AILAC	Independent Association of Latin America and the Caribbean
AOSIS	Alliance of Small Island States
BASIC	Brazil, South Africa, India, and China
CAN	Climate Action Network
COP	Conference of Parties
CSOs	Civil Society Organizations
CVF	Climate Vulnerable Forum
DCME	Developed Countries and Major Emitters
ENGOs	Environmental Nongovernmental Organizations
EU	European Union
FFNPT	Fossil Fuel Non-Proliferation Treaty
G20	Group of Twenty
GCP	Glasgow Climate Pact
GDJ	Global Distributive Justice
GHG	Greenhouse Gases
HDI	Human Development Index
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
JSAPM	Jubilee South Asia Pacific Movement
KIIG	Keep it in the Ground
LDCs	Least Developed Countries
LDCG	Least Developed Countries Group
LMDC	Like-Minded Developing Countries
MoEFCC	Ministry of Environment, Forest, and Climate Change
NDCs	Nationally Determined Contributions
NGOs	Nongovernmental Organizations
ODA	Official Development Assistance
SDGs	Sustainable Development Goals
SSCP	Supply-Side Climate Policy
UAE	United Arab Emirates
UNFCCC	United Nations Framework Convention on Climate Change

Chapter One: Introduction

Fossil fuels—can't live without them, the lifeblood of modern industrial civilization. Fossil fuels—can't live with them, the fire in the oven destined to bake civilization beyond recognition.

Princen et al. (2015). *Ending the Fossil Fuel Era*

This introductory chapter lays the foundation of this study by explaining the research problem. To do so, I provide an overarching overview of why fossil fuels are deemed the principal driver of intensifying the climate crisis, despite their impressive contributions to socioeconomic developments. Here, I argue that the production and combustion of fossil fuels have been responsible for not only the rise in greenhouse gas emissions causing the climate crisis and cataclysmic effects on humanity but also the creation of detrimental impacts on the environment and society. Notwithstanding these negative outcomes, investments and subsidies for fossil fuels continue to increase, production of fossil fuels still grows, and revenues from this extractive sector still escalate. Given these circumstances, responses have unfolded in nongovernmental and intergovernmental spheres to restrict the supply (exploration, drilling, extraction, and transportation) of fossil fuels. I assert that responses in the intergovernmental realm are more vital than nongovernmental ones. This is because the intergovernmental platform, UN climate summits or Conference of the Parties (COP), has potential—and is crucially important —for developing international policies to restrict fossil fuel supply. However, negotiations on constraining fossil fuel supply under this platform have become very difficult owing to numerous challenges that negotiating parties have been undergoing.

This dissertation seeks to explore and address these challenges that the Group of 46 Least Developed Countries (LDCG), a negotiating bloc to the UNFCCC, faces in climate negotiations. To do so, this chapter sets three key questions, which are examined in the three manuscripts, meeting gaps in scholarship. Finally, this chapter provides a synopsis of these manuscripts and conclusion as well. Manuscript-I addresses the first question related to the nature of the paradoxical position—LDCs call for G20 states to phase out fossil fuels while expanding their fossil fuel projects—held by the LDCG and whether this paradox can be justified by the global distributive justice lens. Manuscript-II responds to the second question associated with strategies undertaken by the coalition of LDCs to confront fossil fuel incumbents in COP negotiations to accelerate the transition from fossil fuels and the capacity to do so. Using the theoretical perspective of strategic power, I argue that the coalition's strategic capacity to challenge incumbents is very fragile and needs to be reinforced. Given this weak capacity, Manuscript-III resolves the third question and pinpoints strategic pathways to improve the LDCG's capacity to play stronger roles in climate negotiations, facilitating the development of international policies to constrain fossil fuel supply. In conclusion, I argue that though this dissertation has several limitations (e.g., a better understanding of other negotiating groups except the LDC Group), it contributes to theoretical literature (i.e., distributive justice, strategic power, and supply-side climate policy) and distinct scholarly fields (i.e., supply-side climate politics and policies and UN climate negotiations).

1.1. The Research Problem

1.1.1. Why fossil fuel is at the crux of global climate debate

Fossil fuels—coal, natural gas, and oil—have been very important ingredients in supporting human life on the earth owing to their undeniable roles in fulfilling basic human needs[1], accelerating economic growth[2], improving social conditions, and replacing the earlier forms of energy production sources that were predominantly "biological"[3]. Prior to the industrial revolution, such biological sources, particularly human muscle power and animals, contributed 85% of total energy production (Cipolla, 1978, cited in Huber, 2009). However, fossil fuels have replaced those biological sources and are now central to global energy production, accounting for 80% of the world's primary energy supply for many decades (IEA, 2022). The overall share of fossil fuels in supplying primary energy worldwide has increased exponentially since the first quarter of the 20th century (**Figure 1**).

In addition to meeting primary energy needs, fossil fuels have contributed to increases in the global gross domestic product since the Industrial Revolution in the 18th century (IEA, 2022). Revenue stemming from fossil fuel extraction, manufacturing, and transportation for trade has enabled extractive industries, financial institutions, and asset managers to accumulate "fossil capital" that has been at the core of global capital accumulation since the early 19th century (Malm, 2016; Carroll, 2020). Therefore, studies assert that fossil fuels are the principal driving force in the emergence and development of modern capitalism (Newell and Paterson, 2010;

[1] Fossil fuels as the primary sources of energy in modern society play vital roles in meeting human needs such as heating, cooking, lighting, transportation, and cultural entertainment (Zou et al., 2016).

[2] Drawing on 83 oil-producing states from 1990-2015, Mohammed et al. (2020) find that investment of oil revenues by government positively affected economic growth, thereby contributing to the development of economy. Furthermore, the efficient use of fossil fuels also raises overall sustainable development index (Fu et al., 2023).

[3] Huber (2009) asserts that human history reflects two fundamental periods of using different forms of energy sources: agrarian and industrial. During the agrarian period, energy was derived from human muscle power, animals, water, and wind. However, the burning of coal to generate energy since the Industrial Revolution dramatically ended "the somatic [biological] energy regime" dominated by human and animal-based power and heralded the "exosomatic energy regime" that stands on fossil fuels (McNeill, 2001). It also crucially replaced the biological source-dependent energy system with fossil fuels (Huber, 2009). Importantly, it set the stage for an epochal shift from agrarian to industrialized society.

Carter and Zalik, 2016; Paterson and P-Laberge, 2018), which Mumford (1934) characterizes as "carboniferous".

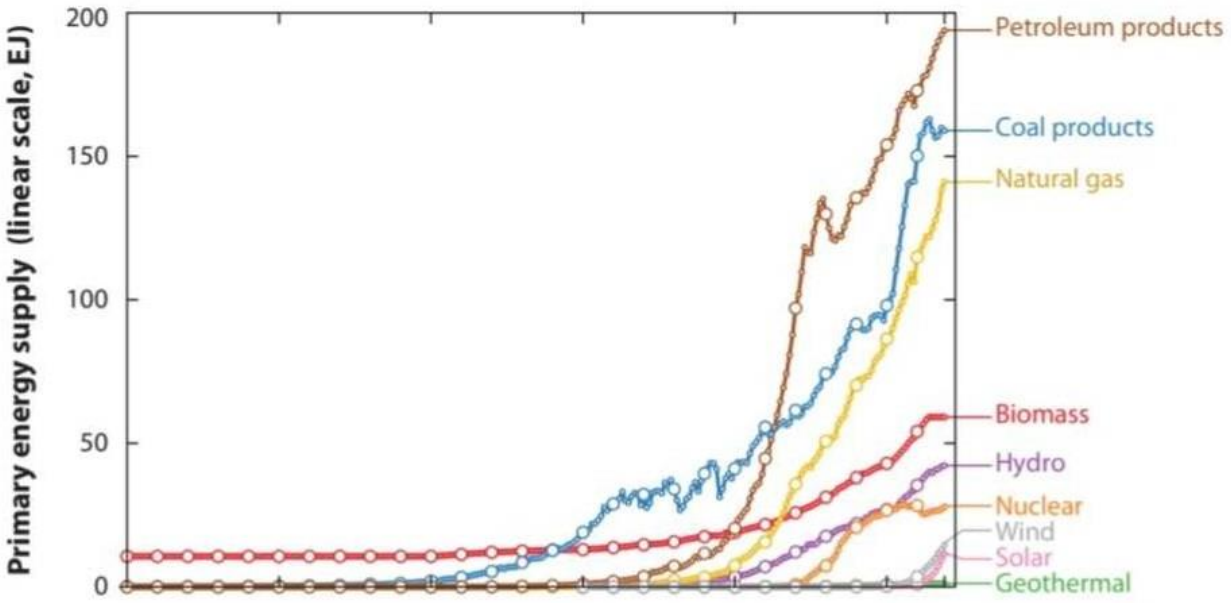


Figure 1: The share of oil (petroleum products), coal, and natural gas in the global primary energy supply in comparison to low-carbon energy production sources (e.g., solar or wind) from 1750 to 2019. (Adapted from Stoddard et al., 2021)

Notwithstanding various impressive contributions identified above, the fossil fuel sector has been undergoing serious criticisms that overshadow its benefits to broader society. Such criticisms arise mainly from increasing detrimental effects on the environment, society, and climate that are related to fossil fuel exploration, extraction, and combustion. The combustion of fossil fuels has been intensifying the concentration of black carbon in the Southern Ocean that negatively affects the Antarctic climate system, ocean circulations, and the balance of atmospheric radiation (Srivastava et al., 2021). The burning of fossil fuels emits harmful pollutants, notably airborne fine particulate matter, into the atmosphere which severely worsen air quality and cause 10.2 million premature deaths per year globally (Vohra et al., 2021). Such pollutants undermine a country's efforts for sustainable growth and impair the earth's capacity to support healthy life (Wang et al., 2023).

Additionally, the exploration for and extraction of fossil fuels contaminate local water and soil, which in turn cause the disruption of wildlife and ecosystem services and acute health problems (i.e., cancer and liver damage) (Johnston et al., 2019; Klasic et al., 2022). Furthermore, production activities negatively impact local communities. These impacts include destroying livelihood options such as fisheries and agriculture, increasing food and accommodation costs that result from workforce migration, discriminating in recruitment and employment based on gender and ethnicity, and disrupting community integration (Graham and Ovadia, 2019; Klasic et al., 2022). Moreover, large inflows of revenues from fossil fuel extraction and trade make producing countries vulnerable to a range of "resource curse" risks that include social, economic, and political consequences (Colgan, 2014; Frynas and Buur, 2020). The social risks include conflicts over resource control and civil wars. Economic risks involve pervasive corruption, unstable economic growth, and diminishing exports of non-extractive items, and political risks include eroding institutional quality. Many fossil fuel-rich states (e.g., Angola, Brazil, Mozambique, Saudi Arabia, Russia, United States, Qatar, and Kuwait) are already experiencing these risks (Biresselioglu et al., 2019).

In addition to the negative socioenvironmental and politico-economic impacts identified above, fossil fuels are deemed primarily responsible for surpassing scientists' proposed threshold level of 350 parts per million/ppm of carbon dioxide (CO_2), a greenhouse gas (GHG) concentration in the atmosphere (Rockström et al., 2009). This level is presumed by scientists as a safe limit for the functional stability of the Earth system's most important "planetary boundary", known as climate change. However, the rapid increase in CO_2 emissions from burning fossil fuels has pushed the Earth's climate system outside of the safe boundary and stable state. This is because the CO_2 concentration level has already reached 420 ppm (Ripple et al., 2023). The Emissions Gap Report 2020 estimated that the fossil fuel sector alone was responsible for 38.0 Gt CO_2e emissions out of 52.4 Gt CO_2e in 2019 (UNEP, 2020). The latest Intergovernmental Panel on Climate Change (IPCC) report shows that fossil fuels have accounted for about 64% of the total anthropogenic CO_2 emissions since 1750 and 86% over the last decade (IPCC, 2021). In addition to CO_2, other GHGs that emit from burning fossil fuels include nitrogen oxides and methane. The rapid rise of these GHGs from fossil fuels has increased global surface temperature from

0.8°C to 1.3°C between 1850 and 2019 (IPCC, 2021). In early July of 2023, humanity witnessed the highest global daily mean temperature on Earth, probably the warmest temperature measured over the past 10 millennium (Ripple et al., 2023). Such temperature rise has changed the Earth's climate causing an existential crisis for humanity.

Studies show how the climate change-induced disastrous consequences include natural catastrophes and slow-onset extreme events worldwide such as flooding, heatwaves, cyclones, storms, wildfires, hurricanes, water scarcity, droughts, desertification, and glacier melts (González et al., 2020; Liu et al., 2021; Huang et al., 2021; Zhu and Fan, 2021; Masson-Delmotte et al., 2022). Such catastrophic events have resulted in deaths, illness, food insecurity, water scarcity, and the loss of livelihoods, agricultural productivity, infrastructures, land, and ecosystems (Saha, 2015; Saha, 2017; Ray-Bennett, 2018; Cauchi et al., 2019; Vicedo-Cabrera et al., 2021; Walz et al., 2021; Filho et al., 2022; Yaseen et al., 2023). For instance, between 1900 and 2022, drought events alone were responsible for more than 10 million deaths of human lives and several hundred billion USD in economic losses across the world (UNCCD, 2022). Likewise, the 6,132 wildfires in 2023 burned 16.5 million hectares of land in Canada, which will negatively impact biodiversity, forest carbon balance, local businesses, indigenous peoples, and forest sector-based economies (Government of Canada, 2023). In addition to droughts and wildfires, cyclonic storms are also intensifying the crisis. For example, in early September of 2023, the ferocious Storm Daniel hit Libya and created massive inundation, heavy rainfalls, and structural collapses resulting in 6,000 human deaths, 10,000 people missing, widespread damages, and huge economic loss (Aljazeera, 2023).

In addition to causing cataclysmic events and irreparable outcomes identified above, GHGs emissions from fossil fuels are now deemed by the scientific community as the greatest barrier to keeping global temperature increase below 1.5°C. It is now a real challenge in meeting the Paris Agreement on addressing the climate crisis. To limit the rise of global temperature to 1.5°C throughout the twenty-first century, such emissions need to be reduced by 45% by 2030 (UNEP, 2022). Furthermore, studies argue that staying below 1.5°C of warming requires reducing 95% of coal, 62% of oil, and 42% of gas supply by 2050 (Achakulwisut et al., 2023), ceasing new fossil fuel exploration and extraction projects, and decommissioning a substantial portion of existing

fossil fuel infrastructures (Trout et al., 2022). Any further initiatives of exploring and extracting fossil fuels would overwhelmingly exceed the global carbon budget limit of 1,240 GtCO2 in 2050 (McGlade and Ekins, 2015).

Notwithstanding the above signals, governments and fossil fuel corporations have been planning on producing more than double the fossil fuels produced in 2020 by 2030, which is inconsistent with the 1.5°C target (SEI et al., 2021). In 2021, countries extracted 15 billion tons of fossil fuels, and revenues from oil and gas exports alone stood at USD 2 trillion (IRENA, 2023). Compared to 2021, global oil and coal production increased by 3.8 million barrels per day and more than 7% in 2022, respectively (Energy Institute, 2023). Although global gas production remained relatively stable in 2022 (Energy Institute, 2023), new approvals for gas production have increased in 2023 aiming at fulfilling the shortage in gas supply by Russia (IEA, 2023). Globally, there has been a 25% increase in approving new gas and oil development projects compared to 2022 (IEA, 2023).

Furthermore, subsidies to fossil fuel production and consumption have increased from US$697 billion in 2021 (Harring et al., 2023) to US$1097 billion in 2022 (Ripple et al., 2023). Ripple et al. (2023) estimate that subsidies have increased by 107% between 2021 and 2022 due to the rising prices of energy. Such subsidies have profound negative impacts on global emissions. Based on panel data of 139 countries from 1998-2015, Arzaghi and Squalli (2023) argue that high fossil fuel subsidy policies are responsible for around 11.4% more GHG emissions than high-tax policies. In addition to subsidies, investments for fossil fuel extraction and revenue of extractive industries stood at USD669 billion and USD4 trillion in 2022, respectively (Rainforest Action Network et al., 2023). IEA (2023) has estimated that investment in unabated fossil fuel production and supply is expected to increase over 6% in 2023 and is assumed to reach USD 950 billion of which upstream oil and gas are likely to receive the largest share. Although the costs of low-carbon energy production technologies such as solar photovoltaic and wind have been declining rapidly (Timilsina, 2021; Rosenow and Eyre, 2022), giant financial institutions continue investing in fossil fuels. For instance, the World Bank has directly financed USD12 billion in fossil fuel development projects in more than 35 countries since the Paris Agreement's adoption in 2015 (Ciplet, et al., 2022).

In addition to investments and subsidies, the world's leading oil-producing countries have been designing climate policy instruments in a way that is supportive of their oil sectors (Carter, 2020). Even policymakers of these countries are now advocating the production of more fossil fuels (Tindall et al., 2020). Such support from policy communities, including favorable policies of governments, has increased the power of fossil fuel corporations and their lobbyists, which enables them to wield influence on national and international climate mitigation policies and the United Nations climate negotiations (Ciplet et al., 2015). In contesting this entrenched influence, two kinds of responses have emerged.

1.1.2. Two strands of responses in constraining fossil fuel supply

In the context of an environment conducive to fossil fuel production that causes emissions leading to temperature rise, and thereby exacerbating pernicious consequences of the climate crisis identified above, there have been two efforts to restrict the global supply of fossil fuels. The first is unfolding in the nongovernmental realm and it is now influencing governments to adopt and implement policies to restrict fossil fuel supply, widely known as "supply-side" climate policies[4] [SSCPs] (Green and Denniss, 2018). The second has emerged more recently in the intergovernmental realm, which continues to evolve and has huge potential for making global policies to restrict fossil fuel supply.

First, the demand for ending fossil fuel production started in the mid-1990s by environmental activists, community-based groups, and environmental organizations who protested fossil fuel development in Ecuador and Nigeria (Carter and McKenzie, 2020). Their protests were primarily premised on the idea that the exploration and extraction of fossil fuels were mainly responsible for the environmental and social harms identified in the preceding section. Over time, these environmental activists, community groups, and environmental organizations have coalesced around the new specialized transnational movement—keep it [fossil fuels] in the ground (KIIG) or leave it [fossil fuels] in the ground—seeking to restrain fossil fuel production and supply (Benedikter et al., 2016; Carter and McKenzie, 2020). With the rise of criticisms regarding the role of fossil fuels in worsening the climate crisis, the KIIG has gained momentum. This

[4] SSCPs are defined as "defined as measures and processes constraining the production, transportation or transformation of [fossil fuels], either voluntarily or coercively, so that supply is reduced for consumers." (Le Billon and Kristoffersen 2020, p.1074).

momentum is mainly due to the active engagement of climate activists, civil society, and environmental organizations in anti-fracking movements, campaigns for rapid divestment, community mobilization, resistance and litigation against producers, blocking pipelines and production sites, calling for moratoria and bans on production, and demanding subsidy removal (Carter and Fusco, 2017; Brown and Spiegel, 2017; Piggot, 2018; Brock and Dunlap, 2018; Blondeel et al., 2019; Trencher et al., 2019; Mangat et al., 2018; Strambo et al., 2020; Le Billon and Kristoffersen, 2020). A major breakthrough of the KIIG movement was the 2017 *Lofoten Declaration for a Managed Decline of Fossil Fuel Production Around the World*, which maintained that new exploration and extraction of fossil fuels is inconsistent with the Paris Agreement's climate goals (Lenferna, 2018). Therefore, the declaration underlined the need for a faster phase-out of a substantial portion of current projects than would otherwise occur under their normal retirement age.

The KIIG movement has been increasing in the last two decades. For example, Temper et al. (2020) identified 371 resistance movements against fossil fuel development projects from 1997 to 2019. The price of these movements includes violence, death, forced displacement, repression, and the demolition of farmland and sacred places (Roberts, 2021). Notwithstanding these adverse repercussions, the KIIG movement continues to grow, which has profoundly influenced governments to adopt and implement SSCPs. Following the first moratorium on oil exploration implemented by Costa Rica in 2002, many national governments such as Belize, Canada, Denmark, France, Germany, Ireland, New Zealand, Norway, Scotland, Spain, Sweden, and the United States have implemented moratoriums on or passed legislation for banning oil and gas exploration and extraction (Erickson et al., 2018; Green 2018a; Newell and Simms, 2020; Carter and McKenzie, 2020). More recently, Germany and Spain have implemented bans on coal mining (Carter and McKenzie, 2020). These "first-movers" states have introduced a "normative shift" that the rest of the world's major fossil fuel producers can follow (Carter and McKenzie, 2020). However, there is an increasing rate of adoption and implementation of SSCPs as Gaulin and Le Billon (2020) identify that, despite highly uneven adoption worldwide, 1302 supply-side initiatives have been implemented to date. In short, responses by climate activists, civil society, community-based groups, and environmental organizations have accelerated the growing adoption and implementation of SSCPs.

Second, the wave of the first response explained above has also permeated the intergovernmental climate negotiations, the Conference of the Parties (COP) meetings held annually under the United Nations Framework Convention on Climate Change (UNFCCC). The response in the middle of the 1990s arguably created pressure on climate policymakers to incorporate the fossil fuel issue in the earlier COP climate negotiations. At COP3 in 1997, the Kyoto Protocol (KP) marked oil and natural gas as the dominant sources of GHG emissions and set legally binding principles for the developed countries (Annex I Parties to the Convention) to abate emissions from burning oil and gas (UNFCCC, 1997). In contrast, developing states were exempted from such requirements given their necessity of using fossil fuels for socioeconomic development. At the COP7 in 2001, the Marrakesh Accords also reiterated the KP's focus on reducing emissions from the usage of fossil fuels. However, the Marrakesh Accords also favored developing states by recognizing their challenges in reducing dependency on fossil fuels (UNFCCC, 2002). Such favor mainly occurred due to the UNFCCC's principles [Article 4 (10)], which also recognized the difficulties of developing countries in transitioning away from fossil fuels (UN, 1992).

Due to this differential burden between developed and developing countries in cutting fossil-based emissions identified above, a deep stalemate emerged in the post-Marrakesh climate negotiations on shifting away from fossil fuels. The result of this deadlock was the absence of mentioning fossil fuels absolutely in the post-Marrakesh climate regimes, notably the Copenhagen Accord, the Paris Agreement, and the guidelines on Nationally Determined Contributions (NDCs) (Piggot et al. 2018; Rayner 2021). Although the KP and Marrakesh Accords emphasized curbing emissions from the usage or consumption of fossil fuels, these climate regimes were entirely silent about the need to limit fossil fuel supply. After a silence of more than a decade, a focus on fossil fuels gained traction in the recent rounds of COPs owing to the repeated signals by scientists that humanity is exceeding the 1.5°C temperature target and fossil fuels are primarily responsible for this temperature rise via emissions growth (Masson-Delmotte et al., 2022; McKay et al. 2022). During the recent COPs, negotiating parties demanded a restriction on supplying fossil fuels. In their closing statement of COP23 in 2017, the Group of

47 Least Developed Countries[5] (LDCs) called for "managing a phase-out of fossil fuels" (IISD, 2018). In the 2018 COP24, the LDC Group urged the Group of Twenty (G20)[6] countries to reduce emissions (LDC Climate Change, 2018a), and therefore, the heads of LDCs delegations argued that "managing the rapid decline of fossil fuels" production is very urgent (LDC Climate Change, 2018b). Likewise, before the COP26, seven small island LDCs (Comoros, Haiti, Kiribati, Timor Leste, Solomon Islands, Tuvalu, and Sao Tome and Principe) called upon G20's fossil fuel producing countries to phase out all subsidies for fossil fuels (Saha and Carter, 2022).

Alongside LDCs, other negotiating parties are also arguing for the reduction in fossil fuel supply. For example, all parties in the COP26 agreed "to accelerate the phasing-out of coal and subsidies for fossil fuels", which was enshrined in the first draft of the Glasgow Climate Pact (GCP) (UNFCCC, 2021, p.4). However, the GCP's final version recommended "the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies" (UNFCCC, 2022, p.5). The demand for phasing down fossil fuels intensified in the next COP. In COP27, India called for a commitment to the phasedown of oil and gas, alongside coal, which was embodied in the GCP (Jessop, 2022). Many states supported the call by India for phasing down all fossil fuels such as Denmark, France, Ireland, Norway, the United Kingdom (UK), and the United States. In addition to supporting the phasedown call, the European Union (EU) argued for a fossil fuel phaseout (Ainger, 2022). Colombia also declared it was stopping oil and gas development (Eco, 2022). Tuvalu joined Vanuatu and invited other countries to endorse the Fossil Fuel Non-Proliferation Treaty (FFNPT). Alongside states, many nonstate actors are also at the forefront of demanding the acceleration of phasing out fossil fuels. For instance, the Climate Action Network (CAN)

[5] Established in 1971 by the United Nations (UN) General Assembly, Least Developed Countries (LDCs) are designated as "low-income" states as their per capita gross national income is USD 1025 or below and are "suffering from structural impediments to sustainable development" (UN, 2018, p.3). As of October 2022, the LDC Group is composed of the 46 poorest and weakest countries in the world (UNCTAD, 2022) of which most of them (e.g., Bangladesh, Nepal, and Myanmar or Burma) were under colonial rule and ruled by imperial powers (Peers, 2002; 2007). Their share of the global gross domestic product (GDP) and world trade is less than 2 per cent and around 1 per cent, respectively (UN-OHRLLS, 2021). In the Group, there are 33 African states, 9 Asian states, 3 Pacific countries, and 1 Caribbean state. Within the intergovernmental climate negotiations, the LDC Group is a negotiating bloc, recognized by the UNFCCC, joining the COP summit each year.

[6] Created in 1999 in the Group of Seven meetings, the G20 is a forum of central bank governors and finance ministers of 19 countries and the European Union that works "to broaden the dialogue on key economic and financial policy issues among systemically significant economies and to promote cooperation to achieve stable and sustainable world growth that benefits all" (Kirton, 1999). The G20 states account for 90 per cent of world GDP and 80 per cent of global trade (Cooper and Thakur, 2013).

imparted the "Fossil of the Day Award" to major producers (i.e., Norway, Brazil, Australia, Russia, the US, and Saudi Arabia) in the COP27. In short, the recent rounds of COPs have demonstrated the potential for advancing SSCPs, signaling a remarkable growth and reinforcement of "anti-fossil fuel norms" in intergovernmental climate negotiations (van Asselt and Green, 2022). Such impressive growth embodies the "procedural commitments" and "disarmament" of the FFNPT (Newell et al., 2022), an overarching framework for a "supply-side climate treaty" (Asheim et al., 2019).

1.1.3. The challenges and opportunities in the second strand

Although the preceding section delineates two strands of restricting the supply of fossil fuels, this dissertation underscores only the second strand. This is because the UNFCCC's intergovernmental climate negotiation is the principal and common platform for state and non-state actors to discuss, develop, and enforce international norms aiming at limiting global fossil fuel supply by fossil fuel-producing countries, negotiating parties of the UNFCCC. While this intergovernmental platform has potential—and is crucially important as well—for advancing international SSCPs, negotiations on constraining fossil fuel supply under this platform have become difficult owing to various challenges that negotiating parties have been undergoing. This dissertation seeks to explore and address these challenges. To do so, the focus of this dissertation is exclusively limited to the Group of LDCs (LDCG), a bloc of 46 negotiating parties to the UNFCCC.

Since the COP23 summit, although the LDCG has been showing its potential in developing restrictive policies on the supply of fossil fuels, the group finds itself in a very challenging position to advance such policies. Two causes are responsible for this challenging position. ***First***, while the LDCG at COP summits has been calling for G20's fossil fuel producers to phase out their fuel production and subsidies identified above, many LDCs, e.g., Bangladesh, Cambodia, Ethiopia, and Myanmar, are simultaneously expanding their fossil fuel development projects with financial support from these very G20 producers, notably China and India (Shepard, 2018; Endeshaw, 2018; Market Forces et al., 2019; Strangio, 2021). While this political position occupied by LDCs appears to be a paradox, studies argue that the expansion of fossil fuel extraction projects by

LDCs is justifiable in accordance with global distributive justice (Lenferna, 2018). This justification is mainly due to LDCs' poor human development index, little exploitation of fossil fuels in the past, and financial barriers to alternative development pathways. Against this justification, studies assert that fossil fuel extraction in LDCs has resulted in resource curse risks such as corruption and decaying institutional quality (Biresselioglu et al., 2019), deaths (Weldegiorgis et al., 2017), violent conflicts, forced displacement, livelihood destruction (Roberts, 2021), and harmful impacts on human health, environment, and ecosystems (Siddique et al., 2020; Marove et al., 2020; Itoua et al., 2021). Moreover, the extension of fossil fuel production will obstruct the LDCG from achieving its highly ambitious target to generate 100% energy from renewable sources by 2050 (LDC Climate Change, n.d). Importantly, reaching a net-zero world by 2050 requires avoiding new investment in fossil fuel expansion projects (Bouckaert et al., 2021).

In the context of two divergent arguments on expanding fossil fuel production projects by LDCs identified above, there is a compelling need to examine the paradoxical political position held by LDCs. Despite this need, scholarly research has not analyzed the LDCs' paradoxical position and its greater implications for socioeconomic developments and global efforts to reduce emissions by transitioning away from fossil fuels. To address this gap, the *first manuscript* of this dissertation examines this paradox and its implications. The in-depth examination of this paradoxical stance is very important since LDCs' fossil fuel expansion has considerable impacts on their negotiation strategies at COP climate summits where the LDCG is calling for abandoning fossil fuel extraction by G20's producers[7].

[7] The first manuscript is partly based on the doctoral proposal and was written before conducting interviews. It is built on reviewing scholarly and grey literature. The paradox (sections 3 and 4 in the manuscript) is drawn from the grey literature suggesting that the LDC Group calls for the G20 states to phase out fossil fuels and subsidies. However, when I conducted interviews with LDCs' negotiators, they explained that the LDC Group does not focus on the G20 states in COP negotiations because there is no existence of G20 as a negotiating bloc of the UNFCCC. In negotiations, the LDC Group calls upon developed countries and major emitters (DCMEs) to reduce fossil fuel consumption, as confirmed by the LDCG's mitigation coordinator and most negotiators (e.g., N#4, N#6). However, several negotiators are arguing for phasing out fossil fuel production (e.g., N#10, N#7). In this changing context, although the first manuscript focuses on the G20 states and production phaseout, the second manuscript considers DCME and underlines production and consumption of fossil fuels. The third manuscript emphasizes the production aspect alone that is the central of SSCPs.

Second, although the LDCG is calling for powerful fossil fuel-producing G20 states to phase out production, a kind of uncertainty remains around the LDCG's capacity to challenge fossil fuel incumbents[8] and the effectiveness of strategies undertaken by the LDCG to pressurize incumbents to forego their production. Such uncertainty arises from three broad reasons. *First*, many LDCs are pursuing initiatives to expand fossil fuel projects that can potentially generate division and conflicts of interest between LDCG's members regarding the phaseout of fossil fuels, thereby undermining the LDCG's capacity to challenge incumbents. *Second*, given the fragile socioeconomic conditions, LDCs are entangled in complex political and economic relations with fossil fuel incumbents. For instance, Angola, an oil-producing LDC, has a deep economic dependency on China, which is also a major producer and helped Angolan postwar reconstruction via investments and loans (Schmitz, 2021). Having such ties will likely preclude LDCs from effective negotiations with incumbents for transitioning away from fossil fuels.

Finally, the profound "rift" and fragmentation in negotiating parties to the UNFCCC (Parker et al., 2012) also deepen the uncertainty around the LDCG's capacity to successfully negotiate with fossil fuel incumbents to shift away from fossil fuels. Such fragmentation can be observed in the recent COP26 and COP27. In the COP26, although all parties agreed to the phasing out of coal and fossil fuel subsidies, China, India, Russia, and Saudi Arabia vehemently opposed this decision that resulted in the text change in the GCP, which advocated for the phasing down of unabated coal power and phasing out of fossil fuel subsidies that are inefficient in terms of emissions and costs (Saha and Carter, 2022). Likewise, in the COP27, while many parties supported the call by India for the phasedown of all fossil fuels, major producing countries such as Brazil, Canada, China, Saudi Arabia, Russia, and the Gulf Petro-states opposed the demand by India (Harvey and Michaelson, 2022; Rabson, 2022; Zee et al., 2022). Such opposition ultimately resulted in the rejection of the motion for the phasedown of all fossil fuels. The three core points explained above are very important given their roles in partly defining the uncertainty around the LDCG's capacity to challenge, pressurize, and negotiate successfully with incumbents to develop policies

[8] Since the second manuscript focuses on both fossil fuel production and consumption (for details, see footnote 7), I have used the term incumbents in the second paper to indicate those countries, who have benefitted from fossil fuel production and consumption and prevent decisions in COP climate negotiations related to transition from fossil fuels.

for restricting the supply of fossil fuels. Notwithstanding this uncertainty, scholarly research has not explored the LDCG's capacity to date. To fill this gap, the *second manuscript* of this dissertation unpacks the LDCG's strategies to challenge fossil fuel incumbents, the effectiveness of those strategies, and the LDCG's capacity to challenge incumbents.

As the LDCG's capacity to challenge incumbents is very fragile, which the second manuscript reveals, there is a compelling need to explore pathways that are essential for the LDCG to improve their capacity and play stronger roles in climate negotiations to accelerate the development and implementation of policies for constraining fossil fuel supply. Pinpointing these pathways is vital. Despite this importance, scholarly studies have not yet identified these pathways. To bridge this gap, the *third manuscript* explores three pathways, namely political economic, institutional, and nonmaterial (it relates to knowledge, argumentative power, and the convening role of the LDCG). These pathways offer opportunities to the LDCG to not only play robust roles in developing supply-side constraint measures but also reshape international climate mitigation policymaking processes in COP climate negotiations.

1.2. Research objectives and questions

This research is guided by three interconnected objectives. *First*, in the context of global climate justice, this study examines the paradoxical political position of the LDCG. *Second*, building on the LDCG's call upon producers to phase out fossil fuels that partly constitutes the paradox, this research examines the strategies undertaken by the LDCG to confront fossil fuel incumbents and the LDCG's capacity to do so. *Third*, this study identifies the pathways to improve the LDCG's negotiation capacity, thereby ensuring that LDCs can play robust roles in climate negotiations to develop restrictive policies on the supply of fossil fuels. To reach these goals, this research is guided by three questions. They are as follows:

1. What does the paradox occupied by the LDCG look like and to what extent is this paradoxical stance justifiable according to global distributive justice?
2. How is the coalition of LDCs (the LDCG) strategizing to confront fossil fuel incumbents and their norms and practices[9], and to what extent does the coalition have the capacity to do so?
3. How can the LDCG advance supply-side policies in climate negotiations and how the Group is reshaping international mitigation policymaking through the UNFCCC?

1.3. A synopsis of the dissertation

To answer the above research questions, this dissertation follows the multiple manuscripts format that includes three stand-alone manuscripts (see Table 1 for an overview). Manuscript-I[10] has been published, Manuscript-II[11] is under review, and Manuscript-III[12] is in the process of submission to *Climate Policy*. Manuscript-I builds on surveying literature, while Manuscript-II and Manuscript-III use empirical data gathered through qualitative interviews. While Manuscript-I applies the global distributive justice approach, Manuscript-II and Manuscript-III employ the perspectives on strategic power and supply-side climate policy, respectively. In addition to this Introduction Chapter One, this dissertation contains Chapter Two (Manuscript-I), Chapter Three (Manuscript-II), Chapter Four (Manuscript-III), and Chapter Five (Conclusion). I provide a synopsis of these chapters below.

[9] Norms can be understood through incumbents' inappropriate behavior manifesting in their "addiction" to fossil fuels that undermines climate policies and causes rapid emissions growth (Suranovic, 2013). Practices can be defined as the system of fossil fuel production and consumption.

[10] Saha, C.K., Carter, A.V., 2022. Phase-out or lock-in fossil fuels? Least developed countries' burning dilemma. *The Extractive Industries and Society, 11*, p.101140.

[11] Saha, C.K., (Forthcoming). Least developed countries vs. fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations. *International Environmental Agreements: Politics, Law, and Economics*. Manuscript No: INEA-S-23-00150.

[12] Saha, C.K. Least developed countries and restricting fossil fuel supply: strategies and implications in the UN climate negotiations. Submitted to *Climate Policy*, Manuscript ID 23CP4518-RA.

Chapter 2 (Manuscript-I):

Manuscript-I examines the first research question. Methodologically, it is based on reviewing scholarly and grey literature. It explores the LDCG's paradoxical position and examines whether this position can be called a paradox or an issue of global climate justice. By calling for the G20 states to phase out fossil fuels and all subsidies, the LDCG has been playing a central role in supply-side climate politics that continue to evolve at COPs, a new avenue in the political economy of climate change. Before explaining the call by LDCs to phase out fossil fuels, this manuscript first analyzes the rise of supply-side climate politics in the UN climate negotiations. Then it explains the LDCs' paradoxical position—calling upon G20 states to phase out fossil fuels while expanding their fossil fuel development projects with the support from the same G20 countries. Next, this manuscript uses the global distributive justice perspective to justify the paradox occupied by the LDCG. Drawing on this perspective, the manuscript argues that the fossil fuel expansion by LDCs can be justified for several reasons such as poor socioeconomic conditions, developmental needs, and less access to energy. However, several concerns suggest that G20 countries' investments in fossil fuel expansion in LDCs should be redirected toward developing low-carbon energy systems. These concerns include "resource curse" risks (e.g., corruption and conflicts over resource control), emissions rise, uncertainty about staying within the 1.5^{C} warming limit, and obstacles to achieving sustainable development goals and the net zero target. Finally, this manuscript calls for beginning a fossil fuel phase-out globally, including LDCs.

Table 1: Overview of manuscripts

No	Manuscript Titles	Theoretical Frames	Data Source	Journals	Status
I	Phase-out or lock-in fossil fuels? Least developed countries' burning dilemma	Global Distributive Justice	Literature Review	*The Extractive Industries and Society*	Published
II	Least developed countries *vs.* fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations	Strategic Power	Empirical Interviews	*International Environmental Agreements: Politics, Law, and Economics*	Addressing Reviewers' Comments
III	Least developed countries and restricting fossil fuel supply: strategies and implications in the UN climate negotiations	Supply-side Climate Policy	Empirical Interviews	*Climate Policy*	Submitted

Chapter 3 (Manuscript-II):

Manuscript-II examines the second research question. Methodologically, this study is based on a set of qualitative semi-structured interviews with negotiators and observers from an LDC, Bangladesh, who have joined COPs for decades. Theoretically, this research is underpinned by the perspective of strategic power that focuses on evaluating state behavior in global climate negotiations. Based on interviews, this study identifies the strategies undertaken by the coalition of LDCs to challenge fossil fuel incumbents and their norms and practices at the UN climate negotiations. Moreover, it also examines the coalition's capacity to confront incumbents and their norms and practices. This manuscript finds that while negotiators use "soft" strategies at negotiations to call upon incumbents to curtail fossil fuel consumption, observers pursue "hard" strategies at side events to pressure incumbents to phase out production. The findings reflect that the coalition is divided between those states emphasizing lowering fossil fuel consumption and those focusing on the necessity of a production phase-out. This division creates disagreement and contestation in the coalition. The analysis suggests that the LDC coalition is ill-suited to challenge incumbents and their norms and practices. This is because the coalition's capacity to

challenge incumbents and their norms and practices is obstructed by fragile strategies, diverse interests and fragmentation in the coalition and G77+China, interstate relations between LDCs and incumbents shaped by colonial legacy and political economic factors. Overcoming these obstacles is essential to increase the coalition's capacity to wield pressure on incumbents to transition away from fossil fuels.

Chapter 4 (Manuscript-III):

Manuscript-III addresses the third research question, building on the perspective of supply-side climate policies. With respect to methods, this manuscript uses a qualitative interviewing technique. Based on twenty-five semi-structured interviews with negotiators and observers who have joined climate negotiations for many years, this study offers three strategic pathways that are vital for the LDCG to enhance their negotiation capacity to play stronger roles in developing restrictive policies on the supply of fossil fuels. The politico-economic pathway includes reducing power asymmetries in climate negotiations and LDCs' politico-economic dependency on fossil fuel-producing states, promoting economic diversification and divestment, and ending the demand for climate funds. The institutional pathway focuses on establishing a fixed negotiation team and LDC energy forum, building coalitions and networks, increasing the participation of negotiators, and incorporating civil society in negotiations. The nonmaterial pathway refers to putting equal focus on fossil fuels alongside other negotiation items, increasing knowledge and expertise, avoiding generic words in, for example, statements and position papers to improve clarity, and playing the convening role by the LDCG to resolve divisions and disagreements in negotiating parties. These pathways would not only enhance the LDCG's capacity to play stronger roles in advancing policies to restrict the supply of fossil fuels but also would enable the Group to reshape international climate mitigation policymaking in three ways. These include facilitating the development of a consensus on transitioning from fossil fuels, advancing supply-side policies in negotiations equitably, and limiting the influence of fossil fuel corporations on climate negotiations.

Chapter 5 (Conclusion):

In the conclusion, I synthesize the three manuscripts to show that this dissertation responds to the research objectives and questions set above. This chapter explains how this research makes novel contributions to the scholarly field of transitioning away from fossil fuels. In this regard, I assert that this research has contributed to three distinct scholarly fields: supply-side climate politics, UN climate negotiations, and supply-side climate policies. It also presents how this study contributes to the theoretical perspectives used in three manuscripts. These contributions include expanding the realm of distributive justice, enhancing the usefulness of strategic power, and materializing the logic of supply-side climate policies. This final chapter also describes several limitations, notably the imbalance in selecting interviewees, the lack of insights from other negotiating blocs (e.g., the AOSIS and Africa Group) apart from the LDCG, and the deficit in examining the LDCG's capacity to confront incumbents from a multidimensional lens of power that incorporates power's instrumental, structural, and discursive forms.

Finally, I propose several directions for future research such as how G20 states' investments in LDCs can be redirected toward the development of an equitable low-carbon energy system; how other negotiating parties can help LDCs in their efforts to press G20 states to begin the phaseout of fossil fuels; how the LDCG's capacity can be increased through overcoming political-economic barriers and colonial legacy, and integrating observers into negotiations; and what barriers can preclude the LDCG from pursuing strategies to develop SSCPs via the UNFCCC, and how these barriers can be overcome.

Chapter Two: Manuscript-I

Phase-out or lock-in fossil fuels? Least developed countries' burning dilemma[13]

Abstract

The Group of Least Developed Countries (LDCs)—motivated by the climate crisis that disproportionately affects them and is predominately driven by fossil fuels—has taken a lead role in pressuring the Group of Twenty (G20) states to phase out the production of fossil fuels. This effort is central in the development of new "supply side" climate politics. Yet, many LDCs are at the same time receiving assistance from G20 nations to expand their domestic fossil fuel production. In short, LDCs are at a crossroads of leading supply-side climate policies that are essential in the climate mitigation effort, while also actively using G20 investment and capacity to extract fossil fuels. Resolving this tension is critically important for LDCs to meet their sustainable development goals and in the global effort to reduce emissions dramatically by mid-century. Here we trace the implications and dynamics of this phase-out/lock-in tension and possibilities for redirecting G20 investment toward low-carbon developments in LDCs.

Keywords: Climate crisis, Decarbonization, Energy transition, Fossil fuels, Least Developed Countries

[13] This manuscript has been published and co-authored with my advisor. Saha, C.K., Carter, A.V. (2022). Phase-out or lock-in fossil fuels? Least developed countries' burning dilemma. *The Extractive Industries and Society*, 11 (101140): 1-6. https://doi.org/10.1016/j.exis.2022.101140

1. Introduction

The Group of Least Developed Countries (LDCs)[14] is leading a vitally important shift in international climate politics by pressuring the Group of Twenty (G20)[15] states to phase out fossil fuel extraction. Yet many LDCs are simultaneously *phasing in* fossil fuel energy projects with financial assistance from these very G20 nations, "locking in" (Unruh, 2000) emissions from these projects for decades to come. This is a significant dilemma given the global imperative to reach net zero emissions by mid-century, yet it has not been well studied in research on LDCs' climate politics.[16] Therefore here we trace the rise of "supply side" climate politics and document the LDCs' leadership therein. We then highlight the unfolding fossil fuel lock-in that is intensifying in LDCs and ask whether it could be part of a global distributive climate justice approach to the climate crisis. Finally, we raise pressing questions to help guide research on redirecting G20 investment toward LDCs' equitable low-carbon development.

2. The rise of "supply-side" climate politics

Fossil fuels are now widely recognized as the lead source of emissions causing the climate crisis[17]; it is also well documented that the crisis has cascading social, political-economic, and health consequences that disproportionately harm the world's LDCs (Fankhauser and McDermott, 2014). The focus on fossil fuels has been fostered by the rise of "supply-side" climate politics, a promising new development in the political economy of climate change (Brown and Spiegel, 2019; Harrison, 2020; Paterson, 2021). In practice, a supply-side approach takes the form of extraction bans, legal cases against producers, civil disobedience at extraction

[14] The LDCs include 46 states that have per capita gross national incomes below US$1025 and face "structural impediments to sustainable development" (The United Nations, 2018, p.3).

[15] The G20 encompasses 19 countries and the European Union that account for most of the world's GDP.

[16] There is burgeoning research on LDCs related to climate agreements (Teklu, 2018), mitigation (Rowlands, 2011), participation in UNFCCC negotiations (Cornell,2010), finance for clean development mechanism (Wood et al., 2016), and adaptation (Sovacool et al., 2017); however, a focus is needed on the phase-out versus lock-in dynamic noted here.

[17] The latest IPCC (2021a) report documents that fossil fuels are responsible for 86 percent of the total anthropogenic CO_2 over the last decade.

or transportation sites, and calls to end fossil fuel subsidies or to divest—all aiming to keep fossil fuels in the ground (Carter and McKenzie, 2020; Green and Denniss, 2018; Martin, 2011; McKenzie and Carter, 2021).

However, United Nations Framework Convention on Climate Change (UNFCCC) documents were silent on fossil fuels for decades. Mention of them was absent from the 2015 Paris Agreement and guidelines on Nationally Determined Contributions (NDCs) (Rayner, 2021). Even in the 2021 Intergovernmental Panel on Climate Change (IPCC) report that sounded a "code red" alarm for humanity, references to fossil fuels were obscured in technical notes and not featured in the headline statements of the summary for policymakers (IPCC, 2021b, 2021c, 2021d). This is likely due to the influence fossil fuel interests have long held over UNFCCC deliberations (Ciplet et al., 2015).

Yet IPCC reports are beginning to spotlight fossil fuels and pressure to foreground fossil fuels is building in international climate governance. The latest IPCC reports (IPCC, 2021e; 2022) underscored the need to reduce "unabated" fossil fuels production, "decommission" existing fossil fuel infrastructures and cancel new projects, end fossil fuel subsidies, and redirect investments in fossil fuels toward low or zero carbon energy developments. The recent 26th Conference of the Parties (COP26) meanwhile signaled the beginning of a breakthrough in supply-side climate policy. Most notably, the first draft of the "Glasgow Climate Pact" (GCP) advocated for the "phasing-out of coal and subsidies for fossil fuels" (UNFCCC, 2021a, p. 4). Major producing states (i.e., China, India, Russia, and Saudi Arabia) stridently opposed this shift (Hook et al., 2021; Kennedy, 2021). These big producers (excluding Russia), plus Japan and Australia, also lobbied with a team of United Nations scientists to remove mention of a fossil fuel phase-out from the IPCC 2021 report (Rowlatt and Gerken, 2021). Given this opposition, the final version of the GCP text was weakened to reference "the *phasedown* of *unabated* coal *power* and phase-out of *inefficient* fossil fuel subsidies" (UNFCCC, 2021b, p. 4, emphasis added). As such, the final version avoids mention of the needed phase-out of fossil fuels and, by referring to unabated coal, allows for the continued use of coal with carbon capture and storage technology. At the same time, it implies that some fossil fuel subsidies are efficient.

These states also did not endorse the landmark statement advocating the end of new direct public financing to the global unabated fossil fuel- driven energy generation by the end of 2022 and the significant reduction of unabated fossil fuels production by 2030 that was signed at COP26 by thirty-nine states and financial institutions (UN Climate Change Conference UK, 2021a). All but Australia also did not ratify the "Global Coal to Clean Power Transition Statement" during the COP26 that underscored the need to phase out unabated coal-powered projects and to end new permits for coal-fired power production as well as government support for unabated coal-based power stations worldwide (UN Climate Change Conference UK, 2021b). This statement was the result of the "No New Coal Power Compact" ahead of the COP26 (Sustainable Energy for All, 2021). While this statement was endorsed by forty-five states and the European Union, five subnational governments, and twenty-six organizations, major coal producers such as the United States (US), Colombia, and South Africa refused to do so. Given the concern about coal supply disruption, the Philippines and Indonesia[18] approved the statement excluding clause three[19] and demanded climate justice and financial as well as technical support to phase out coal.

While there continues to be resistance to focusing on fossil fuel supply reduction in international climate governance, the most recent round of COP negotiations demonstrated impressive growth in "anti- fossil fuel norms" (AFFNs) (Green, 2018). Most remarkedly, on the strength of global endorsements of the Fossil Fuel Non-Proliferation Treaty (FFNPT) (Newell and Simms, 2019), Denmark and Costa Rica launched the Beyond Oil and Gas Alliance at COP26 (Beyond Oil and Gas Alliance, 2021). Now an international coalition of governments is emerging to manage the equitable phase-out of oil and gas production.

[18] Indonesia exports its thermal coal to Bangladesh, China, India, Japan, Philippines, Vietnam, and South Korea and monthly earns about USD 3billion (BCPCL, 2021; Nangoy and Christina, 2022).

[19] "To cease issuance of new permits for new unabated coal-fired power generation projects […] cease new construction of unabated coal-fired power generation projects and to end new direct government support for unabated international coal-fired power generation…" (UN Climate Change Conference UK, 2021b).

3. LDCs' call to phase-out fossil fuel

LDCs have had a vital role in burgeoning AFFNs. These states are motivated by their extreme exposure to climate vulnerability, losses, damages as well as large-scale population displacements they have endured, and their lack of capacity to adapt to climate change. All this occurs in the context of a great emissions disparity (Oxfam, 2015). There is an enormous gap between the emissions of G20 and least developed countries, with the former responsible for around 80% emissions and LDCs accounting for just over 4% (Bowen and Fankhauser, 2011; UNEP, 2021).

LDCs increasingly collaborate to challenge G20 countries' fossil fuel production in global climate negotiations. This effort rose to prominence with the 2015's *Suva Declaration on Climate Change*, when five Pacific Island LDCs, Kiribati, Solomon Islands, Timor Leste, Tuvalu, and Vanuatu,[20] alongside other states and organizations, argued that fossil fuels were the lead cause of greenhouse gases (GHGs) and therefore the global economy must transition away from fossil-based energy production (Pacific Islands Development Forum, 2015). In the closing statement of 2017's COP23, forty-seven LDCs called for the inclusion of "managing a phase-out of fossil fuels" in the Talanoa Dialogue (IISD, 2018). Before the COP24, the group recommended "phasing out subsidies to fossil fuels and [...] phasing out fossil fuel production"[21] (Talanoa Dialogue, 2018, p. 8). To reinforce the Talanoa Dialogue's recommendation, the LDC Group reiterated a "rapid shift away from traditional fossil-fuel" system and a "global phase-out of unabated coal" production (LDC Climate Change, 2018a, p. 3).

Then at COP24 in 2018, the LDC Group urged G20 nations to cut their emissions dramatically (LDC Climate Change, 2018b) while ministers and heads of LDCs delegations emphasized the need to begin "managing the rapid decline" of fossil fuel production to meet a net zero by 2050 target (LDC Climate Change, 2018c). The LDCs pointedly called out the

[20] Vanuatu graduated from LDC status in 2020 (UNCTAD, 2021).

[21] The text is extracted from the inputs of all parties, which encompass all LDCs, to the Talanoa Dialogue that occurred under the COP decision 1/CP.21.

Group of Seven countries (influential G20 members) for benefiting economically from fossil fuels and exhorted them to take a lead role in phasing out fossil fuel subsidies and finance (LDC Climate Change, 2018d). During the 2019 Pacific Islands Development Forum, Pacific Island LDCs reiterated the "moral obligation of fossil fuel producers to lead in putting an end to fossil fuel development and to manage the decline of existing production and the need to ensure the phase out of coal power" (Pacific Islands Development Forum, 2019, p. 17). At the 2020 Thimphu Ambition Summit, convened by LDCs to create "political momentum" for adhering to 1.5°C pathways, the LDC Group continued to underscore that countries with the largest emissions must take a lead role in reducing global emissions by ending "de- pendency on fossil fuels" (LDC Climate Change, 2020). Ahead of the COP26 in 2021, seven Small Island LDCs (Comoros, Haiti, Kiribati, Timor Leste, Solomon Islands, Tuvalu, Sao Tome and Principe), members of the Alliance of Small Island States (AOSIS) who are highly reliant on fossil fuel imports,[22] called on G20 countries to enact a "phase out of all fossil fuel subsidies" by 2023, a call they reiterated after the release of IPCC's sixth assessment report in 2022 (AOSIS, 2021; 2022).

4. LDCs' fossil fuel lock-in

Yet LDCs' call for phasing out fossil fuel production among G20 nations is not universal. For example, most LDCs belong to the African Group of Negotiators on Climate Change (AGNCC) that advocated reducing the negative impacts of the "utilization" of fossil fuels rather than a production phase-out (AMCEN et al., 2017), given that many African states are highly dependent on fossil fuels (AGN, 2018) to meet fuel needs of transportation sectors, provide affordable energy, and pursue economic growth and development (Steckel et al., 2020).

[22]Given the inadequate reserves and production of fossil fuel resources, Small and Pacific Island LDCs heavily rely on imported fossil fuels to produce energy (Raghavan, 2003; Kumar et al., 2017). For instance, Haiti produces its 80 percent of total electricity from imported fossil fuels (Privacy Shield Frame- work, n.d.).

What is more, while the LDC Group has increasingly urged G20 states to phase-out fossil fuels, the climate plans of the LDC Group have been as silent on fossil fuel supply as the UNFCCC. For example, the "LDC 2050 vision" commits to "deliver net-zero emissions by 2050" yet does not note the need to phase-out domestic fossil fuel production, a lead cause of those emissions (LDC Climate Change, 2019). Moreover, while calling on rich country high emitters to phase-out fossil fuel production, LDCs are phasing in fossil-based energy expansion with the support from these same countries. This problem is manifested in numerous LDCs across Asia and Africa.

In Asia, while Bangladesh has been at the forefront of demanding emissions reductions from the G20 countries (Bdnews24.com, 2021), it is expanding coal-based energy production, financed and supported by China, Japan, India, Germany, Indonesia, the UK, Australia, and South Africa. Indonesia and Germany collaborate to ensure the supply and transportation of coal, respectively, for coal-fired power plants in Payra. Bangladesh also plans to import Australian and South African coal for other power plants in the process of construction. With support from the US and Russian fossil fuel corporations, Bangladesh also continues to expand well drillings for gas exploration and extraction (Rahman, 2022). Likewise in Cambodia, although the government has committed to cut domestic emissions (Sony, 2021), with support of Chinese firms, Cambodian companies develop coal-based energy while G20 countries (e.g., Australia, China, and France) compete to explore for and extract the country's oil. Similarly, Myanmar is currently developing a new coal mine and a USD3.5 billion coal-fired power plant, financed and constructed by Japanese energy corporations (Wilder, 2018). It is also expanding oil and gas transportation capacity via USD1.5 billion financing from Chinese state-owned companies aiming to satisfy China's energy demand (Poling, 2018). With support of the US Geological Survey, Afghanistan continues to explore oil and gas fields (Mehrad et al., 2020).

This tension is exemplified across Africa as well. In Tanzania, where coal production almost tripled between 2015 and 2019, China and UK's energy corporations are supporting coal extraction and coal-based power. Meanwhile from Niger to Benin, an oil pipeline nearly two thousand kilometers long is being constructed by China. In Angola, a joint venture was adopted recently by UK's and Italian oil corporations that also promote Angola's New Gas Consortium to explore for and extract oil (Esau, 2022). Finally in Ethiopia, the national government has recently adopted regulatory changes to attract coal mining companies and foreign investment. To date, US and Chinese energy firms are boosting oil and gas production and building oil refining infrastructures in Ethiopia (Zelalem, 2020; Getachew and Awel, 2020). The climate impact of these G20-enabled fossil fuel projects is formidable. Emissions associated with them will likely surpass the international communities' 1.5°C carbon budget (Welsby et al., 2021). Put simply, these projects undermine global climate stability.

5. Paradox or global climate justice?

LDCs are clearly at a crossroads of leading supply-side climate policies—a core element in the climate mitigation effort—while also actively using G20 investment and capacity to expand fossil fuel extraction. On one hand, LDCs are championing AFFNs to foster a new focus on fossil fuels in international climate negotiations. On the other, their actions to expand fossil fuel extraction risk diluting the success of the LDCs' "norm campaign" (Blondeel et al., 2019) pressing G20 states toward a fossil fuel wind-down.

However, could LDCs' domestic fossil fuel expansions be justifiable according to a global distributive justice (GDJ) perspective (Lenferna, 2018; Muttitt and Kartha, 2020; Le Billon and Kristoffersen, 2020)? In this view, the global fossil fuel wind-down must be led by states that have the capacity—economic, technical, and institutional—to transition, that have benefitted most from fossil fuel extraction, and that have the highest-cost and most carbon-intensive fossil fuels. Thus, arguably there is a case to be made for LDCs being allocated space in the global carbon budget to produce fossil fuels to meet their development needs (Caney, 2016; Lenferna, 2018).

As Williges et al. (2022) note, "the allocation of the remaining global carbon budget can count as fair only if all people have a chance to lead a minimally good life" (p. 4). But "decent living standards" (e.g., heating, cooling, and transportation) require access to energy. LDCs have much less energy access compared to the global average (Millward-Hopkins et al., 2020), which negatively affects their Human Development Index (HDI) rank, notably in sub-Saharan African LDCs (Sarkodie and Adams, 2020). Therefore, on the basis of GDJ it can be argued that economically fragile LDCs—particularly those that have yet to benefit from fossil fuel production—have a right to extract fossil fuels, using the revenue to improve their HDI standing (Lenferna, 2018).

Meanwhile, countries that have produced the most fossil fuels per capita historically and continue to dominate fossil fuel supply (particularly top ten major producers, none of which are LDCs), must wind down extraction (Le Billon and Kristoffersen, 2020). Put simply, LDCs should be allocated a larger share in a rapidly declining carbon budget, given that their fossil fuel production, in absolute terms and as a proportion of global production, are much lower than any G20 states (Table 2). This "burden-sharing" dynamic is a cornerstone of the FFNPT. By this principle, global phase-out of fossil fuels must be led by—and the costs of the phase-out should be borne by—countries with the greatest capacity and "ability to pay" for the transition, for example OECD (Organisation for Economic Co-operation and Development) states and the Russian Federation (Newell and Simms, 2019). This resonates with the UNFCCC's "common but differentiated responsibilities and respective capabilities" and aligns with the "affordability" criterion of GDJ that prioritizes "supply cuts" in high-income affluent states with a low reliance on fossil fuel rents, and the allocation of global carbon budget's remaining rents to poorer countries (Le Billon and Kristoffersen, 2020). As poorer countries with very low per capita income strive for sustain- able development, they may continue to rely on fossil fuel extraction for development and will take more time to phase out fossil fuels (Muttitt and Kartha, 2020).

Table 2: Fossil fuels production of selected G20 and LDCs, 2021.

Country		Fossil Fuel Types					
		Oil		Natural Gas		Coal	
		Production (Million tonnes)	Global share (%)	Production (Billion cubic metres)	Global share (%)	Production (Exajoules)	Global share (%)
G20	USA	711.1	16.8	934.2	23.1	11.65	7.0
	Canada	267.1	6.3	172.3	4.3	1.14	0.7
	China	198.9	4.7	209.2	5.2	85.15	50.8
	Russian Federation	536.4	12.7	701.7	17.4	9.14	5.5
LDCs	Angola	56.6	1.3	×××[23]	×××	×××[24]	×××
	Republic of Congo	14.0	0.3	×××	×××	×××	×××
	Bangladesh	×××	×××	24.1	0.6	×××	×××
	Myanmar	×××[25]	×××	16.9	0.4	×××	×××

Source: Data compiled from British Petroleum (BP) (2022). XXX indicates that data is not available.

While the LDCs' fossil fuels expansion could be justified to meet their developmental needs and access a stable energy system still sought by many LDCs (Brunet et al., 2022), there are several inherent concerns with this approach. The first concern is that relying on fossil fuel extraction for economic development actually poses a range of "resource curse" risks (Le Billon and Kristoffersen, 2020). That is, large inflows of revenues from extractive industries (e.g., coal, oil, and gas) tend to bring adverse consequences, from macro-economic (e.g., reducing the competitiveness of non-extractive exports) and social impacts (e.g., conflicts over

[23] Although Angola (CEIC, 2021) and Republic of Congo (Eni.com, 2022) produce natural gas, the data is unavailable given their very limited amount of production.

[24] Given the very limited production estimating less than 0.005 exajoules, country-specific data of coal production is not available for Angola, Republic of Congo, Bangladesh, and Myanmar.

[25] Although Myanmar (International Trade Administration, 2022) and Bangladesh (Worldometer, n.d.) produce oil, the data is not available for limited production rate.

resource control) to political issues (e.g., decaying institutional quality) (Frynas and Buur, 2020). Many fossil fuel-abundant LDCs—for example Angola, Bangladesh, Chad, Myanmar, Mozambique, Niger, Tanzania, Congo, Sudan, and Yemen—are now experiencing these "curses" (Goumandakoye, 2016; Poncian, 2019; Biresselioglu et al., 2019). In response, in cases like Ethiopia (Weldegiorgis et al., 2017), Bangladesh (Faruque, 2018), and Myanmar (Roberts, 2021), communities, civil society, and nongovernmental organizations (NGOs) resist fossil fuel extraction, arguing it would destroy the environment, forest resources, agricultural land, and customary livelihoods. The price paid for this resistance is often high: violence, death, forced displacement, and the destruction of farmland and sacred places.

Yet while local people—often marginalized communities with the least recognition of their values and knowledge by governments and multinational corporations and with very limited access to decision-making processes, resonating the failure of recognitional and procedural justice (Jenkins et al., 2016)—contest fossil fuel exploration and extraction, their governments continue to support fossil fuel projects on the grounds that it brings development. For instance, the Angolan Government argues that revenues from oil production will contribute to poverty eradication, income growth, job creation, and economic diversity and development (Ovadia, 2014). Given the resistance to extraction, it can be argued that local communities, NGOs, and civil society in LDCs are more committed to AFFNs than their governments and politicians.

Meanwhile, a related inter-state inequity is unfolding. While fossil fuel extraction poses multiple risks to LDCs, the lion's share of the profits and energy security benefits flow to G20 states (Raphael and Stokes, 2011; Goumandakoye, 2016). Although LDCs argue fossil fuel production is needed for their domestic development, often these extractive projects are primarily intended to provide energy for G20 countries (Raphael and Stokes, 2011; Klare, 2017). Major G20 players (e.g., China, USA, France, Italy, and the United Kingdom) and their multinational energy corporations (e.g., Sinopec, Chevron, Eni, and BP) compete to control, explore, and extract oil from African LDCs (e.g., Angola, Congo, and Chad), in collaboration with local elites (Okeke, 2008; Raphael and Stokes, 2011). Raphael and Stokes (2011) characterize this competition as an "imperialist race" to grab African fossil fuels that European countries started

during colonial periods (Okeke, 2008). Presently it takes the form of neocolonial extraction, occurring through foreign direct investments by G20's energy firms, development banks, and financial institutions (Balasubramanyam, 2015). An abundance of fossil fuels has not resulted in socioeconomic advancement in LDCs (Biresselioglu et al., 2019) and has instead exacerbated economic, social, and political instability as well as inequities between LDCs and G20 states. In this light, a fossil fuel extraction phase-out in the LDCs is more efficient in terms of development (Le Billon and Kristoffersen, 2020) as well as more equitable.

Another major concern relates to how fossil fuel extraction in LDCs facilitates or impedes the poorest countries in attaining sustainable development goals (SDGs), notably goal 3 on good health and wellbeing, goal 7 on affordable clean energy, goal 13 on climate action, goal 14 on life below water, and goal 15 on life on land. Fossil fuel extraction results in extensive emissions. Though LDCs emit the least greenhouse gases, extractive industries have increased carbon emissions in those poorest states (Steckel et al., 2020). Moreover, it results in detrimental environmental impacts on marine and terrestrial ecosystems that negatively impact local communities reliant on them, as well as in multilayered human health impacts, as seen in, for example, Angola (Jorissen et al., 2009), Bangladesh (Siddique et al., 2020), Mozambique (Marove et al., 2020), Myanmar (Roberts, 2021), and Congo (Itoua et al., 2021). Given its cascading negative effects, reducing fossil fuel extraction is crucial for achieving SDGs, while expanding existing renewable energy such as solar photovoltaic and wind—rapidly declining in costs—can deliver greater access to stable energy (Choi et al., 2015; Rosenow and Eyre, 2022).

Finally, focused on the point of emissions, there is clear evidence that any new fossil fuel production project is difficult to justify the reality of global emissions causing the climate crisis. Even the International Energy Agency signaled in its 2021's "Net Zero by 2050" report, there can be no new investment for the exploration and extraction of new fossil fuel resources if the global community is to keep within 1.5° warming limits (Bouckaert et al., 2021). And yet countries plan on producing more than double the amount of fossil fuels by 2030 than is aligned with a 1.5° limit (SEI et al., 2021). While both LDCs and their G20 partners might argue fossil fuel extraction projects are being done with environmental and mitigation

policies in place, there is simply no room left in the global carbon budget for any new extraction. As documented by Calverley and Anderson (2022), while rich countries must wind down fossil fuel production rapidly and leave room for LDCs to continue production, "all producer countries must peak their production immediately and begin an uninterrupted decline" (p. 55) if the global community is to have a half-chance of staying within 1.5° of warming.

6. Unlocking an equitable LDC transition

Fossil fuel extraction poses multiple "resource curse" risks to LDCs, deepens economic and energy accessibility inequalities between LDCs and G20 states, and impedes LDCs from reaching SDGs. Specifically on the point of emissions and the climate crisis, the expansion of fossil fuel developments in LDCs impedes these countries from fulfilling the LDC Group's long-term vision to reach net zero by 2050 via ambitious NDCs. It also detracts from LDCs' credibility in advancing supply-side climate policy on the world stage, a vitally important shift. More broadly, fossil fuel developments in LDCs (and elsewhere) impede the global community from staying within agreed warming limits and instead entrench fossil fuels in LDCs' energy systems.

Understanding the phase-out versus lock-in contradiction unfolding in the LDC Group and how G20 countries' investments in LDCs can be directed toward an equitable low-carbon energy system—essential to attaining SDGs without the climate cost—are therefore urgent research priorities. What pressures among and within LDCs might impede the phase-out of their domestic fossil fuel production? How are local elites, who benefit from fossil fuel production, barriers to climate justice and LDCs' sustainable development? What strategies are required by global governance institutions to redirect G20 energy investments in LDCs? How can other countries and non-state actors support LDCs in their efforts to pressure G20 countries to begin a global fossil fuel phase-out? Research on these questions is now required to ensure LDCs can avoid the fossil fuel entanglement that has defined the G20 countries' energy development pathway and driven the global climate crisis—and instead create a fairer low-carbon future.

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Chapter Three: Manuscript-II

Least Developed Countries *vs.* fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations[26]

Abstract

The United Nations climate summits—Conferences of the Parties, or COPs—have emerged as an important site to contest fossil fuel incumbents. While new research indicates that least developed countries (LDCs) are challenging incumbents at COPs by calling upon them to phase-out fossil fuel, there is limited research on how the coalition of LDCs is strategizing to confront incumbents and their capacity to do so. This article responds to this gap by drawing on 25 interviews with LDCs' negotiators and observers. Informed by the strategic power perspective, it identifies three central dynamics in how LDCs contest fossil fuel incumbents. First, negotiators undertake "soft" strategies at negotiations to call upon incumbents to reduce fossil fuel consumption, while observers pursue "hard" tactics at side events to press incumbents for phasing-out production. Second, the coalition is divided between those countries focused on reducing fossil fuel consumption *versus* those emphasizing the need for a production phase-out. This split creates disagreement, contestation, and division in the coalition. Finally, the coalition's capacity to confront incumbents is restrained by three obstacles: fragile strategies, varied interests and fragmentation in the coalition and G77+China, and interstate relations between LDCs and incumbents shaped by political and economic factors and colonial legacies. The LDCs are central to advancing supply side climate policy in international climate negotiations. Overcoming these divisions and barriers would enhance the coalition's capacity to exert pressure on incumbents, particularly major producing states.

Keywords: climate crisis, coalition**,** fossil fuel, fragmentation, negotiation, strategies

[26] This single-authored manuscript submitted to *International Environmental Agreements: Politics, Law, and Economics* on June 25, 2023. The Manuscript No is INEA-D-23-00126. On November 06, 2023, I received an email from the Editor-in-Chief that mentioned "manuscript can be accepted for publication after you have carried out the corrections as suggested by the reviewer(s)". Reviewers suggested minor revisions. I will resubmit my revised manuscript before December 25, 2023 (I extended the original deadline: November 20, 2023). In Appendix-2, I have attached the editor-in-chief email, reviewer comments, and manuscript status on the editorial manager.

1. Introduction

The burning of fossil fuels is now scientifically recognized as the principal cause of intensifying climate crisis. The latest Intergovernmental Panel on Climate Change (IPCC) report shows that the combustion of fossil fuels has been responsible for about 64% of the total anthropogenic carbon dioxide emissions since 1750 and 86% over the past ten-year (IPCC, 2021). Achieving the Paris Agreement's aspirational 1.5°C goal requires leaving 89% of coal, 59% of gas, and 58% of oil reserves underground, ceasing new fossil fuel developments, and decommissioning a sizable portion of existing infrastructures (Trout et al., 2022; Welsby et al., 2021). The continued development of fossil fuels will substantially exceed the 1.5°C carbon budget. Nevertheless, governments and fossil fuel corporations plan on producing over double fossil fuels produced in 2020 by 2030 (SEI et al., 2021) and subsidies to fossil fuel production and consumption stood at US$697 billion in 2021 (Harring et al., 2023).

Acknowledging the relation between fossil fuel and climate crisis, climate activists are pressuring governments and corporations to cut fossil fuel production, and therefore, they engage in anti-fossil fuel protests and movements, lawsuits against producers, blocking extraction sites, and calling to end fossil fuel subsidies and accelerate divestment (Carter & McKenzie, 2020; LeBillon & Kristoffersen, 2020; Temper et al., 2020). Together these efforts have contributed to the advancement of "supply-side" climate policies. The supply side approach complements "demand-side" measures (carbon tax and emissions trading system) to limit fossil fuel consumption that have been prioritized in mitigation-related climate negotiations (Asheim et al., 2019; Green & Denniss, 2018). Supply-side climate policy has also gained traction in the recent rounds of Conference of Parties' (COP) negotiations [COP26 and COP27], signalling the potential for making "anti-fossil fuel norms" (AFFN) (Jessop, 2022; van Asselt & Green, 2022) part of international climate policy.

Within the intergovernmental climate negotiations, the coalition of 46 Least Developed Countries (LDCs) is recognized as the LDC Group (LDCG) according to the United Nations Framework Convention on Climate Change (UNFCCC). This negotiating group of the

UNFCCC[27] occupies a unique and challenging position in the intensifying effort to confront fossil fuel incumbents[28] and their norms and practices.[29] This coalition is transnational[30] given that it encompasses LDCs' *negotiators* who actively participate in the negotiations and *observers* who participate at "side events" that occur outside the formal negotiations. At COP negotiations, the LDCG, accounting for 4% emissions but unevenly bearing the brunt of climate catastrophes, has been pressuring the Group of Twenty countries, responsible for 80% emissions, to phase-out fossil fuels and subsidies (Saha & Carter, 2022). In doing so, LDCs' negotiators take the lead on confronting incumbents that impede global mitigation policies by blocking fossil fuel-related decisions at negotiations. Likewise, observers engage in other actions (e.g., protests and conferences) at side events to challenge incumbents' norms and practices and press them to shift away from fossil fuel.

While the coalition is a crucial organization for advancing global climate mitigation policy, scholarly research has not uncovered how the coalition is strategizing to confront incumbents and their norms and practices, and to what extent the coalition has the capacity to do so. Drawing on the concept of "strategic power" (Ciplet et al., 2015) and interviews with LCDG negotiators and observers, I address these gaps. This article identifies central three dynamics in how LDCs contest fossil fuel incumbents. First, while negotiators undertake "soft" strategies at negotiations to call upon incumbents to reduce fossil fuel consumption, observers pursue "hard" tactics at side events to press incumbents for phasing-out production. Soft strategies are cooperative and seek to maintain positive relations between LDCs and developed countries and major emitters (DCME) and prevent LDCs from urging DCME's incumbents to phase-out fossil fuel production. Hard strategies are aggressive and conflictive (Bailer, 2012) and underscore that major fossil fuel producers must wind down their production. Second, the

[27] https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/parties/party-groupings

[28] Johnstone et al. (2017) define incumbents as actors, who are driven by "vested interests" to maintain their "privileged position" instead of enabling energy transition. In this study, incumbents are those states, who have been benefitted from fossil fuel extraction and use and prevent decisions in climate negotiations related to transition from fossil fuels.

[29] Norms can be understood through incumbents' inappropriate behavior manifesting in their "addiction" to fossil fuels that undermines climate policies and causes rapid emissions growth (Suranovic 2013). Practices can be defined as the system of fossil fuel production and consumption.

[30] The term transnational indicates that the coalition of LDCs not only includes one state but also encompasses 46 LDCs that negotiate collectively as a group and highlight on common agenda for all LDCs.

coalition is divided between among those countries focused on reducing fossil fuel consumption *versus* those emphasizing the need for a production phase-out. This split creates disagreement, contestation, and division in the coalition. Finally, the coalition's capacity to confront incumbents is restrained by three obstacles: fragile strategies, varied interests and fragmentation in the coalition and G77+China[31], and interstate relations between LDCs and incumbents shaped by political economic factors and colonial legacy.

By exploring these issues, I contribute to the burgeoning literature on states' negotiation strategies and interests and fragmentation in the UN climate negotiations, shaping mitigation policies and transnational climate governance initiatives. I also contribute to scholarship on the rise of AFFN and supply-side climate politics at COPs.

I first provide a brief overview of challenging fossil fuel incumbents at climate negotiations. I then describe the theoretical perspective and methodology guiding my fieldwork and analysis. Next, I unpack the coalition's strategies followed by disagreement and fragmentation in the coalition and G77+China. This is followed by a discussion of barriers restraining the coalition's competency to confront incumbents and their norms and practices. In the conclusion, I argue that future research is essential to overcome these barriers that will enable the coalition to press incumbents for winding down fossil fuel and advance supply-side climate policy in multilateral climate negotiations.

2. The rise of confronting fossil fuel incumbents at climate negotiations

Alongside mounting resistance against incumbents by nonstate actors (Hestres & Hopke, 2020; Temper et al., 2020), states are now challenging them at intergovernmental climate negotiations. Although the UNFCCC recognized fossil fuels as a lead source of emissions (UN, 1992), due to the influence of powerful corporations and their lobbyists over climate negotiations (Aronoff, 2018), fossil fuels were not mentioned in the Paris Agreement and guidelines for Nationally Determined Contributions (Rayner, 2021). However, restricting fossil fuel production has gained

[31] The G77+China is the largest negotiating group formed by other developing countries' groups, for example, Africa Group, AILAC, ALBA, AOSIS, Arab States, BASIC, LDC Group, LMDC, and Coalition for Rainforest Nations.

traction in the recent COPs. Incumbents are increasingly challenged to phase down fossil fuel production.

In the closing statement of COP23, the LDCG called upon incumbents for a managed phase-out of fossil fuels (Saha & Carter, 2022). Ahead of the COP24, the heads of LDCs delegation reiterated this call for "managing the rapid decline of fossil fuels" to achieve net zero target by 2050 (LDC Climate Change, 2018). Before the COP26, a group of fossil fuel import dependent LDCs (Comoros, Haiti, Kiribati, Timor Leste, Solomon Islands, Tuvalu, and Sao Tome and Principe), members of the Alliance of Small Island States (AOSIS), called upon incumbents to phase-out fossil fuel subsidies.

These calls began to be reflected in the texts of the negotiations at the COP26. The first draft of the "Glasgow Climate Pact" (GCP) called upon parties "to accelerate the phasing-out of coal and subsidies for fossil fuels" (UNFCCC, 2021, p.4); however, the final version was revised to advocated only for "the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies" (UNFCCC, 2022, p.5). The term "unabated" will allow for the continued use of coal with carbon capture technology, providing an opportunity to the fossil fuel industry to claim that they are contributing to decarbonization (van Asselt & Green, 2022). The weakening of GCP occurred in the context of stringent opposition by China, India, Russia, and Saudi Arabia (Saha & Carter, 2022). Ahead of the GCP's text change, the United States (US) also joined the discussion between China and India to protect coal interests (Shankleman & Rathi, 2021). Some of these opponents (China, India, and Saudi Arabia) joined Australia and Japan to lobby with scientists to remove mentioning fossil fuel phase-out from the IPCC 2021 report (Rowlatt & Gerken, 2021).

Then at the COP27, incumbents undertook substantial challenges to protect fossil fuel production. Given the exclusion of references to oil and gas from the GCP text, India called for a commitment to phasedown all fossil fuels (Jessop, 2022). India was supported by, for example, the United Kingdom (UK), US, Norway, France, Denmark, and Ireland (Morton, 2022). The European Union (EU) also supported India and advocated a fossil fuel phase-out (Ainger, 2022), a demand amplified by civil society organizations (CSOs) and environmental nongovernmental

organizations (ENGOs). For example, the Climate Action Network (CAN) awarded "Fossil of the Day Award" to incumbents, e.g., Japan, Norway, Brazil, Australia, Russia, US, and Saudi Arabia.[32] To reinforce the call by India, national governments pledged to wind down oil and gas production. For instance, Colombia committed to ending oil and gas development (Eco, 2022a). Joined with Vanuatu, Tuvalu invited other states to endorse the "Fossil Fuel Non-Proliferation Treaty", a new approach to phase-out fossil fuels equitably (Newell & Simms, 2019).

While above efforts bolstered India's call, Saudi Arabia, Russia, Canada, China, Brazil, and Gulf Petro-states vehemently opposed phasedown of all fossil fuels by arguing it is "unacceptable" and "red line" for energy security (Harvey & Michaelson, 2022; Rabson, 2022; Zee et al., 2022). Furthermore, oil and gas executives and their lobbyists joined state delegations (e.g., Angola, Canada, Namibia, Kuwait, and Russia) and influenced negotiators to block phasedown-related decisions (McGrath, 2022). The COP27 presidency also favored gas interests, reflecting in the Egyptian energy minister's speech: fossil gas is "the least emissions fuel" (Eco, 2022b). Under these circumstances, no consensus was made to phasedown oil and gas alongside coal.

Beyond negotiations, various developments occurred at side events to challenge fossil fuel incumbents. At the COP26, Denmark and Costa Rica launched "the Beyond Oil and Gas Alliance" to expand cooperation for an equitable phase-out of oil and gas production. The UK spearheaded the adoption of the Global Coal to Clean Power Transition Statement to forgo unabated coal power production and end new permits for unabated coal-fired power projects (van Asselt & Green, 2022). Although many states, subnational governments, and organizations joined this initiative, Australia, China, India, US, and South Africa refused, and Indonesia and Philippines endorsed with conditions, demanding support for coal phase-out (Saha & Carter, 2022). At the COP26, this group (excluding US) also did not endorse the Statement on International Public Support for the Clean Energy Transition, underlining the end of new direct state financing to international unabated fossil fuel-driven energy production by 2022. At the COP27, the UN's High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities contended that the continued investment in fossil fuel is incompatible with net-zero, and

[32] See: https://climatenetwork.org/resource_type/fossil-of-the-day/

therefore, businesses, financial institutions, cities, and regions should accelerate phasing-out fossil fuels (High-Level Expert Group, 2022). In short, COP has emerged as an intergovernmental forum to confront incumbents, and their norms and practices.

3. Theoretical perspective

The perspective of strategic power, focused on evaluating state behavior in global climate politics and negotiations (Ciplet et al., 2015), guided this analysis of the strategies and challenges of the LDCG in challenging fossil fuel incumbents. According to this approach, power manifests through identities, ideas, and institutions (3Is). *Identity* implies commonality and solidarity in people, making collective action possible (Brubaker & Cooper, 2000). Identities are shaped by experiences, informing state behavior in climate negotiations. In the case of LDCs as a negotiating group, they share the common traits of having low emissions from fossil fuels while experiencing the worst climate change impacts. As "weak states", LDCs' influence on climate negotiations relies on their "moral authority" deriving from experiences of climate catastrophes (Genovese, 2020).

Ideas are defined as causal beliefs, norms, and knowledge (Beland & Cox, 2010) that contribute to policy change and influence interests. The dominant ideas that shape negotiations on mitigation policies centre on constraining fossil fuel production and consumption that negotiators and observers invoke at COPs. *Institutions* are a set of rules that define, enable, and constrain behavior (Hodgson, 2006). In the case of UNFCCC, its rules require decisions in COPs to be based on consensus that any country can break (Falzon, 2023).

Drawing on 3Is, as well as the work of Gramsci and other scholars working in that vein, Ciplet et al. argue that strategic power can be understood through *strategic*, *layered*, and *historical* views. The *strategic* view is concerned with the struggle of transnational coalitions to challenge hegemonic norms and practices. It builds on the Gramscian idea of power as hegemony that understands socioeconomic structures as systematically benefiting particular groups (Ford & Newell, 2021). To challenge this position, a coalition of actors, what Gramsci calls a "historic bloc", negotiates conditions to influence hegemonic norms and practices. Gill and Law (1989)

argue that a successful historic bloc is organized politically and motivated by a range of hegemonic ideas. Under the banner of a coalition, actors attempt to make realistic solutions to the climate crisis by engaging in strategic actions and establishing alliances with others to influence discursive and material resources and defend hegemonic groups. Gramsci calls this situation the "war of position."

In climate negotiations, power lies in the struggle of marginalized actors and their coalition (i.e., the coalition of LDCs' negotiators and observers) to challenge norms and practices of hegemonic incumbents benefitting from fossil fuel. Actors aspire to disrupt discursive and extractive power of incumbents by, for example, filing lawsuits, as in the case of Vanuatu, a former LDC, that threatened to take legal action against fossil fuel companies for climate pollution and damage (Wewerinke-Singh & Salili, 2020). In short, the strategic viewpoint sheds light upon transnational coalitions that organize around particular ideas and devise strategies to challenge incumbents' norms and practices.

The *layered* outlook focuses on conflict and fragmentation in global climate governance arrangements restraining coalitions' strategic actions. Outside the UNFCCC, the emergence of diverse initiatives to address the climate crisis creates deep fragmentation in the global climate governance architecture (Biermann et al., 2009). Coalitions engage strategically with this complex architecture to confront hegemonic norms and practices through international system such as COPs. The proliferation of groups and issues in climate negotiations creates division and disagreement preventing consensus among states that is reflected in the AOSIS's fragmented opinions on emissions reduction (Betzold et al., 2012). For this reason, Genovese (2014) argues that the UNFCCC is a site of conflict and political struggle between developed and developing states over climate-related issues. Struggles arise within these groups as well and the LDCG is not an exception. In short, the layered viewpoint particularly focuses on fragmentation and conflict in climate governance mechanisms such as COPs.

The *historic* viewpoint explains that the climate governance architecture and coalition's engagement are influenced by historic structures of rapidly changing world order shaped by interstate relations, global political economy, ecological destruction from resources extraction, and transnational civil society. Ciplet et al. contend that while civil society is an influential actor in coalition and climate governance initiatives, they undergo changes causing fragmentation and support to neoliberal agendas. Furthermore, questions arise whose interest civil society serves in climate politics since it lacks accountability in playing roles (Newell, 2008).

Despite the above limits, civil society is deemed crucial in establishing a new world order (Cox, 1999) because it does not only collaborate with states and business actors to shape climate governance initiatives, but also hold governments, corporations, and financial institutions accountable for their climate footprints (Newell, 2008). At COPs, it plays a vital role, in the form of organizing side events, in boosting LDCs' negotiators struggling to challenge incumbents at negotiations. This struggle is embedded in LDCs' unequal structural relations with incumbents owing to LDCs' political-economic entanglement and colonial legacy.

4. Methodology

The analysis here was based on a mixed-method approach which consisted of analyzing policy documents and LDCG's presentations at the COP26 and conducting qualitative semi-structured interviews. Given the large number of countries in the LDCG, I focused on one country to allow for a deeper analysis of the LDC-incumbent dynamics. I selected Bangladesh for three reasons. First, the LDC Group's mitigation agenda is coordinated by Bangladesh and the mitigation coordinator co-leads LDCs' mitigation-related negotiators and negotiations with other negotiating blocs. The mitigation coordinator has profound knowledge of the politics of mitigation in COPs. Likewise, negotiators of this country have been involved in negotiations for over the last decade. Second, Bangladesh has a record of climate leadership chairing the LDCG and Climate Vulnerable Forum (CVF)[33], a coalition of 58 least developed and developing countries that influence negotiations by advocacy and diplomacy. Third, negotiators (N#10) and

[33] See: https://thecvf.org/

observers (O#5) of Bangladesh have significant stake in pushing and materializing climate-related agenda (e.g., loss and damage) through negotiations.

Following the process of qualitative interviewing (Kvale & Brinkmann, 2009), I developed a semi-structured interview guide. It was based on two themes aligned with research questions and theory. Themes include strategies, disagreement, and fragmentation. The interview guide included 10 open-ended narrative sub-questions that allowed participants to share their experiences on the complex fossil fuel politics at negotiations. Participation in COPs was the only criterion to recruit interviewees. Participants were divided into negotiators (N) and observers (O). While negotiators are eligible to join negotiations between states, observers are denied. The UNFCCC's rules suggest that observers can only join side events, a forum providing input into negotiations and facilitating the exchange of ideas (Schroeder & Lovell, 2012).

To recruit participants and conduct interviews, I used purposive and snowball samplings. After confirming with the member secretary of the Ministry of Environment, Forest, and Climate Change's (MoEFCC) subcommittee on preparing Bangladesh's position paper for COP26, I chose 14 current and former negotiators from the subcommittee. Following post-COP26 press conferences and by asking negotiators, I then chose 10 observers based on their experiences in participating side events. Participants included academics, bureaucrats, CSOs, ENGOs, LDC experts, journalists, parliament members, and researchers **(Table 3).** To conduct interviews, I used four platforms: Zoom, WhatsApp, mobile, and face-to-face meeting. I conducted interviews (ranging in duration from 30 minutes to 1.5 hours) in English and Bengali. Seventeen interviewees consented to audio-recording. I took detailed notes for the remaining interviews.

I then transcribed and translated the interviews. Following two thematic categories, I organized the transcripts. I assigned a unique reference number to each interview to preserve participants' anonymity. Following the deductive approach, I scanned the transcripts and performed manual coding along thematic categories, a method used in other research on climate negotiations and fossil fuels (Betzold et al., 2012; Genovese, 2014; Marquardt & Nasiritousi, 2022). This allowed me to screen transcripts to identify key themes and connections between thematic categories.

Table 3: Participants' affiliation, positional divide, and reference numbers used in analysis

Group	Reference Number	Production Phaseout (PP) or Consumption Reduction (CR)	Affiliation
Governmental	N-1	PP	Chair of the Parliamentary Standing Committee on MoEFCC
	N-2	CR	Department of Environment
	N-3	CR	
	N-4	CR	
	O-1	PP	
	N-5	PP	MoEFCC (bureaucrat)
	N-6	CR	
	N-7	PP	
	O-2	CR	
	N-8	CR	ENGO
	N-9	CR	
	N-10	PP	
	N-11	CR	Journalist
	N-12	CR	Academic, CSO
	N-13	CR	
	N-14	PP	Researcher Director
Nongovernmental	O-3	PP	ENGO
	O-4	PP	
	O-5	PP	Academic, CSO
	O-6	PP	
	O-7	PP	
	O-8	PP	CSO
	O-9	PP	
	O-10	CR	Technical Advisory Panel, Green Climate Fund

5. Analysis: Central dynamics of LDCs' confronting fossil fuel incumbents

To challenge incumbents' norms and practices, the LDCs coalition is guided by two competing ideas that shape the strategic actions of negotiators and observers. While the idea of reducing fossil fuel consumption inspires negotiators to undertake soft negotiation strategies focused on reducing fossil fuel consumption, observers adopt hard tactics at side events to emphasize the need for phasing out fossil fuel production. The LDCG's mitigation coordinator (interviewees N#4) argued that negotiators constantly pressure incumbents to reduce fossil fuel consumption[34]

[34] While literature documents the LDCG's demand for phasing out fossil fuel, the results of this study suggest that the LDCG calls upon DCME to reduce fossil fuel consumption, as confirmed by mitigation coordinator and other negotiators. Though some negotiators argue for production phase-out, this is their individual position, not reflects the LDCG's position.

since burning fossil fuels is responsible for emissions growth. Negotiators' demand for reduction in consumption intensified after the Paris Agreement established the 1.5°C target in 2015 (N#12). Against this backdrop, observers deem production phase-out is a more viable path than reducing consumption given the lack of emissions reduction progress made by the focus to date on demand-side policies (O#1, O#6-9).

Building on the power's strategic viewpoint, below I present how negotiators (section 5.1) and observers (section 5.2) devise strategies to challenge incumbents and their norms and practices. Using the layered approach of the concept, I then unpack varied interests (section 5.3) that lead to disagreement and fragmentation in and beyond the coalition that partly set the stage of evaluating the coalition's competency in confronting incumbents (section 6).

5.1. Strategies of negotiators

To challenge incumbents, the LDCG uses inclusive and strategic language guided by science and facts. Drawing from the UNFCCC's institutional principles on emissions reduction and IPCC's scientific reports, negotiators (for example as confirmed by interviewees N#2-4) asserted that since burning fossil fuel is more responsible for emissions rise than its production, the LDCG calls on "developed countries and major emitters" (DCME) to lower fossil fuel consumption. One negotiator (N#6) noted that alongside developed states, who are the largest historic emitters recognized by the UNFCCC, the LDCG includes major emitters in their call, who are emerging economies (Brazil, South Africa, India, and China [BASIC]) and Arab Group's petrostates. The inclusion of major emitters (incumbents of the G77+China) in the call is due to their increased demand for fossil fuels and emissions growth after the adoption of UNFCCC (N#8-9).

The inclusion of major emitters is very strategic owing to the politics and divide between northern and southern parties. One negotiator (N#4) argued that if negotiators exclude major emitters, the developed world's groups (particularly the Umbrella Group and EU) would regard the LDCG's call as biased, favoring G77+China's hegemonic incumbents. This is also because Umbrella Group's incumbents (Australia, Canada, Japan, US, and Russia) deny fossil fuel-related decisions in negotiations if the BASIC Group and Arab Group's petrostates disagree with such decisions, and vice versa (N#10-13). During the call upon DCME, the LDCG highlights

environmental and climatic effects of fossil fuel burning to challenge incumbents' norms and practices (N#3). The mitigation coordinator (N#4) noted that the LDCG highlights facts from the IPCC and World Meteorological Organization's recent reports to corroborate claims about climate change impacts and refute arguments by incumbents. Alongside underlining their own climate vulnerabilities, the LDCG strategically emphasizes how the survival of small island and African states is threatening, given their exposure to the cascading effects of fossil fuel burning (N#3). As explained by the mitigation coordinator:

> The LDC Group has an ethical stand to say we are the most vulnerable. We say to incumbents that by burning fossil fuels, you are increasing our vulnerability. If you continue to emit from fossil fuels, ice caps will continue to melt, sea-levels will continue to rise, and temperatures will continue to increase. Consequently, many small island states will slowly sink into water and disappear from the world map. African states will undergo more desertification, food crisis, and famine than the present. (N#4)

Negotiators (N#8-10) noted that by highlighting differential vulnerabilities of island and African states, they aim to garner support of the AOSIS and Africa Group during G77+China's meetings and negotiations. This strategy has brought the LDCG, AOSIS, and Africa Group closer since they share very common features (low fossil fuel consumption and low per-capita emissions) creating a common identity—"we consume less fossil fuel and emit significantly less than DCME"—and a sense of solidarity among these groups (N#8-15). Moreover, most LDCs are members of the AOSIS and Africa Group due to their geographical location and vulnerability. Two negotiators (N#10, N#11) argued that LDCs' overlapping with other negotiating groups and their common identity have facilitated the AOSIS and most states of the Africa Group (division is explained in section 5.3) to support the LDCG's call for reducing consumption. They advocate for the LDCG's call upon DCME since their demand for scaling down fossil fuel-based emissions aligns with the LDCG's call (N#7). Apart from formal support, they provide joint statements with the LDCG underpinning the call to exert pressure over incumbents (N#4). The UK and Independent Association of Latin America and the Caribbean [AILAC] also buttress the LDCG's position (N#13). In negotiation, the EU plays a progressive role in strategically promoting the LDCG's call. One negotiator reflected:

> Though the EU negotiates as a group of developed states, they take a liberal position regarding our call upon DCME since the EU is investing to transition away from fossil fuels. Beyond the negotiation room, they encourage us to raise voice against incumbents. Sometimes they play a mediating role in carrying negotiation process forward, if the LDCG engages in contestation with incumbents (N#5).

Even so, the EU's liberal position is also subjected to criticism. In this regard, negotiators asserted that although the European Union has undertaken promising policy initiatives and sharpened its commitments to transition from fossil fuels, simultaneously, they provide indirect support to incumbents by not directly advocating for our call upon developed countries and major emitters during negotiations (N#11, N#14). Moreover, the European Union feels discomfort when the LDC Group argues that developed countries should reduce their emissions from burning fossil fuels, and it has never been a compatible negotiation issue between LDCs and the European Union (N#8-9).

Several negotiators (N#1, N#5-7) emphasized that the support of other like-minded groups during G77+China's meetings is crucial for convincing southern incumbents. Therefore, the LDCG engages in well-organized "teamwork" to set a "common position" that they discuss in ministerial and preparatory meetings before seeking support of other groups. ENGOs (e.g., Climate Analytics) provide support with drafting the group's position paper and crafting negotiation language to confront incumbents (N#3, N#10). As a cluster lead, the mitigation coordinator (N#4) request the LDC Chair to write statements and press releases in collaboration with the AOSIS and Africa Group. At side events, the coordinator present the LDCG's call to motivate observers and attract the attention of incumbents (N#4). To influence incumbents at negotiations, the coordinator place the LDCG's call on the top of mitigation-related negotiation items, when they submit the LDCG's position to the UNFCCC before COP meetings.

The coordinator shared that during the call upon DCME they abstain from mentioning specific names of incumbents to avoid spoiling bilateral relations. Instead, they request other negotiators (either from LDCs or non-LDCs) to name incumbents specifically. This is done with caution in light of the depth of bilateral relations between incumbents and negotiators. One negotiator from Bangladesh gave this example:

> In G77+China's meetings, I cannot directly call upon China, India, and Saudi Arabia to curb fossil fuel usage as it will harm Bangladesh's bilateral political economic relations with these incumbents. Given this complexity, I request, for example, Tuvalu to mention these names as Tuvalu has shallow relations with them (N#4).

One coordinator (N#4) explained that if divergent views arise that prevent a consensus, negotiators bilaterally discuss with incumbents about conflict of interests and points of disagreement. Bilateral discussion occurs outside negotiation rooms mostly in the form of informal "side meetings" that negotiators characterize as "corridor meeting" (N#6-7). Such meetings take place at the time of tea or coffee break, breakfast, and dinner. In meetings, negotiators share their views and hear counter arguments by incumbents (N#11). One former negotiator (N#5) said that negotiators, in collaboration with like-minded parties of the AOSIS and Africa Group, strive to convince incumbents by saying "we will raise it [the call] for discussion, please don't oppose us at least, if not support." Several negotiators (N#5, N#7, N#4) argued that these bilateral or corridor meetings are very strategic and crucial and they often work better than multilateral negotiations to reach a consensus.

5.2. Strategies of observers

Since observers are restricted from the blue zone (where negotiation occurs), LDCs' observers engage in strategic actions in the green zone (area of side events) and act as a pressure group demanding the phase-out of fossil fuels. One observer (O#8) noted that observers arrange an "alternative COP", known as "people's COP", where CSOs and E/NGOs from LDCs and other negotiating groups join. The alternative COP is supported by the host country's CSOs, who deliver speeches and assist LDCs' CSOs to organize protest and mobilization for winding down fossil fuel (O#3-4). Academic and civil society's observers (O#6-7) noted that through demonstration, LDCs' CSOs raise awareness among public to press their host government for pushing fossil fuel phase-out into negotiations. Observers added that DCME's CSOs also reveal solidarity with these initiatives. In the alternative COP, observers also underline the benefits of advancing renewable energy to influence incumbents. In this regard, a civil society observer stated:

> Our message to incumbents is that if you phase-out fossil fuel production and invest for renewables, it will be the "best investment approach" because investment for renewable energy expansion means that you are investing to avoid potential harms from fossil fuel extraction. In the people's COP, we arrange awareness campaigns to create pressure over incumbents for changing their addiction to fossil fuels. (OA-8)

In addition to the alternative COP, LDCs' observers arrange the "participant day" at COP to pressure incumbents. In the participant day, CSOs and ENGOs hold processions, chant slogans, wear climate masks, and join other observers and local communities with placards betokening the phase-out demand. In orchestrating these actions, they are backed by key civil society organizers such as the CAN, 350.org, Extinction Rebellion, and Jubilee South Asia Pacific Movement (JSAPM) that use non-institutional strategies to convey their message. One civil society observer described his role in this way:

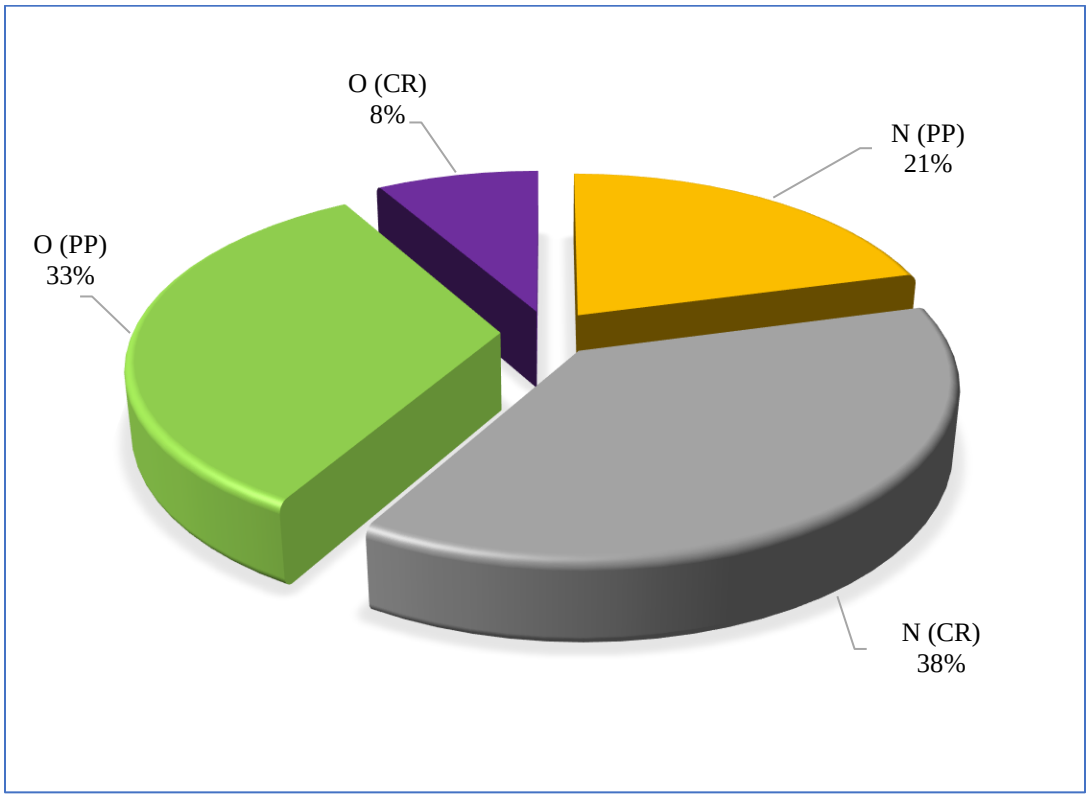
> As a radical climate activist, I am a member of the CAN, 350.org, and JSAPM and I join their anti-fossil fuel campaigns and demonstrations at COPs. I have participated in the CAN's 'Fossil of the Day Award' announcement for lead incumbents. To influence negotiations, I join them to submit online statements to the UNFCCC that include our demand for rapid phase-out. (O#9)

In addition to the "radical" actions described above, CSOs and ENGOs also devise tactics to build relations with negotiators and influence them to push fossil fuel phase-out into negotiations. Observers (O#4-5) noted that they organize seminars at side events and invite LDCs' negotiators to deliver keynote speeches. They also present research studies and applied projects in booths and invite negotiators to visit stalls. Beyond the COP venue, they join webinars and engage in climate-related conversations with negotiators (O#10). Thus, these platforms play a crucial role in presenting and conveying their phase-out demand to negotiators. These efforts aim to press negotiators to discuss fossil fuel phase-out in G77+China's meetings and negotiations. One observer (O#3) argued that such initiatives persuade negotiators to confront incumbents at negotiations. Additionally, CSOs highlight their demand in press conferences at side events and send key messages to negotiators through distributing press releases and newsletters, broadcasting news, and posting on social media platforms.

5.3. Interests, disagreement, and fragmentation

Below I present fossil fuel-related discords and divisions unfolding in the coalition and the G77+China that significantly impacts consensus-based decision-making and the coalition's strategic efforts to challenge incumbents' norms and practices at COPs. **Figure 2** demonstrates the absence of consensus between negotiators and observers regarding whether fossil fuels should be phased out or its usage should be reduced. This division also exists within negotiators and observers. While 46 percent [38% (N) and 8% (O)] interviewees argued for its reduction in usage, 54 percent [33% (O) and 21% (N)] supported production phase-out.

Figure 2: Fragmentation between and within negotiators (N) and observers (O) regarding fossil fuel production phaseout (PP) and consumption reduction (CR)



Of the negotiators who opposed production phase-out, they did so on the grounds that "if you phase-out fossil fuels, how the world will operate activities because the term implies "fully out" from natural gas, oil, and coal on which the world system depends" (N#8). One argued that the

idea of phase-out is "abnormal thinking" (N#8). Another negotiator (N#3) involved in mitigation agenda opined that the LDCG will never accept fossil fuel phase-out due to their lowest production in comparison with DCME, and noted that, instead, "LDCs will continue their production as we don't have adequate capacity to develop alternative of fossil fuels" (N#12). These positions align with those of some observers (O# 2, O#10), who argue against production phase-out and advocate negotiators' call for reduction in fossil fuel consumption. Negotiators affiliated with academia and CSOs (N#12-13) take the anti-phase-out position because these academics and CSOs are driven by "material interests and therefore they do not speak in collective way. Given the influence of government, they are not vocal, cannot play active roles, and cannot speak impartially" (O#7).

Negotiators supporting production phase-out (Table 3) are divided into two groups. While some argued that fossil fuel phase-out should be begun by DCME considering their production (N#5, N#7), others supported a global phase-out while emphasizing support for those who have inadequate capacity for transition from fossil fuel to low-carbon developments (N#1, N#10, N#14). However, such division is not evident in observers calling for a global phase-out of fossil fuels.

In addition to these divides, national interests and regional integration are vital issues during group meetings and negotiations affecting the LDCG's consensus-making process. Negotiators (N#4, N#10-11) asserted that because of high dependency on fossil fuel extraction and its revenue, Africa Group's LDCs (Angola, Ethiopia, Niger, Mozambique, Senegal, and Tanzania) challenge the phase-out proposal by AOSIS's LDCs (Tuvalu, Kiribati, Solomon Islands, Haiti, Timor-Leste, and Comoros) who rely upon fossil fuel imports. Other African LDCs (e.g., Madagascar, Senegal, and Sierra Leon) that rely less on fossil fuels cannot take positions to support production phase-out. This is because there is a perceived risk of harming regional cooperation and bilateral relations with Africa Group's non-LDCs (e.g., Egypt and Algeria) extracting fossil fuels to earn revenue (N#4, N#10-11). They are, however, supportive of reducing fossil fuel usage (N#4). Ethiopia is also receptive to consumption reduction instead of production phase-out.

Similarly, Asian LDCs (e.g., Cambodia and Myanmar) prefer consumption reduction and avoid supporting phase-out as they pursue fossil fuel production. One negotiator (N#14) argued that "if Bangladesh advocates phase-out, we have also to get out from gas production contributing over two-third of total energy and therefore we disagree with phase-out". Despite less dependency on fossil fuels, Nepal and Bhutan ignore phase-out due to the likelihood of adverse implications on regional cooperation and bilateral ties with neighbors (N#7, N#10). Negotiators (N#5, N#14) are concerned about such divisions and diverse interests within the LDCG preventing consensus on production phase-out and weakening language in the group position paper that calls on DCME to scale down fossil fuel usage.

Furthermore, varied interests and divergence in the G77+China affect the LDCG's consensus. In the G77+China, Arab petrostates, BASIC Group, and Like-Minded Developing Countries' (LMDC) Group are the primary states that obstruct a fossil fuel production phase out as they collaborate each other to impair the LDCG' call backed by the AOSIS (N#10). Key incumbents in the Africa Group and AILAC (e.g., Columbia) are also aligned with this group. At negotiations, incumbents of the G77+China and Umbrella Group sit together to counter anti-fossil fuel parties (N#7). Despite historic geopolitical conflict, India and Pakistan support each other to sustain fossil fuel interests (N#5). While Arab petrostates assert that transition away from fossil fuel will cause their oil business contraction and revenue loss, BASIC, LMDC, and Africa Group's incumbents argue for a right to produce fossil fuels:

> We did not pollute in the past. We have the right to pollute, right to emissions, and right to eradicate poverty. Allow us to be developed first and then tell us to wind down fossil fuels. (NA-5)

One negotiator (N#9) highlighted that concern about eroding bilateral ties and losing development support and investment prevents LDCs contesting with G77+China's incumbents. Moreover, this negotiator added that contestation with incumbents can hamper the flow of adaptation monies for which the LDCG, together with the AOSIS and others, bargains. Additionally, Arab petrostates are the key destinations of labor supply and source of remittance for many LDCs (e.g., Bangladesh) supporting to economic growth and development (N#3, N#12, O#10). Religion also appears as another hidden obstacle for some LDCs. For instance,

one negotiator (N#2) indicated that no Muslim LDCs will directly call on Saudi Arabia to phase-out oil or lower its usage owing to religious brotherhood. In sum, diverse interests and divisions in the LDCG and G77+China and LDCs' reliance on and ties with incumbents prevent negotiators' consensus on the fossil fuel phase-out and undermine their call for abating fossil fuel usage.

6. Discussion

Drawing on strategic power's three viewpoints, below I evaluate the coalition's capacity to confront fossil fuel incumbents and their norms and practices. Three underlying barriers restrict the coalition. These include: the fragility of negotiators' strategies, conflicts of interests and fragmentation in the coalition and G77+China, and the deep interstate relations between LDCs and incumbents that are shaped by political economic factors and colonial legacy.

The first barrier is related to negotiators' strategies. While the "soft" nature of strategies undertaken by negotiators seeks to maintain diplomatic relations between LDCs and incumbents, this approach falls short on several grounds. To reduce consumption, while the LDCG's call upon DCME includes BASIC, this call does not specify developed states and Arab Group's petrostates. This non-specification is crucial because not all developed states consume fossil fuel equally. Moreover, production is more important than consumption for Arab petrostates as they dominate global oil and gas production (Tagliapietra, 2019). While the use of soft strategies in global climate negotiations increases the prospect of bargaining success (Weiler, 2012), it appears to be less efficacious for the LDCG because it means LDCs' negotiators abstain from directly mentioning incumbent's names while negotiations occur. Instead, they proceed more cautiously and indirectly, requesting negotiators of another negotiating group (e.g., AOSIS) to name incumbents and reminding them of their responsibility to reduce consumption (N#2). This request results from LDCs' negotiators' concerns about eroding interstate and bilateral relations with incumbents. In short, weaknesses in negotiators' strategies limit the coalition's ability to confront specific incumbents and target their fossil fuel production commitments directly.

The second barrier relates to diverse interests, disagreement, and fragmentation in the coalition and G77+China. Due to the co-existence of dual ideas—production phase-out and consumption reduction —disagreement and division emerge between and within negotiators and observers. As found in the analysis here, two-thirds of negotiators advocate for reducing consumption while over two-thirds of observers support phasing-out production. Though fossil fuel phase-out is crucial for advancing supply-side climate policy under the UNFCCC (Piggot et al., 2018), national interests, regional priorities, and divisions unfolding in LDCs obscure this prospect. These issues also prevent the LDCG to reach a consensus on phasing-out fossil fuel. Without such a consensus, phase-out-related decisions are not possible at negotiations since the UNFCCC's rule requires that decisions should be based on consensus and any LDC can break this consensus by disapproving of the negotiation text (Falzon, 2023).

In addition to barriers to reach a consensus, CSOs, ENGOs, and academics are also *bifurcated*. When they join as negotiators, they pursue soft strategies and demand for reducing consumption. When they participate as observers, they undertake hard strategies and pressure for phasing-out production (Table 3). The results of this study align with Ciplet et al. (2015) and Newell (2008), who discuss fragmentation in civil society and question whose interests civil society serves, respectively. When they join negotiations, their freedom to speak on fossil fuel is very limited (O#7) as governments characterize CSOs and ENGOs as "foreign agents" receiving foreign funds and promoting donor agenda to spoil national interests (O#4). These findings are consistent with Matejova et al. (2018) who assert that CSOs and ENGOs opposing fossil fuel extraction are suppressed by states. Given the national priority on adaptation, CSOs are discouraged by peers and governments to speak out against incumbents (O#8). Their non-institutional or "radical" actions are also confined to side events due to their inaccessibility to negotiations (O#9) diminishing civil society's potentials to hold governments and the UNFCCC accountable (Bäckstrand et al., 2017). Additionally, their resources are limited (Dryzek, 2017).

Alongside the obstacles in the coalition identified above, demand for rights, varied interests, and profound "rift" in G77+China's subgroups (Parker et al., 2012) are the LDCG's underlying barriers. While the LDCG, together with the AOSIS, confronts incumbents, the BASIC Group

emerges as an obstacle. Fossil fuel reliant African LDCs also collaborate with Africa Group's incumbents backed by BASIC and Arab petrostates (N#4). Without recognizing BASIC, little will be achieved in climate negotiations as they seek to shift and balance power and backed by BASIC, power shifts towards China (Dubash & Rajamani, 2010). In Arab petrostates, Saudi Arabia blocks negotiation progress and collaborates with other key "laggards" (Castro et al., 2014), such as the BASIC and Umbrella Groups, to hinder fossil fuel-related decisions. This collaboration has far-reaching implications as it creates a challenging environment for the LDCG to confront incumbents and obscures the prospect of an international agreement to leave fossil fuels underground (van Asselt & Newell, 2022).

The third barrier is entrenched in LDCs' interstate relations with DCME impairing negotiators' ability to confront incumbents. LDCs tend to retain interstate and bilateral ties because of political economic reasons and colonial legacy. LDCs' relations with Arab petrostates are crucial for earning remittance from migrant laborers working in, for example, Saudi Arabia, Qatar, and the United Arab Emirates (UAE) (Ulrichsen, 2016). As remittance substantially contributes to LDCs' foreign reserves and economic development, LDCs' negotiators are tied to the "obligation" to Arab petrostates (N#12) that prevent them from directly calling upon Arab petrostates to cut fossil fuel usage. To portray economic threat, one negotiator (N#3) exemplified that Arab petrostates (Saudi Arabia, Qatar, and the UAE) use migrant workforce as a weapon (and threaten to "send back your workers") to garner support from LDCs during G77+China's meetings and negotiations that limits LDCs' bargain power and negotiation freedom.

In addition to Arab petrostates, relations with BASIC and developed countries are also important for LDCs to secure official development assistance (ODA) bilaterally. For instance, one negotiator (N#12) illustrated that the depth of interstate relations determines LDCs' negotiators' bargaining success during bilateral negotiations for ODA grants that includes a substantial portion of adaptation fund for which negotiators cannot pressurize developed parties to reduce fossil fuel consumption. China and developed states use ODA to influence LDCs' democratic institutions, political regimes, and governments, and obtain access to natural resources, e.g., fossil fuels (Hess & Aidoo, 2019; Blair et al., 2022). Additionally, DCME's energy corporations use investment as a tool to control, explore, and extract LDCs' fossil fuels. Such

investment enables corporate executives to build relations with LDCs' governments aiming to join LDCs' delegations (McGrath, 2022) and influence negotiators to block fossil fuel-related decisions (O#4, O#8-9).

Moreover, LDCs' preference to maintain positive interstate relations relates to their colonial legacy and political ties with neighboring incumbents. To maintain colonial ties, African LDCs are split in anglophone and francophone countries and respective colonizers have notable contributions to conflict resolution, peacekeeping, post-conflict reconstruction, and state-building in their former colonies (Adebajo, 2012). One negotiator (N#9) underlined that "colonial masters still provide with financial, security, and technical support to their former colonies, thereby maintaining postcolonial relations with LDCs." The results of this study imply that Asian LDCs tend to preserve relations with competing regional hegemons (China and India), who are economically and geopolitically vital for LDCs (N#2, O#8). To ensure political security across borders, Myanmar, Nepal, and Bangladesh are required to retain bilateral relations with India. However, interstate relations coupled with political economic dynamics and colonial legacy define why the LDCG is a "weak power" in multilateral climate negotiations, why negotiation power of the LDCG is fragile (N#13), why weaker states, LDCs, undertake soft strategies at negotiations (Bailer, 2012), and why LDCs cannot engage in climate negotiations effectively (Falzon, 2023).

In brief, fragile strategies, discord and fragmentation in the coalition and G77+China, and LDCs' interstate relations together with political economic entanglement and colonial legacy explain why the coalition is still ill-suited to challenge incumbents and their norms and practices. Though Cox (1999) assumed that civil society can establish an *alternative* world order, rupture in and barriers of LDCs' civil society have blurred their prospect of disrupting incumbents' norms and practices and creating a renewable energy order that they invoke at side events.

7. Conclusion

On the basis of common identities, LDCs formed a transnational coalition encompassing negotiators and observers who have devised strategies to confront fossil fuel incumbents and their norms and practices at COPs. While confronting incumbents is indeed a promising initiative to transition the global community from fossil fuels and accelerate international efforts for a fossil-free future (Marquardt & Nasiritousi, 2022), the co-existence of dual ideas creates divisions between and within negotiators and observers. Although civil society is cast as an emerging force to accelerate transition away from fossil fuels (Piggot et al., 2018; McKenzie & Carter, 2021), it is also fragmented due to the presence of dual ideas. Furthermore, civil society actors are denied access to negotiations and can participate as observers only, according to the UNFCCC's rule. Such barriers are also evident in ENGOs and academics that in turn undermine their hard strategies and radical actions invigorating negotiators' anti-fossil fuel stance and creating a kind of pressure over incumbents to forego fossil fuel production.

In addition to observers, LDCs' negotiators are also subjected to constraints while negotiating with G77+China's incumbents, who pursue efforts to continue fossil fuel production, challenge the LDCG's call for reducing fossil fuel consumption, and closely collaborate with Umbrella Group's incumbents. Tensions erupting between negotiators and incumbents further intensify fragmentation, thereby undermining negotiators' ability to defy incumbents' norms and practices by soft strategies. The division into negotiators blocks the LDCG's consensus on phasing-out fossil fuel. The G77+China's rift obstructs the LDCG to garner support from the G77+China's subgroups to bolster the call. Moreover, due to fragile structural conditions, LDCs are enmeshed in complex interstate relations with incumbents shaped by political-economic dynamics and colonial legacy, which in turn forces LDCs to be reliant upon incumbents and restrains negotiators' capacity to challenge incumbents.

In these circumstances, the coalition of LDCs' actors—an historic bloc in a Gramscian perspective—appears to be unable to confront incumbents and their hegemonic norms and practices. Nevertheless, their initiatives are crucial in accelerating global climate mitigation efforts and achieving the 1.5°C target since the global community has failed to control the rise

of carbon dioxide emissions despite three decades of mitigation measures (Stoddard et al., 2021). For this reason, overcoming the barriers and divisions identified here is urgent to advancing supply side climate policy. Therefore, future research should explore how observers' integration and accommodation to climate negotiations can be pursued, how LDCs can overcome political-economic entanglement and colonial legacy, and how greater consolidation in and beyond the coalition can be achieved. Understanding these dynamics is vital to ensuring the LDC coalition can act to curtail fossil fuel production in multilateral climate negotiations.

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Chapter Four: Manuscript-III

Least Developed Countries and restricting fossil fuel supply: strategies and implications in the UN climate negotiations[35]

Abstract

Restricting fossil fuel supply is imperative to curb fossil CO_2 emissions and keep global mean temperature under 1.5°C, thereby accomplishing the Paris Agreement on preventing the catastrophic climate crisis. Very recently, the United Nations climate negotiations have emerged as a key venue to develop international policies for limiting the flow of fossil fuel supply. Although the Group of Least Developed Countries (LDCG) has played a lead role in advancing these vital policies in climate negotiations, diverse challenges obstruct the LDCG's stronger roles in pressing fossil fuel producing negotiating parties to constrain fuel supply. While the LDCG's stronger roles are crucial for developing "supply-side" constraint initiatives, there is limited research on how the LDCG can advance these policies in climate negotiations and how the Group is reshaping international mitigation policy-making through the United Nations Framework Convention on Climate Change (UNFCCC). This article addresses this gap by drawing on 24 interviews with LDCs' negotiators and observers. It identifies three strategies enabling the LDCG to play robust roles in negotiations: *politico-economic*, *institutional*, and *nonmaterial* strategies stand to improve LDCs' negotiation capacity to argue with producers to limit extraction and help address challenges that LDCs face while developing restrictive policies on the supply of fossil fuels. This article contends that LDCG's application of these strategies is pivotal to the advancement of climate mitigation policies via the UNFCCC. Through these strategies, the Group can facilitate the development of a consensus on transitioning from fossil fuels, the advancement of supply-side policies in negotiations equitably, and the diminution of the influence of fossil fuel corporations on climate negotiations.

Keywords: Climate negotiations, fossil fuels, LDC Group, supply-side climate policy, UNFCCC

[35] This single-authored manuscript is the final version after addressing comments of my advisor, Dr. Angela Carter. I have submitted this manuscript to *Climate Policy* (Manuscript ID: 23CP4518-RA).

Key Policy Insights (Journal Requirement):

- The UN climate negotiations are the focal site of developing international policies to restrict the supply of fossil fuels, required for keeping global temperatures below 1.5°C.
- In climate negotiations, the Group of Least Developed Countries (LDCG) has long been championing the implementation of supply-side policies to transition away from fossil fuel production.
- The LDCG leadership on these initiatives is vital for reaching a consensus on fossil fuel transition, advancing supply-side policies in negotiations equitably, and reducing the fossil fuel industry's dominance on climate negotiations.
- The application of three strategies—politico-economic, institutional, and nonmaterial—would enable the LDCG to advance supply-side constraint initiatives in climate negotiations.

1. Introduction

> "If suppliers [of fossil fuels] do not react, demand reductions by a subset of countries are ineffective."
>
> (Sinn, 2008, p.360)

Fossil fuels—coal, natural gas, and oil—are now recognized as the single largest source of human-induced carbon dioxide (CO_2) emissions, contributing about 64% since 1750 and 86% over the last decade (IPCC, 2021). This unprecedented rise in fossil CO_2 emissions is the greatest obstacle to keeping global temperature increase below 1.5°C, and thereby challenges meeting the Paris Agreement on addressing the climate crisis. To limit temperature increases, governments' mitigation policies and international climate regimes have overwhelmingly emphasized curbing the use of fossil fuels by developing policies (e.g., carbon tax) to regulate consumer demand (Rogelj et al., 2015; Lazarus & van Asselt, 2018; Piggot et al., 2020).

These demand-side policies (DPs), however, have largely produced "disappointing" outcomes (Le Billon & Kristoffersen, 2020) given that emissions and therefore prolonged high temperatures, heat-related mortality, and natural disaster-induced losses continue to increase (Vicedo-Cabrera et al., 2021; Yaseen et al., 2023). Therefore, studies argue that staying below 1.5°C of warming

requires leaving 95% of coal, 62% of oil, and 42% of gas reserves underground, ceasing new fossil fuel exploration and extraction, and decommissioning a substantial portion of current fossil fuel infrastructure (Trout et al., 2022; Achakulwisut et al., 2023)—with attention to equity and justice (Muttitt & Kartha, 2020). However, the continued supply of fossil fuels is set to significantly exceed the 1.5°C carbon budget. In 2030, countries plan to produce around 110% more fossil fuels than the amount required to limit warming 1.5°C (SEI et al., 2023). Subsidies to fossil fuels have increased from US$697 billion in 2021 (Harring et al., 2023) to US$1097 billion in 2022 (Ripple et al., 2023) while investments for fossil fuel extraction and revenue of extractive industries are still enormous: USD669 billion and USD4 trillion in 2022, respectively (Rainforest Action Network et al., 2023).

As awareness has grown about connection between fossil fuel production and intensifying climate upheaval, efforts to constrain fossil fuel supply have unfolded on two fronts. First, climate activists have engaged in anti-fossil fuel movements, blocking production sites, litigation against producers, and demanding subsidy removal and rapid divestment (Carter, 2020; Le Billon & Kristoffersen, 2020; Temper et al., 2020). In response, policies to restrict fossil fuel supply, notably bans and moratorium, have been enacted by a subset of states acclaimed as "First Movers," such as France, Costa Rica, Germany, Denmark, and Ireland (Carter & McKenzie, 2020). Second, and subsequently, activists' supply-side climate policy (SSCP) efforts have permeated the Conference of Parties' (COP) multilateral climate negotiations. The recent rounds of COP26 and COP27 have demonstrated the potential for advancing SSCPs internationally, ushering an impressive growth and reinforcement of "anti-fossil fuel norms" into climate negotiations (van Asselt & Green, 2022; Saha, forthcoming). Such SSCPs aim at complementing existing DPs (Pellegrini & Arsel, 2022).

In multilateral COP negotiations, calls for implementing SSCPs was first raised by the Least Developed Countries' Group (LDCG), a negotiating bloc of 46 low-income states in the United Nations Framework Convention on Climate Change (UNFCCC). The LDCG's demands for curtailing fossil fuel production started in the COP23 through a call for a managed phase-out of fossil fuels (Saha & Carter, 2022). As yet, the LDCG continues to confront fossil fuel producers, who in turn continue to attempt to block decisions in climate negotiations that would restrict

fossil fuel supply (Michaelson, 2022; McGrath, 2022). Yet, new research (Saha, forthcoming) has indicated that the LDCG is constrained from advancing SSCPs due to the diverse interests and divisions within the Group. The LDCG also faces other challenges, notably politico-economic relations with fossil fuel producing states.

The LDCG has played a vital role in expediting the development and implementation of SSCPs. Yet, scholarly research has not addressed how precisely the Group influences climate negotiations in this direction and, in so doing, how the Group is reshaping international mitigation policy-making through the UNFCCC. I address these gaps by drawing on 25 interviews with LDCs' negotiators and observers. Based on interviews, I develop three strategic mechanisms that stand to enhance LDCs' negotiation capacity, thereby enabling the Group to play stronger roles in climate negotiations to advance SSCPs.

The *politico-economic* strategy entails reducing LDCs' political and economic reliance on fossil fuel producers, minimizing power asymmetries in negotiations, focusing on divestment and economic diversification, and ending demands for climate finance. The *institutional* strategy involves founding a fixed negotiation team and LDC energy forum, building coalition and networks, increasing participation of negotiators, and incorporating civil society in negotiations. The *nonmaterial* strategy refers to increasing knowledge and expertise of negotiators, putting equal focus on fossil fuels, by negotiators and observers, alongside other negotiation items, avoiding generic words in, for example, statements and position papers to boost clarity, and playing the convening role by the LDCG to resolve divisions and disagreements in negotiating parties. By undertaking these strategies, the LDCG could advance climate mitigation policies through the UNFCCC in a number of promising directions. These include accelerating the development of a consensus on transitioning away from fossil fuels among negotiating parties, advancing SSCPs equitably, and weakening the fossil fuel industry's influence on multilateral climate negotiations.

This research is unique given it is the first study offering strategies—and implications—to develop SSCPs by a negotiating group, the LDCG. By exploring these strategies and their implications, this article contributes to the emerging literature on identifying ways to address fossil fuel supply under the UNFCCC (Piggot et al., 2018). These strategies help bridge the current lack in extant scholarship (e.g., Green & Denniss, 2018; Lazarus & van Asselt, 2018; Gaulin & Le Billon, 2020; Harrison & Bang, 2022) of specific pathways to advance SSCPs. I begin by providing context on SSCPs and initiatives by Least Developed Countries (LDCs) to adopt supply-side actions in COPs and describe the methodology of this study. I then present the three strategies and then draw out the implications of their application. I conclude by asserting that as strategies are important for the LDCG's robust roles in developing SSCPs, multiple barriers may obstruct pursuing those strategies that need to be pinpointed and resolved by future studies.

2. Background

2.1. Fossil fuel production and supply-side climate policies

This paper contributes to the discourse of SSCPs, which emerged in the context of perceived failure of DPs to reduce fossil CO_2 emissions. For decades, global climate negotiations, agreements, and mitigation plans have overwhelmingly emphasized DPs (e.g., emissions trading system) to curtail fossil fuel consumption (Lazarus & van Asselt, 2018). Although policymakers initially presumed that DPs would abate emissions substantially, they are now deemed less "cost effective" (Fæhn et al., 2017) and "insufficient" (Pellegrini & Arsel, 2022) at lowering fossil fuel consumption in accordance with the Paris Agreement's 1.5°C goal (Lazarus & van Asselt, 2018). The outputs of DPs are "largely disappointing" (Le Billon & Kristoffersen, 2020), since fossil CO_2 emissions have increased about 86% over the past ten years (IPCC, 2021).

In the context of DPs' frustrating results, policymakers are increasingly focusing on constraining the "upstream supply" of fossil fuels that has been ignored in climate policymaking (Green & Denniss, 2018). Furthermore, the disappointing outcomes have mobilized climate activist movements, pressuring producers to leave fossil fuels underground (Carter & McKenzie, 2020; Pellegrini & Arsel, 2022). These burgeoning movements and protest coupled with governmental initiatives (e.g., the Yasuní-ITT Initiative, the Beyond Oil and Gas Alliance, and the Fossil Fuel

Non-Proliferation Treaty) have facilitated the rapid rise of SSCPs (Piggot, 2018; Newell et al., 2022) to restrict "the production, transportation or transformation of [fossil fuels], either voluntarily or coercively" (Le Billon & Kristoffersen, 2020, p.1074).

Although supply-side policies to constrain fossil fuel production are relatively new in the climate policy domain, they have been long used to limit the supply of other commodities, notably asbestos and tobacco (Green & Denniss, 2018). Proponents of SSCPs have proposed various tools to restrict fossil fuel production. While Lazarus & van Asselt (2018) categorizes these tools into economic, regulatory, and governmental, Le Billon & Kristoffersen (2020) divide them into financial and material. Financial or economic instruments seek to constrain fossil fuel supply by, for example, taxing production and export, removing production subsidies, imposing cap-and-trade on production rights, and divesting. Material instruments overlap with regulatory initiatives because material SSCPs include legal (e.g., moratoria and bans on production) and physical (e.g., blocking extraction sites) measures. Governments can acquire producers' rights by compensating resource owners for leaving fossil fuels underground.

Furthermore, Erickson et al. (2018) contend that fossil fuel (oil) supply can be restricted through, for example, ceasing the issuance of new permits, using setback regulations that focus on maintaining distances between extraction sites and important infrastructures such as hospital, phasing out emissions-intensive production, and phasing out "high-cost" fossil fuels. In the broad spectrum of SSCPs, phasing out fossil fuel production has gained traction (Trencher et al., 2023), thereby representing the "procedural commitments" and "disarmament" of the Fossil Fuel Non-Proliferation Treaty (Newell et al., 2022), an overarching institutional framework for a "supply-side climate treaty" (Asheim et al., 2019). In short, there is an increasing uptake of SSCPs. As Gaulin & Le Billon (2020) track, despite highly uneven adoption worldwide, 1302 supply-side constraint initiatives were implemented between 1988 and 2017.

Many advantages have inspired the implementation of SSCPs. Green & Denniss (2018) asserted that SSCPs can lower transaction and administrative costs, increase abatement certainty, reduce carbon "lock-in"[36] risk, address the "green paradox[37]," and garner public support to restrict fossil fuel supply. They are conducive to international cooperation and producer coalitions to undertake supply-side actions. SSCPs can also contribute to diminishing resource curse outcomes (Pellegrini & Arsel, 2022), improving health benefits and equity for disadvantaged communities, and reducing losses in worker compensation (Deshmukh et al., 2023). This in turn helps to reduce the cost of low carbon transitions, motivates low-carbon investment, incentivizes carbon policies being applied to fossil fuel producers, and insures against a "failed" Paris Agreement (Asheim et al. 2019). Compared to DPs, SSCPs offer direct options to curtail emissions by phasing-out fossil fuels. While DPs focus on a large volume of consumers, SSCPs offer the benefit of focusing on a relatively limited number of producers (Collier & Venables, 2014).

Though SSCPs are gaining prominence for their advantages, key barriers hamper enacting such restrictive policies. Piggot (2018) and Piggot et al. (2020) identify that "carbon entanglement" of fossil fuel producing states, institutional and financial supports by governments to the fossil fuel industry, political power of fossil fuel corporations, cultural discourses around fossil fuels' role in socioeconomic development, climate change denial movements, and equity concerns are hindering the implementation of SSCPs. Additionally, membership in Organization of Petroleum Exporting Countries obstructs the enactment of SSCPs (Lujala et al. 2022). Fossil fuel producers, politically powerful interest groups, and political parties also strongly oppose enacting SSCPs (Erickson et al. 2018; Harrison & Bang, 2022). Despite multiple barriers, supply-side proponents envision that SSCPs would reduce about two-thirds of global emissions by 2020 (Fæhn et al., 2017), whereas DPs have failed.

[36] A process through which countries have been locked into carbon-intensive fossil fuel sectors (Unruh, 2000).
[37] The perceived risk in resource policy change can inspire resource owners to increase their resource extraction, thereby declining market prices and increasing consumption of those resources (Sinn, 2012).

2.2. LDCs' supply-side climate policy initiatives at COPs

Alongside growing pressure by nonstate actors on governments for implementing SSCPs (Pellegrini & Arsel, 2022), states are also increasingly calling at intergovernmental climate negotiations for undertaking SSCPs. Of the UNFCCC's negotiating groups, the LDCG has been demanding the adoption of SSCPs in COPs. This started in 2015 with the *Suva Declaration on Climate Change*, when a subset of small island LDCs (Kiribati, Solomon Islands, Timor Leste, Tuvalu, and Vanuatu), with other countries and organizations, called for transitioning away from fossil fuels (Saha & Carter, 2022). The LDCG's demand was consolidated at the 2017 COP23, when other LDCs joined small island LDCs during closing statements and collectively called for a managed phase-out of fossil fuels.

The LDCG continued their call for adopting SSCPs. Ahead of the 2018 COP24, the LDCG endorsed the Talanoa Dialogue's (TD) proposal on "phasing out subsidies to fossil fuels and [...] phasing out fossil fuel production" (Talanoa Dialogue, 2018, p. 8). To bolster the TD's proposal, the LDCG restated the urgency of shifting away from conventional fossil fuels and phasing-out unabated (without any emissions reduction measures) coal production globally (LDC Climate Change, 2018a). Before the COP24, the ministers and heads of LDCs delegations called for "managing the rapid decline of fossil fuels" production to achieve net zero by 2050 (LDC Climate Change, 2018b). Likewise, ahead of the 2021 COP26, seven small island LDCs that are reliant on fossil fuel imports (Comoros, Haiti, Kiribati, Timor Leste, Solomon Islands, Tuvalu, and Sao Tome and Principe) called upon fossil fuel producing G20 countries to "phase out of all fossil fuel subsidies" by 2023 (Saha and Carter, 2022, p.3). In short, although SSCPs have long been ignored in international climate negotiations (Pellegrini & Arsel, 2022), recently they have been gaining prominence in COPs because of the lead role of the LDCG.

3. Methodology

To explore how the LDCG can play robust roles in COP negotiations to constrain fossil fuel supply, I focused on identifying strategies the LDCG can pursue to advance restrictive SSCPs through intergovernmental climate negotiations by a close analysis of an LDC, namely Bangladesh. I chose Bangladesh for three reasons. First, Bangladesh has been coordinating the

LDCG's mitigation agenda, LDCs' mitigation-related negotiators, and negotiations with other negotiating blocs. Mitigation coordinator was key informants to identify strategies given the experience on calling for the adoption of SSCPs in COPs. Second, negotiators and observers of Bangladesh have years of experience in joining COP negotiations and "side events", respectively. Third, choosing Bangladesh was particularly valuable given that this country's negotiators and observers have had remarkable influence on adopting climate-related decisions (loss and damage [L&D]) in COPs: as Bangladesh chaired the LDCG and Climate Vulnerable Forum (CVF) influencing negotiations by diplomacy and advocacy.

Following the steps of "standardized" open-ended qualitative interview technique (Turner, 2010), I developed an interview guide that aligned with my research questions and contained 11 open-ended sub-questions. The open-ended nature of the interview permitted interviewees to discuss wide ranging strategies for advancing climate policies to restrict fossil fuel supply. To recruit interviewees, I used purposive and snowball samplings that allowed to find targeted participants easily. Interviewees are negotiators (N) and observers (O) participating in COP negotiations and side events, respectively. Since the UNFCCC denies observers' participation in negotiations, they only join side events providing indirect input into negotiations and promoting the exchange of ideas (Schroeder & Lovell, 2012).

I conducted 24 interviews, with 14 negotiators and 10 observers. I conducted interviews via Zoom (9), WhatsApp (3), mobile (3), and in-person (9). I selected former and current negotiators of Bangladesh from the subcommittee on developing the country's COP26 position paper. To choose observers, I consulted with negotiators and followed the activities of COP26 delegates over several online platforms (e.g., Facebook). Interviewees came from diverse backgrounds, including academics, civil society organizations, ENGOs, and bureaucrats (Table 4). Each interview lasted from 30 to 90 minutes and was conducted in English and Bengali, following ethics protocols at the University of Waterloo Human Research Ethics Board. Most interviewees (17) agreed to have the interviews audio recorded; I took detailed notes if interviewees preferred not to be recorded.

All interviews were transcribed, translated, and coded using manual coding, which is a technique used in analyzing qualitative data on climate negotiations and fossil fuels (Betzold et al., 2012; Marquardt & Nasiritousi, 2022). Using a deductive approach, I scanned the transcripts and identified three broad themes (4.1, 4.2, and 4.3) that helped generate ten subthemes (4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, and 4.3.3). These themes and subthemes manifest strategic pathways enabling the LDCG to play robust roles in COPs to advance SSCPs. The results are presented according to the themes and subthemes. I used a unique reference number for each interviewee to maintain their anonymity. The reference numbers helped compare and connect interviewees' opinions and draw anonymous quotes.

Table 4: Participants' affiliation, interview process, and reference numbers used in analysis

Group	Reference Number	Affiliation
Governmental	N-1	Chair of the Parliamentary Standing Committee on MoEFCC
	N-2	Department of Environment
	N-3	
	N-4 (Mitigation Coordinator)	
	O-1	
	N-5 (Retired)	MoEFCC (bureaucrat)
	N-6 (Retired)	
	N-7	
	O-2	
	N-8	ENGO
	N-9	
	N-10	
	N-11	Journalist
	N-12	Academic, CSO
	N-13	
	N-14 (Retired)	Researcher Director
Nongovernmental	O-3	ENGO
	O-4	
	O-5	Academic, CSO
	O-6	
	O-7	
	O-8	CSO
	O-9	
	O-10	Technical Advisory Panel, Green Climate Fund

4. Results

Drawing on interviews with negotiators and observers, this section describes strategic pathways to reinforce LDCG's roles in climate negotiations to advance policies constraining fossil fuel supply. Strategies are divided into politico-economic, institutional, and nonmaterial that will strengthen LDCs' negotiation capacity to press producing states for limiting fossil fuel supply. They will also help address challenges that LDCs face in developing restrictive policies on the supply of fossil fuels.

4.1. Politico-economic

4.1.1. Addressing politico-economic dependency and power imbalance

Interviews underscored that LDCs are entangled in complex political-economic relationships with fossil fuel producers. This inhibits negotiation attempts to encourage producers to curtail their fossil fuel supply. For instance, negotiators underlined the importance of maintaining relations with Arab Group producers to earn remittance from migrant laborers working in nations like Saudi Arabia and Qatar (interviewees N#3 and N#12 see Table 4). This remittance is vital for LDCs' economic growth. Likewise, the relationships with producers in the BASIC Group, the Umbrella Group, and the European Union are also crucial for LDCs to secure Official Development Assistance [ODA] (N#12). Though ODA makes remarkable contributions to LDCs' socioeconomic development, it is used by many producers to influence LDCs' energy policies and politics (N#8). The findings also reveal the geopolitical and economic interconnections between Asian LDCs (e.g., Bangladesh, Myanmar, and Nepal) and regional hegemons (India and China) of the G77+China (N#2, O#8). Asian LDCs and hegemons depend on each other to ensure political stability across borders. For example, Myanmar, Nepal, and Bangladesh are required to maintain bilateral relations with India to ensure political security across borders. Due to these complex politico-economic relations, one negotiator asserted that "we cannot directly force any [producers] to curtail fossil fuel supply because there is [...] dependency in LDCs undermining our strategic positions in negotiations" (N#3). The LDCG must overcome this dependency to play a more robust role in pressuring producers to adopt decisions to restrict fossil fuel supply (O#9-10, N#9). Since LDCs are "economically very weak"

and do not have "material power," resourceful and powerful producers often "neglect" LDCs' opinions in climate negotiations (N#12). An observer argued that fossil fuel producing countries are a "hundred times more powerful" regarding economic resources than LDCs and without addressing this "power imbalance" in climate negotiations, the LDCG will be unable to advance SSCPs (O#5).

4.1.2. Divestment and economic diversification

To advance SSCPs by the LDCG, the emphasis on divestment in negotiations is vital. Civil society observers noted that negotiators should emphasize institutional investors (e.g., educational institutions) for removing investments from fossil fuel production (O#8-9). An ENGO observer argued that, despite the record-breaking profits by fossil fuel corporations, the LDCG is still silent about the urgency of divesting fossil fuel holdings (O#3). This interviewee further asserted that, although the divestment movement has been remarkably successful in encouraging financial and educational institutions to divesting trillions of dollars from fossil fuel production, the emphasis on divestment has been neglected in LDCs' preparatory meetings and negotiations. According to the above observers, the focus on divestment can contribute to adopting related decisions to divert fossil fuel investments towards low-carbon developments.

Additionally, the emphasis on economic diversification can help to reduce reliance on fossil fuel extraction for economic development. The mitigation coordinator observed that negotiators of producing states are reluctant to support phasing out fossil fuels because curtailing production would hamper economic growth and diminish revenue (N#4). This belief largely persists in negotiators of the Umbrella Group, Arab Group, Africa Group, and BASIC (Brazil, India, China, and South Africa) Group (N#5, N#10). The mitigation coordinator affirmed that the LDCG should underscore economic diversification in COP preparatory meetings and negotiations to remind producers that "it is urgent to diversify economic sectors to generate revenue and support economic development in the absence of fossil fuels as they are exhaustible" (N#4). Given the hesitancy of producers to diversify their economic sectors, this interviewee argued negotiators should mobilize support from other like-minded groups (e.g., the Alliance of Small Island States [AOSIS]) to promote this idea. However, one mitigation coordinator noted that diversification

is already started by major producers such as Saudi Arabia, which has been investing in tourism and entertainment to reduce the reliance on oil revenue (N#4). More than diversification alone is needed to phase out fossil fuel production.

4.1.3. Ending the funding demands for adaptation, loss, and damage

LDCs' negotiators and observers focus on securing funds for climate adaptation and L&D is another constraint on their ability to pressuring producers to restrict fossil fuel supply. As one negotiator observed, "we foolish people [LDCs' negotiators] are only shouting for money" for L&D, rather than focusing on the root cause of the damage (N#10). Interviewees stressed the importance of securing funding for L&D, for example, one observer noted:

> "We [LDCs] are extremely vulnerable to climate change. We need to adapt but we don't get offered money for adaptation. We need funding to recover from L&D but nobody is coming forward. There is a strongly failed mismatch between funding pledge and disbursement" (O#5).

Yet, the overwhelming emphasis on L&D funds in COPs, particularly the COP27 in Egypt, prevents negotiators and observers from strongly urging producers to forego extraction (N#12)—in part because negotiators and observers believe that if they press producers of the Umbrella Group and European Union (EU) to phase out production, it would negatively affect mobilizing funds for adaptation, loss, and damage (N#12, O#4, O#8). One interviewee noted that LDCs' position papers have been ignoring the fossil fuel phase-out and other legal measures to restrict fossil fuel supply (N#10). The underlying reason of this negligence is the inertia of policymakers, experts, and bureaucrats, who engaged in developing position papers and underlined the need of financial assistance (N#10). Since NGOs seek funding to implement projects for, for example, adaptation, they are also aligned with the groups preparing position papers (O#4, O#9). In these circumstances, negotiators and observers suggested that LDCs "should not run for money"; instead they should pressure producers for transitioning away from fossil fuels (N#1, N#9-10, N#14, O#4, O#8-9).

4.2. Institutional

4.2.1. Forming a fixed negotiation team

Negotiators' stronger roles in developing SSCPs depend on their understanding of negotiation process, strategies, institutional rules, and the debate around fossil fuel transition. To increase such an understanding, negotiators need to participate in negotiations regularly. However, interviewees noted that LDCs' delegations lack such continuity (O#9-10, N#9, N#14) because, due to retirements and changes in government departments, new negotiators join each subsequent COP negotiation with limited knowledge or experience (N#3, N#14, O#10). For instance, one negotiator observed the "wholesale transfer" and retirement of officials in Bangladesh that resulted in a completely new delegation of negotiators at COP26 (N#9).

In addition to hampering negotiations, such transfer also creates the problems of coordination (new negotiators lack the means to coordinate officials, civil society, and activists) and documentation (if an officer transfers after COPs, it is difficult to find out documents left by that officer) (N#7, O#3). Furthermore, new negotiators do not feel confident to voice opposition to the G77+China's fossil fuel producers (N#9). Given these problems, participants stressed the need to maintain consistency by sending experienced negotiators to each COP and stop removing officials, who had been involved in COP negotiations for years (N#14, O#10). These are important to avoid the "efficiency loss" due to transferring experts and to ensure fruitful negotiations on developing SSCPs. Interviewees strongly suggested establishing a "fixed and resourceful negotiation team" equipped with knowledge, expertise, and negotiation capacity (N#7, N#9, O#1). Such a team is urgently needed because the LDCG still "needs expert and experienced negotiators to counter fossil fuel producing states in negotiations" (N#7). This team should incorporate academics, politicians, government officials, civil society, researchers, and activists engaged in climate negotiations for years (O#1, N#7, N#9).

4.2.2. Establishing the LDC energy forum

A coordinating body would also help the LDCG to develop a consensus on, and foreground the need to, curtail fossil fuel supply as a negotiation priority. One observer underlined the potential for creating an "energy forum," for example, where the LDCG's forty-six members can discuss

and reach a consensus on initiatives to constrain global fossil fuel production (O#8). Such a consensus is crucial prior to discussing SSCPs in LDCs' ministerial and preparatory meetings, including the G77+China. It is also important given the diverse interests, disagreements, and divisions among negotiators, LDCs, and the G77+China regarding measures to curtail fossil fuels supply (N#1, N#3-4, N#10-14). With the UNFCCC's assistance, the LDCG could form this energy forum as an "independent body" (N#5), involving not only negotiators but also civil society, experts, academics, and activists those who understand SSCPs (O#8).

An energy forum could arrange side-events, talk-show, dialogues, and seminars underlining the enhancement of international cooperation for the implementation of supply-side measures to restrict fossil fuels. Moreover, this forum would represent the LDCG in international fora (e.g., the World Economic Forum and UN Energy) to start global cooperation for SSCPs. Interviewees observed that the limited advancement of SSCPs in COPs is due to the "lack of a platform" for this conversation among the LDCG with energy experts and activists, who can pressure fossil fuel producers to implement supply-side measures (N#13, O#8). Creating an LDC energy forum that includes "consistent strong leaders and experts" would provide this platform and is now urgently needed (O#8).

4.2.3. Building coalition and networks

Since the LDCG is economically and materially less powerful than fossil fuel producers as identified above, forming a coalition between the LDCG and like-minded negotiating parties is essential in the effort to lobby producers to implement SSCPs. As one negotiator asserted, the LDCG has limited ability to exert pressure on EU, Umbrella Group, and G77+China's producers as LDCs are in a structurally disadvantaged position in negotiations due to their need to secure financial resources from wealthy producers to address climate impacts (N#7). Therefore, the LDCG should selectively choose "good allies" to strengthen their ability to press producers effectively (O#10). One negotiator underscored that the LDCG should form a coalition with allies relying least on fossil fuel extraction such as the AOSIS, ALBA (Bolivarian Alliance for the Peoples of Our America), EIG (Environmental Integrity Group), and Coalition for Rainforest Nations (N#7). Furthermore, the LDCG needs to be cautious about including "spoilers" (such as

the Arab, BASIC, and Umbrella Groups' producers) in any coalition as these countries would oppose efforts to cut fossil fuel production (O#10).

In addition to the coalition formation, the mitigation coordinator underscored the importance of building networks with transnational ENGOs (N#4). Although ENGOs (e.g., Climate Analytics and International Institute for Environment and Development) have been supporting the LDCG for successful negotiation outcomes on, for example, financing climate adaptation, ENGOs have not offered similar support for ending fossil fuel production—and this is because LDCs' negotiators working on mitigation have not yet sought such support (N#4). Therefore, the mitigation coordinator emphasized the need to build ties and networks with transnational ENGOs to organize workshops and trainings to enhance negotiators' limited understanding about the burgeoning initiatives to constrain fossil fuel supply.

4.2.4. Greater participation and inclusion

The prospect of LDCG' success in advancing SSCPs vastly depends on greater participation and inclusion of skilled negotiators and observers in negotiations, respectively. However, the mitigation coordinator noted that most LDCs (e.g., Angola, Congo, Djibouti, Guinea-Bissau, and Liberia) don't send their negotiators or participate in negotiations on mitigation-related issues, notably relating to fossil fuel production (N#4). Such nonparticipation is mainly due to their limited financial capacity to send negotiators to COPs (N#4). The lack of negotiators limits the LDCG's ability to participate in or focus on negotiations on constraining fossil fuel production (N#3). For example, while the Umbrella Group sends four negotiators on each mitigation item, the LDCG sends one negotiator to cover four items simultaneously (N#13). These circumstances undermine the LDCG's effective participation in negotiations on fossil fuels. Therefore, interviewees suggested the greater participation of skilled negotiators to engage with fossil fuel producers for implementing SSCPs (O#2, N#3). For instance, the mitigation coordinator emphasized the need to ensure three negotiators participate from each LDC (N#4).

Given the limited progress in developing SSCPs by negotiators and the UNFCCC's restriction on observers to join negotiations, interviewees underscored the need for the "respectful" inclusion of observers in state negotiation teams and COP negotiations (N#5, O#9). Observers asserted

that governments and the UNFCCC should include civil society representatives given their successful records of lobbying states and corporations to phase out fossil fuels (O#4, O#8). One former negotiator argued that "the UNFCCC should incorporate civil society in negotiations" (N#5) because civil society can play a "vibrant role" as a "watchdog" in monitoring and tracking investors' "dirty investments" in fossil fuel exploration, extraction, and transportation (N#5, O#4, O#9). The UNFCCC and negotiating parties must ensure civil society's "freedom" to play that role as a "pressure group" in negotiations (O#4, O#10).

4.3. Nonmaterial

4.3.1. Knowledge, intellect, and argumentative power

Knowledge on climate negotiations, mitigation, and international diplomacy increases negotiators' intellectual and argumentative capacity. These are essential for LDCs' negotiators to scientifically refute the arguments of fossil fuel producers, thereby advancing SSCPs. However, interviewees observed a serious "knowledge gap" among LDCs' negotiators that undermines productive negotiations on restricting fossil fuel supply (N#5 O#4). One observer noted that "LDCs join negotiations as the least prepared group and they do not have interest in recruiting experts, who have knowledge on fossil fuels" (O#10). Negotiators also confirmed the LDCG's lack of expertise on the need to constrain fossil fuel supply to advance mitigation policies (N#7, N#13). Due to insufficient knowledge, LDCs' negotiators need additional time in negotiations to engage with fossil fuel producers (N#5). This is because negotiators of producing states "have the higher-level of knowledge" (N#5) and extensive training on diplomacy and negotiation that LDCs' negotiators lack (N#11).

To improve LDCs' negotiators' knowledge and expertise, interviewees underscored the importance of acquiring academic degrees and training from reputed institutions (N#11). Other suggestions included empirical research and relevant documentation through regular meetings, workshops, and seminars (N#7, N#12, O#1-2). These are important for not only building negotiators' "soft capacity" that one negotiator defined as "argumentative power," (N#12) but also changing negotiators' "mindset" of focusing on demanding climate funds without prioritizing restricting fossil fuel production in LDCs' position papers (N#10). Building this

capacity is important because climate negotiation is "an art and negotiators must be intelligent, courageous, and skilled for face-to-face arguments" with powerful producers to advance SSCPs (N#11), and LDCs need financial and technical support to develop it (N#3, O#4).

4.3.2. Equal space and avoidance of generic terms

The development of SSCPs through COPs mostly relies on the equal focus on limiting fossil fuel production alongside other negotiation agenda such as adaptation and L&D. However, one negotiator asserted that the LDCG has never put "equal priority" on fossil fuel reduction compared to adaptation, finance, and L&D (N#5). Similarly, one observer noted that "an equal space is not given to observers to discuss phasing-out fossil fuels. Instead, they are being advised to demand funds for adaptation and L&D" (O#10). This situation is articulated as the "motivational gap" because as one observer noted:

> "(t)he pundits [experts] on adaptation and L&D have never motivated governments, negotiators, and observers to highlight phasing out fossil fuels because they are disinterested in annoying political leaderships by bringing this sensitive issue to the fore" (O#4).

The issue is sensitive as LDCs still depend on either producing or importing fossil fuels. If pundits emphasize constraining fossil fuel production, it will affect LDCs' energy supply, socioeconomic development, and financial benefits that LDCs receive from fossil fuel producing states through remittance and ODA (N#14, O#8). These reasons which prevent pundits from highlighting fossil fuels must be addressed to create an equal space for fossil fuel in LDCs' negotiation agenda (O#4, N#5, O#8, N#12).

In addition to an unequal focus on fossil fuels, the generic use of terms is another barrier to developing SSCPs. One mitigation coordinator asserted that "we put little emphasis on fossil fuels and instead broadly highlight two generic terms: mitigation and emissions reduction" (N#4). Emphasis on such generic terms undermines the prospect of developing SSCPs. Therefore, negotiators should avoid generic terms, identify key elements of emissions, and broadly discuss the fossil fuel element with a priority on winding down fossil fuel extraction (N#4). Alongside the discussion, negotiators should include abandoning fossil fuel extraction in

LDCs' position papers, submissions to the UNFCCC, and statements during plenary and closing sessions of COPs. This issue also needs to be prioritized in joint statements with other negotiating groups, press conferences, and LDCG and G77+China's preparatory meetings (N#4-7).

4.3.3. Resolving disagreement and divisions

To make progress on developing SSCPs, negotiators must develop a consensus on the restriction of fossil fuel production. However, negotiators observed disagreement, divisions, and diverse interests in the LDCG, including the Umbrella Group and G77+China's subgroups (the BASIC, Arab, and Africa Groups) (N#4-5, N#10-11; N#14). The producing states of these groups have been opposed to restricting fossil fuel production. Therefore, negotiators suggested that producing states must abandon their "narrow national self-interests" to continue fossil fuel extraction thus creating disagreement with nonproducers, who demand restricting fossil fuel supply (N#7, N#10). The ultimate result of this disagreement is divisions in negotiating parties.

To address producers' self-interests, negotiators recommended bilateral negotiations and meetings among fossil fuel producers in advance of each COP (N#3, N#7). This would provide a chance for LDCs and producers to discuss competing interests and find mutually beneficial ways to address points of disagreement (N#7). LDCG's nonproducers could collaborate with Umbrella Group and G77+China's nonproducers to convene meetings with producers (N#7). Nonproducers could arrange bilateral negotiations and meetings before each COP and invite producers to join and discuss potential pathways to develop international policies to restrict fossil fuel supply. The G77+China and Umbrella Group's chairs coussld facilitate these meetings and negotiations since key producers belong to these groups (N#7). One negotiator suggested this approach would increase interaction and cooperation among producers, thereby resolving disagreements and divisions that will create a conducive environment for developing supply-side constraint initiatives via the UNFCCC (N#14).

5. Discussion

The previous section presented politico-economic, institutional, and nonmaterial strategies that could help the LDCG reinforce their strategic position in negotiations and capacity to argue with producers to reduce extraction, and address challenges that the Group undergoes while developing restrictive policies on the supply of fossil fuels. This strategic reinforcement enables the LDCG to reshape international mitigation policymaking through the UNFCCC. Three crucial areas of this reshaping process are discussed below.

5.1. Ensuring consensus on transitioning from fossil fuels

Though the recent COPs showed initial steps toward for fossil fuel phasedown and phaseout, the lack of consensus among negotiating parties restrains progress. In the COP26, while the first draft of the Glasgow Climate Pact (GCP) called upon parties "to accelerate the phasing-out of coal and subsidies for fossil fuels" (UNFCCC, 2021, p.4), the final version was revised to refer to "the phasedown of *unabated* coal power and phase-out of *inefficient* fossil fuel subsidies" (UNFCCC, 2022a, p.5, emphasis added). This weakening of the text occurred because China, India, Iran, Nigeria, Russia, South Africa, and Saudi Arabia failed to arrive at a consensus on the first draft (Saha & Carter, 2022; Depledge et al., 2022). Then in COP27, India called for phasing-down oil and gas alongside coal. However, major oil and gas producers, notably Saudi Arabia, Russia, Canada, Brazil, and Gulf Petro-states, again failed to reach a consensus on phasing-down of all fossil fuels (Saha, forthcoming). Consequently, the phasedown of all fossil fuels was not included in decisions of the COP27, rather it just restated the final text of the GCP.

Since the UNFCCC process is a consensus-based decision-making process, meaning each party has equal veto power (Prasad & Sud, 2021), developing COP decisions on phasing-out fossil fuels is difficult (Piggot et al., 2018). This difficulty is due to divisions and disagreement between nonproducers and producers, who demand restricting fossil fuel supply and oppose phasing-out fossil fuels, respectively (N#4-5, N#10-11). This fragmentation prevents consensus from developing in negotiations. Therefore, Dubash and Rajamani (2010) asserted that this consensus-based approach is "fundamentally flawed" since it obstructs ambitious climate actions, particularly the progress on fossil fuel subsidies-related negotiations (Hermwille et al., 2017; van

Asselt & Kulovesi, 2017). Given this fragmented landscape, pre-COP bilateral meetings and negotiations organized by nonproducers of the LDCG and other negotiating groups are crucial for addressing divisions and disagreement, thereby assisting producers to arrive at a consensus on transitioning away from fossil fuels (N#3, N#7, N#14).

5.2. Equitable development of supply-side climate policies

Since the UNFCCC's adoption in 1992, thirty years of climate negotiations have resulted in hundreds of decisions and notable climate regimes such as the Kyoto Protocol, the Marrakesh Accords, and the Paris Agreement. These decisions and regimes have overwhelmingly prioritized reducing emissions from downstream activities such as combustion, distribution, and consumption of fossil fuels. To achieve this goal, negotiators have made policies—for example, carbon pricing, energy efficiency, and low-carbon technologies—to decrease the demand for fossil fuels (Lazarus & van Asselt, 2018). Until the COP26, negotiators have never focused on curtailing emissions from upstream activities, notably exploration, drilling, and production of fossil fuels. International climate agreements have long been neglecting restrictive SSCPs, thereby over emphasizing on DPs' development (Pellegrini & Arsel, 2022). Silence on fossil fuel supply is mostly due to the fossil fuel industry's influence on producing countries' negotiators (O#4, O#8-9).

Additionally, negotiators also treat types of fossil fuels unequally in COP negotiations. For example, negotiators excluded oil and gas and included coal in the COP26's GCP. Moreover, the COP26 failed to determine any specific timeframe and follow-up mechanism for the phasedown of unabated coal power, leaving these issues for negotiations in forthcoming COPs (van Asselt & Green, 2022). However, the subsequent COP27 "failed" to address the unresolved issues and strengthen the COP26's fossil fuel-related decisions (Wyns, 2023). In sum, negotiators put an unequal emphasis on SSCPs and DPs, and fossil fuels. Given this unequal landscape in supply-side policy development, LDCG's leadership in these negotiations are vital. Their efforts can advance new supply-side constraint initiatives alongside the current ones undertaken in the COP26, accelerate the operationalization of adopted decisions on fossil fuels, and address the COP26's shortcomings on fossil fuels.

5.3. Reducing the fossil fuel industry's influence on climate negotiations

Criticism is intensifying against the surge of fossil fuel industry lobbyists who attempt to restrain the advancement of SSCPs in COP negotiations. There was a 25% increase in the number of lobbyists in the COP27 (636) compared to the COP26 (503) (Michaelson, 2022). McGrath (2022) reported that most lobbyists joined the delegations of UAE (70), Russia (33), Kenya (12), Congo (12), Oman (11), Kuwait (9), Canada (8), and Angola (8). These lobbyists maintain close relations with negotiators of these countries and influence negotiators to block decisions limiting fossil fuel production (O#4, O#8-9). For example, the chief of the African Petroleum Producers Organization joined the COP27 to "influence negotiators to support the development of oil and gas in Africa" (McGrath, 2022). Due to the influence of such high-level executives, including their lobbyists, India's demand for phasing-down oil and gas was denied and negotiations on fossil fuels slowed down in the COP27 (Saha, forthcoming; Michaelson, 2022).

This has been a longstanding problem at COPs because fossil fuel industries and their lobbyists exert extensive influence on negotiators, thereby securing industries' business interests, entrenching the industry's power in negotiations, and shaping policies to reduce emissions (Newell & Paterson, 1998). Notably, industry lobbyists (for example Shell Oil) together with fossil fuel producers influenced the Paris Agreement's Article 6 (Aronoff, 2018). As a result, fossil fuels were not mentioned in the Paris Agreement—indeed attention to fossil fuel production has been downplayed in climate negotiations over decades (Piggot et al., 2018). In this context, the LDCG can reduce industry influence through the following practices: enhancing negotiators' knowledge on the need to limit fossil fuel supply as industry lobbyists also influence negotiators of LDCs (e.g., Congo and Angola); including civil society in negotiations who can trace and draw attention to lobbyists' participation to and ties with COPs and negotiators, respectively; and empowering civil society to notify delegation heads regarding lobbyists' participation and ties. Moreover, the formation of an energy forum and coalition by the LDCG would invigorate the existing "supply-side movements" (Piggot, 2018) started in the COP26, thereby diminishing the fossil fuel industry's influence on climate negotiations.

6. Conclusion

This article analyzed the politico-economic, institutional, and nonmaterial strategies that will assist the LDCG in strengthening their strategic position and roles in climate negotiations, thereby facilitating the development of restrictive SSCPs. Yet advancing SSCPs is contingent on reducing LDCs' politico-economic dependency on fossil fuel producers and diminishing the power asymmetry between producers and the LDCG in climate negotiations. This is crucial given the "unequal negotiating capacity" between the LDCG and fossil fuel producing developed countries that affects LDCs' fair and active participation in shaping negotiation outcomes (Chan, 2021). To address this unequal capacity, greater participation in negotiations by knowledgeable, experienced negotiators from LDCs is essential. To date, these poorest states send few negotiators to negotiations due to their inadequate resources (Bulkeley et al., 2014). Furthermore, the establishment of a fixed negotiation team and an energy forum by people with greater climate policy knowledge and negotiation experience is vital for the LDCG leading on SSCPs. Effective participation depends on the understanding of complex negotiations, technical knowledge, and negotiating skills (Chasek & Rajamani, 2003).

Additionally, LDCs' negotiation teams and COP negotiations should incorporate civil society to facilitate SSCPs' development as civil society can hold governments, corporations, and financial institutions accountable for their climate footprints (Newell, 2008). Likewise, the LDCG should form a coalition with other groups, build networks with ENGOs, avoid a generic focus on emissions, prioritize fossil fuels equally, enlarge their focus beyond demanding L&D funds, and convene bilateral meetings and negotiations to resolve divisions and disagreement. These strategies are important for the LDCG's stronger roles in developing SSCPs in COPs. The stronger the role LDCs have in climate negotiations, the stronger international climate mitigation policy can advance through the UNFCCC process. However, there are significant barriers that restrain the LDCG from foregrounding the need to restrict fossil fuel supply in intergovernmental climate negotiations. How to overcome these barriers, documented here, is a pressing area for future research and policy advocacy.

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Chapter Five: Conclusion

5.1. The synopsis of this study

For several centuries, fossil fuels have played vital roles in fulfilling fundamental human needs, ensuring the world's primary energy supply, and accelerating economic growth. They also contributed to the transformation from agrarian to industrialized society. However, a multitude of detrimental effects stemming from a large-scale production and combustion of fossil fuels have overshadowed its remarkable contributions to thriving human society and global economy. These effects range from socioenvironmental and politico-economic to climate change. Due to growing concentrations of carbon dioxide and methane in the Earth's atmosphere that mostly release from burning fossil fuels and have changed the climate system, Crutzen (2002) argued that humanity has entered the *Anthropocene*—a human-dominated new geological period that started in the late 18th century. The change in the climate system has greatly escalated since 1945, an era that ushers the beginning of the Great Acceleration (McNeill and Engelke, 2016). With the escalation of climate change, natural catastrophes and extreme events have increased globally that result in, for example, deaths, illness, livelihood destruction, and massive economic loss.

Given the growing pernicious effects of climate change identified above, the scientific community has called for reducing fossil fuels-related emissions, which is required for keeping global average temperatures below 1.5°C (Masson-Delmotte et al., 2022). To achieve this temperature goal, it is urgent to curtail 95% of coal, 62% of oil, and 42% of gas production by 2050 (Achakulwisut et al., 2023) and stop new fossil fuel development projects and a substantial amount of current fossil fuel infrastructures. Despite the evidence, fossil fuel exploration and extraction continue to grow. Governments are increasingly approving new oil and gas development projects, which are overwhelmingly more substantial than the past. Countries are also designing climate policies in a way that is supportive to extraction. Likewise, subsidies and investments for fossil fuel production are also increasing. The underlying reason for this increase is the "monster profits" by energy corporations from the fossil fuel industry (Milman, 2023).

As initiatives to expand fossil fuel production are increasing despite cataclysmic effects of climate change, efforts to restrict fossil fuel supply have unfolded in the two realms: nongovernmental and intergovernmental. While states have been challenging fossil fuel incumbents in intergovernmental climate negotiations to restrict fossil fuel production, nonstate actors such as climate activists are actively involved at the nongovernmental level by, for example, blocking production sites, organizing anti-fossil fuel movements, filing lawsuits against producers, and demanding subsidy removal. In intergovernmental negotiations at COP climate summits, a group of forty-six least developed states known as the LDC Group (LDCG) has been calling for G20 fossil fuel producing states to phaseout their fuel production and subsidies. In doing so, the LDCG is playing a vital role in developing international policies to restrict the supply of fossil fuels. However, while the LDCG is demanding the fossil fuel production phase-out by G20 states, many LDCs still continue expanding their own fossil fuel exploration and extraction projects with support from same G20 producers. This paradoxical political position substantially undermines the negotiation strategies undertaken by the LDCG to challenge fossil fuel incumbents at COP summits for the transition from fossil fuels.

Given the negative role of the paradoxical position in weakening the LDCG's negotiation strategies, the first manuscript (Chapter 2) has examined this paradoxical position in light of the global distributive justice approach. The analysis suggests that the expansion of fossil fuel exploration, extraction, and transportation projects in LDCs are justifiable given their fragile socioeconomic conditions, developmental needs, and less access to energy. It is also justifiable given their very negligible contribution (0.4%) to total CO_2 emissions between 1850 and 2019 (Dhakal et al., 2022). However, diverse inherent concerns imply the beginning of the fossil fuel production phase-out in LDCs and the redirection of G20 countries' fossil fuel investments toward low-carbon energy developments in LDCs. These concerns are, for example, resource curse risks and barriers to achieve SDGs and net zero by 2050 through ambitious NDCs. In addition to these concerns, studies noted that despite thirty years of mitigation measures, global emissions continue to increase (Stoddard et al., 2021) and G20 states account for 80% of total GHG emissions (UNEP, 2021). This increase suggests the closure of the point of emissions'

origin, mainly fossil fuels. To accelerate this closure, the LDCG needs support from other states and nonstate actors to pressure G20 states to start phasing out fossil fuel production globally.

The LDCG necessitates this support since the LDCG as a coalition is characterized by inadequate capacity to challenge mighty fossil fuel incumbents and their norms and practices, which the second manuscript reveals (Chapter-3). In negotiations, LDCs' negotiators seek such support from other negotiating groups to name incumbents and remind them about reducing fossil fuel production and usage. This support-seeking effort manifests the LDCG's inadequate capacity. The lack of capacity partly stems from the weaknesses in strategies undertaken by negotiators of the LDCG to pressure incumbents to transition from fossil fuels. Divisions in the LDCG weaken their strategic position. Such divisions emerge when fossil fuel producing LDCs oppose beginning a production phaseout worldwide on the grounds that LDCs extract very little fossil fuels and they lack sufficient capacity to develop alternative of fossil fuels. Furthermore, conflicts of interest and disagreement to phase-out fossil fuels prevail in the G77+China, which undermine the LDCG's strategies and consensus pressuring producers to curtail fossil fuel production. Additionally, the LDCG's insufficient capacity is due to their colonial legacy and complex political and economic relations with incumbents. These factors preclude the LDCG from effective negotiations with incumbents for transitioning away from fossil fuels.

The improvement of the LDCG's negotiation capacity is essential for arguing with producers to limit fossil fuel exploration, extraction, and transportation. To enhance the LDCG's capacity, the third manuscript (Chapter-4) identifies politico-economic, institutional, and nonmaterial strategic pathways, which are crucially important for the LDCG to play stronger roles in climate negotiations. Their robust roles are very urgent for accelerating the development, adoption, and implementation of restrictive policies on the supply of fossil fuels via the UNFCCC. This is because the COP26 did not specify a particular timeframe and follow-up mechanisms for the phasedown of unabated coal power, leaving these issues for negotiations in future COP summits (van Asselt and Green, 2022). However, the COP27 neglected these unresolved issues and failed to consolidate fossil fuel-related decisions adopted in the COP26 (Wyns, 2023). By playing stronger roles in negotiations, the LDCG can speed up the development of decisions to constrain fossil fuel supply, thereby reshaping international climate mitigation policymaking processes

through COPs and accelerating the international community's efforts for a fossil free future (Marquardt and Nasiritousi, 2022) or "fossil free zones" (Green, 2022).

5.2. Contributions to scholarly fields

This dissertation stands to make three novel contributions to different scholarly fields that include supply-side climate politics, UN climate negotiations, and supply-side climate policies (SSCPs). These contributions are explained below.

The *first* contribution relates to the debate on "supply-side climate politics", which focuses on the evolving politics, contestation between groups and political parties, and political barriers around curtailing the supply of fossil fuels via restricting their exploration, extraction, and transportation (Harrison, 2020; Harrison and Bang, 2022). Recently, this debate has emerged as a new promising site in the field of political economy of climate change (Paterson and P-Laberge, 2018; Paterson, 2021), which has intensified with the rise of anti-fossil fuel narratives, widely known as the "anti-fossil fuel norms" (Green, 2018). This debate has long concentrated in the nongovernmental realm, which has been advanced by, for example, civil society, climate activists, and scholarly communities. However, the supply-side climate politics has also arisen in intergovernmental climate negotiations at COP summits and it continues to evolve (Burki, 2022; van Asselt and Green, 2022; Bakošová, 2023).

In the evolution and development of supply-side climate politics at COP climate negotiations, the LDCG has played a lead role since the COP23 by calling for G20 countries to phaseout fossil fuel production while many LDCs simultaneously continue to expand their own fossil fuel extraction projects. Although this paradoxical political position held by the LDCG is central in the supply-side climate politics, the existing scholarship has not explored this paradox and the extent to which the LDCG has the capacity to challenge fossil fuel incumbents and their norms and practices. By analyzing the dynamics and implications of this unexplored contradictory stance and the LDCG's capacity, this dissertation stands to make a significant contribution to the existing knowledge about supply-side climate politics (Newell and Johnstone, 2018; Skovgaard and van Asselt, 2019; Brauers and Oei, 2020). It also contributes to the LDCs'

involvement in global climate and energy politics (Hurrell and Sengupta, 2012; Ciplet et al., 2015; Falkner, 2016; Bricout et al., 2022).

The *second* contribution relates to UN climate negotiations, particularly strategies undertaken by negotiating parties and the nature of conflicts and divisions among those parties, which centers around negotiation items. With respect to strategies, there is an increasing volume of literature examining negotiation strategies of states (Russia and India) and blocs [the European Union] in UN climate negotiations (Andonova and Alexieva, 2012; Michaelowa and Michaelowa, 2012; Bailer, 2012; Bäckstrand and Elgström, 2013; Downie, 2014; Bailer and Weiler, 2015). By identifying the LDCG's negotiation strategies at climate negotiations to confront fossil fuel incumbents, this dissertation contributes to the expanding literature identified above. Similar to negotiation strategies, a growing number of studies argues that UN climate negotiations are characterized by increasing conflicts, discords, and fragmentation between negotiating parties (Arts and Rüdig, 1995; Biermann et al., 2009; Grasso, 2011; Zelli, 2011; Parker et al., 2012; Betzold et al., 2012; Hurrell and Sengupta, 2012; Van Asselt and Zelli, 2014; Friman and Hjerpe, 2015; Tørstad and Sælen, 2018; Castro and Klöck, 2020), which create a "deadlock" in the consensus-based decision-making process, thereby impeding the adoption of ambitious climate actions (Dubash and Rajamani, 2010; Schroeder et al., 2012; Hermwille et al., 2017). By exploring the conflicts of interest, disagreement, and divisions in the LDCG, G77+China, and other negotiating blocs, which are related to the fossil fuel production phaseout and usage reduction, this dissertation vastly contributes to the burgeoning literature on fragmentation and discordance in climate negotiations.

The *final* contribution of this dissertation is to explore strategic pathways for the development of SSCPs via intergovernmental climate negotiations at COP summits. Compared to demand-side measures, restrictive policies to reduce fossil fuel supply have gained traction in the scholarly community for their tangible benefits (see manuscript-3) in accelerating global mitigation efforts (Sinn, 2008; Green and Denniss, 2018; Asheim et al. 2019). Given such benefits and the frustrating results of demand-side policies (Le Billon and Kristoffersen, 2020), there has been a global call for developing an international "treaty" (Asheim et al. 2019; Newell and Simms, 2020; Newell et al., 2022) and "agreement" (van Asselt and Newell, 2022) to restrict the supply of fossil

fuels effectively and fairly. Additionally, a burgeoning body of literature has also emphasized the necessity of adopting and implementing SSCPs (Fæhn et al., 2017; Lazarus and van Asselt, 2018; Piggot et al., 2018, 2020; Erickson et al., 2018; Gaulin and Le Billon, 2020; Harrison and Bang, 2022). This urgency is required for preventing the dangerous effects of climate change.

Despite the exigency of developing SSCPs articulated in the above scholarly studies, there is still a lack of research on the potential strategic pathways to advance restrictive policies on the supply of fossil fuels. By exploring such pathways that are essential for the LDCG to develop international SSCPs through UN climate negotiations, this dissertation fills this gap and contributes to the burgeoning literature analyzing supply-side constraint measures for global climate action.

5.3. Contributions to theories

In addition to contributing to knowledge explained in the preceding section, this dissertation also expands the understanding of the global distributive justice approach, strategic power perspective, and "theory of supply-side climate policy" (Erickson et al., 2018). These theoretical contributions are discussed as follows:

Expanding the realm of distributive justice

The idea of distributive justice is deeply embroiled in debates about climate change. Scholarship examining the relationship between distributive justice and climate change has been increasingly emphasizing mitigation and adaptation policies (Jafino et al., 2021; Davidson, 2021), emissions rights (Meyer and Roser, 2006; Meyera and Roserb, 2017), economic growth and biodiversity loss (Rosales, 2008), international climate regimes (Okereke, 2010; Chandani, 2007), carbon budget (McKinnon, 2015), climate-friendly development projects (Wood et al., 2017), and climate finance (Islam, 2022). With respect to fossil fuels, few studies have discussed the connection of the distributive justice perspective to the reduction of fossil fuel supply equitably and efficiently (Lenferna, 2018; Le Billon and Kristoffersen, 2020; Muttitt and Kartha, 2020). However, the usage of distributive justice in examining the paradoxical position—the expansion of, and the call for phasing out, fossil fuels—held by LDCs is as yet unaddressed in the existing literature.

By exploring the paradox and its implications in global mitigation efforts, including the environment, economy, and society, this dissertation extends the current scholarship utilizing the distributive justice lens to examine diverse facets related to climate change.

Enhancing the usefulness of strategic power

As a fundamental constituent of structural relations between negotiating parties, power defines the ability of parties to move in an "intended direction" (Pfetsch, 2011). In global climate negotiations, power determines the process and outcome of negotiations, and thereby the success of negotiating parties in intergovernmental climate negotiations (Betzold, 2010). In this regard, the LDCG's success as a negotiating bloc to challenge fossil fuel incumbents is constrained by defining traits of the strategic power perspective that include weak negotiation strategies, fragmentation and disagreement, and complex interstate and political economic ties. These traits define why the LDCG is a weak power in intergovernmental climate negotiations, why the negotiation power and capacity of this group is very fragile, and why LDCs as weaker states pursue soft strategies in negotiations (Bailer, 2012). Furthermore, these traits also manifest the three viewpoints of strategic power—*strategic*, *layered*, and *historical*. While these viewpoints of strategic power are important for examining the leverage of a negotiating group (e.g., the LDCG) to influence climate negotiation process and outcome on a specific agenda such as fossil fuel, they are not explored in the existing literature. Likewise, although Ciplet et al. (2015) argue that the strategic power approach is useful to evaluate state behavior in intergovernmental climate negotiations, this study does not examine how the three views of strategic power explain and shape the LDCG's capacity to exert influence on incumbents for the transition from fossil fuels. By employing the viewpoints of strategic power to examine the LDCG's capacity to confront incumbents, this dissertation fills this gap, enhances the usefulness of this approach, and extends the scholarship related to the intersection of power and global climate change negotiations (de Águeda and Mol, 2014; Happaerts, 2015; Park, 2016; Marquardt, 2017; Allan and Hadden, 2017).

Materializing the logics of supply-side climate policies

In the realm of climate policy, supply-side policies to constrain fossil fuel production are relatively new compared to demand-side policies, though such supply-side policies have long been used in reducing the supply of other harmful products, such as asbestos, tobacco, and ozone-damaging chemicals (Green and Denniss, 2018). The theoretical roots of SSCPs are in economics, political science, and sociology (Erickson et al., 2018). Economists argue that since prices of fossil fuels increase to constrain their production, higher prices reduce consumption of fossil fuels, thereby lowering fossil CO_2 emissions. If the ability of fossil fuel producers to increase extraction decreases due to high prices, it raises the effectiveness of fossil fuel supply constraint initiatives. The economic theory suggests that the restriction on fossil fuel production can also enhance effectiveness of emissions reduction measures undertaken by countries (Harstad, 2012; Fæhn et al., 2017). In addition to economists, sociologists and political scientists also assert that the reduction in fossil fuel supply can accelerate global climate actions. This is because public mobilization, citizen support, and social movements for restricting fossil fuel production have been escalating globally, which have created a "sustained momentum" for supply-side interventions to limit fossil fuels, thereby preventing the climate crisis (Erickson et al., 2018).

Though the above theoretical assertions on SSCPs imply that the restriction on supplying fossil fuels has tangible benefits in mitigating climate change, the development of such policies internationally via intergovernmental climate negotiations to restrict fossil fuels faces diverse obstacles explained in the manuscripts two and three. These obstacles encountered by the LDCG suggest the difficulty of materializing theoretical logics on SSCPs to limit fossil fuels. Although a plethora of studies increasingly emphasizes the adoption and implementation of SSCPs (Fæhn et al., 2017; Lazarus and van Asselt, 2018; Erickson et al., 2018; Green and Denniss, 2018; Piggot et al., 2018, 2020; Gaulin and Le Billon, 2020; Harrison and Bang, 2022), none of these studies have as yet explored strategies to overcome those barriers, thereby realizing theoretical assumptions on SSCPs. To fill this gap, this dissertation pinpoints strategic pathways to overcome the LDCG's limits to the development of international policies to restrict fossil fuel

supply via intergovernmental climate negotiations. This pinpointing amplifies the likelihood of formulating restrictive SSCPs, thereby driving theoretical assumptions to come to fruition.

5.4. Limitations of this study

This dissertation explores the LDCG's paradoxical stance, and strategies and capacity to challenge fossil fuel incumbents, and strategic pathways for the LDCG to play stronger roles in negotiations to develop SSCPs. The dissertation also identifies potential impacts the LDCG might have in climate mitigation policy-making via the UNFCCC. However, this dissertation has several limitations that need to be addressed in future studies. These limits are as follows:

First, to analyze the LDCG's paradoxical political position, the first manuscript examines LDCs' fossil fuel lock-in that is important for international and LDCs' climate mitigation efforts. It is also vital given its negative impacts on the LDCs' achievement of sustainable development goals and net zero target by 2050. Furthermore, LDCs' fossil fuel lock-in is crucial since it will obstruct their plan to generate 100% energy from renewable sources by 2050. Although the broader examination of these issues related to the fossil fuel lock-in is very important, this dissertation has narrowly addressed these issues. This is because this dissertation concentrates on the LDCG's engagement in UN climate negotiations, thereby examining the Group's capacity to challenge fossil fuel incumbents and pinpointing potential strategies to develop supply-side climate policies.

Second, this dissertation is not beyond methodological limits. To conduct the research, this study purposively selected Bangladesh as a case of least developed country and all participants were from Bangladesh. However, examining the views of other LDCs are also important for a better understanding of the dynamics between the LDC Group and fossil fuel incumbents. Despite such importance, this research does not reflect the views of negotiators and observers from other LDCs. This is mainly due to University of Waterloo's restrictions on international travel during the COVID-19 pandemic when the proposal was written, defended, and approved by the Human Research Ethics Board.

Third, the COP26 and COP27 summits manifest the conflicts of interest and disagreement in UN climate negotiations on transitioning away from fossil fuels are deep, which obstruct the decision-making process based on consensus. Therefore, a better understanding of conflicts and discords requires an extensive study that should incorporate interviewing negotiators from other negotiating blocs of the UNFCCC. However, this study has focused on the LDC Group only that lacks the better insights of other negotiating groups (e.g., the AOSIS, Arab Group, and BASIC) related to discords and conflicts regarding the shift away from fossil fuels.

Finally, Marquardt (2017) argues that power is an underlying aspect of formulating international climate policy and analyzing global climate governance mechanisms such as negotiations at COP climate summits. To examine these mechanisms, Never (2013) utilized a multidimensional lens of power that includes instrumental, structural, and discursive forms of power. While this lens might be useful in explaining the negotiation capacity of the LDCG as a group of weak states, this study employed the strategic power perspective due to its high effectiveness in examining conflicts and fragmentation in negotiations, interstate relations, political economic dynamics, strategies pursued by the LDCG to challenge fossil fuel incumbents, and the capacity to do so. Therefore, there is a deficit in this dissertation, namely what the LDCG's capacity to confront incumbents could look like if the multidimensional approach of power was applied in the second manuscript. In a nutshell, the four limitations of this dissertation explained above need to be addressed in future studies.

5.5. Avenues for future research

In addition to above areas of future studies, there are multiple opportunities for future research that have emerged from this study and remained unaddressed in the dissertation. In the first manuscript and preceding section, I explained the predicaments of LDCs' fossil fuel lock-in supported by G20 countries. Therefore, any future research should explore the dynamics arising between G20 nations and LDCs that have resulted in the expansion of fossil fuel extraction projects in LDCs. Related to this expansion, several crucial questions have arisen such as how LDCs are justifying requests for funding for fossil fuel developments and securing that support from G20 states; how and why G20 countries are providing this assistance to promote fossil fuel

sectors, not low-carbon developments, in LDCs; what pressures in LDCs might obstruct the phase-out of their domestic fossil fuel production; how G20 states' investments in LDCs can be redirected toward the development of low carbon energy system that is equitable; how global governance institutions can help redirect G20 energy investments in LDCs; and how other negotiating groups and parties can help LDCs in their efforts to press G20 states to begin the phaseout of fossil fuels. Future research should address these questions to ensure avoiding LDCs' fossil fuel entanglement. This research is also urgent so that LDCs can meet the targets of SDGs by 2030, and net zero and 100% renewable energy production by 2050.

Furthermore, future research is required to explore how LDCs' observers can better be integrated and accommodated in climate negotiations, how LDCs' political economic entanglement and colonial legacy can effectively be overcome, and how greater consolidation in and beyond the LDC Group can be achieved. Research on these questions is essential to overcome the obstacles and divisions experienced by the LDCG during their call for fossil fuel incumbents to transition away from fossil fuels. Addressing these questions will also help enhance the LDCG's capacity to challenge incumbents and their norms and practices, thereby developing SSCPs through UN climate negotiations. Though this dissertation has proposed three strategic pathways for the LDCG to play robust roles in advancing international SSCPs, various obstacles may hamper the path of implementing those pathways. Therefore, there is a compelling need to research what these barriers are and how the LDCG can overcome these barriers to develop supply-side carbon constraint measures through the UNFCCC process, thereby contributing to the acceleration of international climate mitigation efforts.

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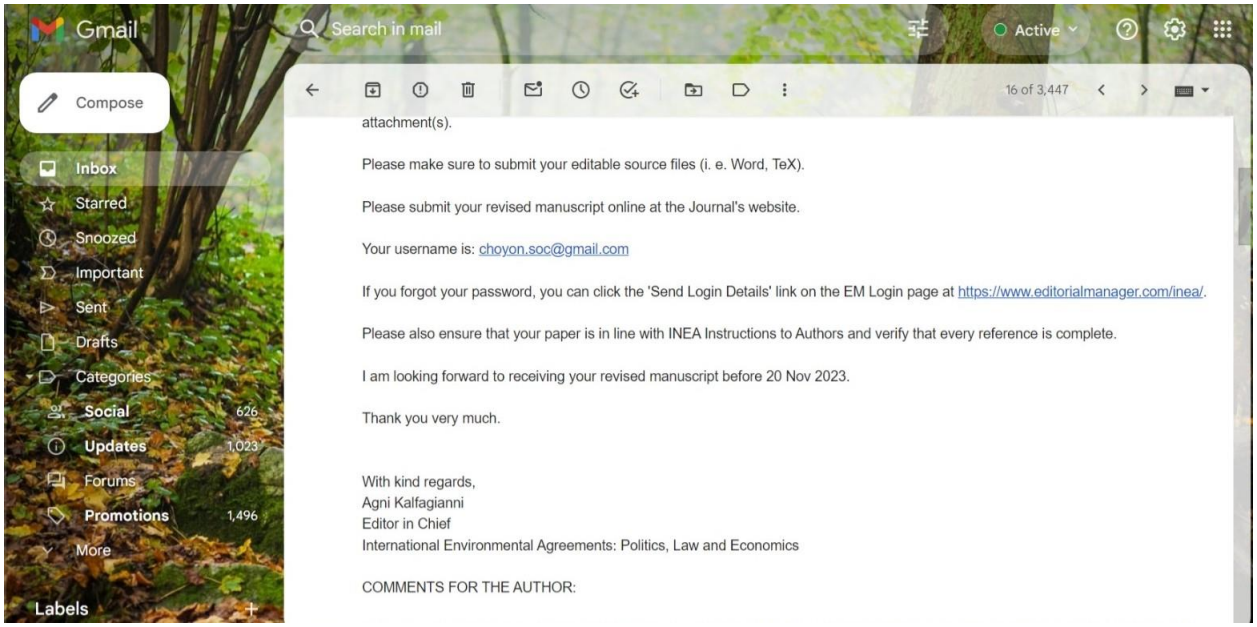
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Appendix-1





Action	Manuscript Number	Title	Initial Date Submitted	Date Revision Due	Status Date	Current Status	View Decision
Action Links	INEA-D-23-00126	Least Developed Countries vs. fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations	25 Jun 2023	25 Dec 2023	06 Nov 2023	Revise	Minor revisions

Reviewer 1

Report on

Least Developed Countries vs. fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations

Manuscript INEA-D-23-00126

This paper discusses the roles played by the LDCG (Least Developed Countries Group) in COPs of the UNFCCC, particularly concerning to what extent the countries of this group of countries argue for supply-side policies as opposed to demand-side policies. The paper contains very interesting information, obtained though interviews, on the stands taken by 15 negotiators and 10 observers from Bangladesh and Sierra Leone.

The theoretical perspective is far from the one that would have been taken by an economist,like myself, for whom it is more natural to consider the interests of different kind of countries. Let me therefore start my evaluation of this paper by mentioning how an economist might considerthe interests of countries concerning the choice between supply-side and demand-side policies.

Moving from demand-side policies to equally effective supply-side policies leads to an increase in the market prices of fossil fuels, with the consequence that terms-of-trade for exporting countries are improved and terms-of-trade for importing countries are worsened. The improved terms- of-trade are especially important for high-reserve countries (like Saudi Arabia and other Arab petrostates) producing low-cost oil and natural gas that will be produced also if climate policies are successful, while the worsened terms-of-trade are especially important for non-producing countries(like some in the LDCG) that, due to continued development and few green energy alternatives,will burn fossil fuels also if climate policies are successful. It follows from this argument that a country in the first group should normally be in favor of a shift from demand-side to supply-side policies and a country in the second group should be opposed to a shift from demand-side to supply-side policies.

However, the preferences might be inverse, with a country in the first group being opposed to supply-side policies and a country in the second group being in favor of supply-side policies, if they believe that introduction of supply-side policies will strengthen climate action, so that suchfossil fuel producers must reduce their production as a consequence and such LDCs will benefit from a better climate[38]. There are reasons to believe that introduction of supply-side policies might strengthen climate action. One argument that is pertinent in the context of this paperis that the resulting increased prices of fossil fuels will make it easier for some countries in the LDCG to leapfrog fossil fuels and develop in a green manner, provided that developed countries make available sufficient funding for green energy investments, as fossil energy cannot be chosen aslower cost alternatives. This argument is particularly strong if such LDCs, being virtually without responsibility for historical greenhouse gas emissions, have weak incentives to contribute to climateaction. Bangladesh (due to sea-level rise) and Sierra Leone (due to an increase of unpredictable weather patterns) are both among the countries most vulnerable to climate change and, thus,might be among LDCs that will benefit if the introduction of supply-side policies strengthenclimate

[38] The sentence "While Arab petrostates assert that transition away from fossil fuel will cause their oil business contraction and revenue loss . . . " on page 12 indicates that such countries are against effective climate action, which necessarily will reduce use and production of fossil fuels. It does not mean that these countries are against a shift from demand-side policies to equally effective supply-side policies. Indeed, OPEC has restricted supply of oil for 50 years for the purpose of improving their terms-of-trade.

action, in spite of their continued reliance of imported fossil fuels.

I would think that the paper would be strengthened if such perspectives could be introducedin Section 3 and elsewhere.

The term "fossil fuel incumbents" is central in the paper—it appears also in the title—but no clear definition is given. An important issue is that the countries with the historical responsibility for greenhouse gas emissions up to the point in time when the UNCFFF process started more than 30 years ago, emit a much smaller fraction now (while being constant in absolute terms), while the development of China and other Asian countries based on coal has been the main contributor to thenear doubling of CO_2 emissions in the same time period. Looking forward, it is clear that a climate crisis cannot be avoided if India and, later, Africa follow China's example, independently of what happens in those countries that developed on the basis of fossil fuels in the 19th and 20th centuries.Ensuring a green development in the ROW seems as least as important for avoiding catastrophic climate change as a successful green transition in OECD countries. On this background, the paper would be much clearer if the "fossil fuel incumbents" was replaced, in each instance, by the set of countries that the author has in mind. The paper reads like a technical report with an abundance of abbreviations and with sentences that often are difficult to unpack. The first paragraph of Section 2 is one example where thetext can be written much simpler and clearer. Perhaps it would be a good idea to improve the readability by limiting the use of abbreviations and choosing a language that conveys meaning ina more efficient manner.

Reviewer 2

Least Developed Countries vs. fossil fuel incumbents: Strategies, divisions, and barriers at the UN climate negotiations

Overall, the paper makes a timely, important and original contribution to the literature by analysing an under-studied set of political relations informed by new interview based research.

To strengthen its contribution I propose a further clarification about choice of conceptual framework, draw more on existing scholarship on the climate negotiations as well as dealing with a series of more minor issues.

Why that in particular "strategic power" as opposed to work on advocacy coalition frameworks or anti-fossil fuel norms, for example? As you note, the 3 'I's work builds on work in this vein within the transitions literature by scholars like Florian Kern and the neo-Gramscian approach to discursive, institutional and material power (Levy and Newell 2002). Indeed, what is perhaps from the 3 'Is' approach is that deeper material and structural account of power which points to the dependencies and power inequities between states and between state and capital that often constrain efforts to restrict fossil fuel production. For example, the quote in the paper from one negotiator that, 'I cannot directly call upon China, India, and Saudi Arabia to curb fossil fuel usage as it will harm Bangladesh's bilateral political economic relations with these incumbents' (p.9) speaks to structural vulnerabilities and lack of policy space and autonomy (because of aid dependence or trade ties) to be able to stand up to these actors.

These critical power dynamics emerge again through the examples on page 14 where it is shown 'China and developed states use ODA to influence LDCs' democratic institutions, political regimes, and governments, and obtain access to natural resources, e.g., fossil fuels (Hess & Aidoo, 2019; Blair et al., 2022). Additionally, DCME's energy corporations use investment as a tool to control, explore, and extract LDCs' fossil fuels'. The implications of these broader political economy dynamics in constraining what can be said about which issues and by whom could be further brought out in the discussion.

How would that critical power dynamic be accounted for the in the '3i' framework?

In this regard, I wonder if the contribution of the paper should be clarified as being a study of discourse, framing and strategy but not effects, influence or outcomes. It seems to me, that it shows how, where and why demands are made, but not what impact they have.

I would also encourage a closer engagement with the extensive literature on the climate negotiations themselves and how different groupings seek to assert and defend their interests including about AOSIS and OPEC and LDCs (see Depledge, Huq and many others).

Minor comments

Not sure the opening statement is correct that 'Conferences of the Parties, or COPs—have emerged as an important site to contest fossil fuel incumbents'. They have also been sites to entrench and extend incumbent power subject to extensive influence by the fossil fuel industry over many decades now (see for example Newell and Paterson 1998).

Please address instances of awkward phrasing throughout. In the abstract, for example, 'is divided between among those' – delete 'among'.

p.2 s 'plan on producing over double fossil fuels'. Add 'the amount of'.

p.3 why is underscoring the widely accepted fact that major fossil fuel producers must wind down their production 'aggressive'?

Likewise on page 7 are the tactics 'hard' at side events to emphasize the need for phasing out fossil fuel production or just the discursive framing? In International Relations 'soft' and 'hard' power are about ability to exert power and the effect of actions rather than how critical or demanding a discourse is.

p.6s 'through international system' – add 'the'

p. 6 'lacks accountability in playing roles- why does it lack accountability and which roles?

p. 12 Is Colombia still aligned with this group given the Petro government's commitment to leave oil reserves in the ground?

p. 15 It seems to be something of a stretch- and probably not necessary to your argument to have to bring in analysis, using Cox, of civil society and world order. It feels like it is several steps removed from the focus of the discussion here.

p.15 how realistic is it that LDCs can overcome political economic entanglement and colonial legacies? That feels like a broader normative claim than a concrete and short term research programme.

Appendix-2

UNIVERSITY OF WATERLOO

Notification of Ethics Clearance to Conduct Research with Human Participants

Principal Investigator: Angela Carter (Political Science)

Student investigator: Choyon Saha (Centre for Global Governance Research)

File #: 43638

Title: Assessing and amplifying the role of Least Developed Countries in confronting the climate crisis via winding down fossil fuel supply

The Human Research Ethics Board is pleased to inform you this study has been reviewed and given ethics clearance.

Initial Approval Date: 09/08/21 (m/d/y)

University of Waterloo Research Ethics Boards are composed in accordance with, and carry out their functions and operate in a manner consistent with, the institution's guidelines for research with human participants, the Tri-Council Policy Statement for the Ethical Conduct for Research Involving Humans (TCPS, 2nd edition), International Conference on Harmonization: Good Clinical Practice (ICH-GCP), the Ontario Personal Health Information Protection Act (PHIPA), the applicable laws and regulations of the province of Ontario. Both Boards are registered with the U.S. Department of Health and Human Services under the Federal Wide Assurance, FWA00021410, and IRB registration number IRB00002419 (HREB) and IRB00007409 (CREB). This study is to be conducted in accordance with the submitted application and the most recently approved versions of all supporting materials.

Expiry Date: 09/09/22 (m/d/y)

Multi-year research must be renewed at least once every 12 months unless a more frequent review has otherwise been specified. Studies will only be renewed if the renewal report is received and approved before the expiry date. Failure to submit renewal reports will result in the investigators being notified ethics clearance has been suspended and Research Finance being notified the ethics clearance is no longer valid.

Level of review: Delegated Review

Signed on behalf of the Human Research Ethics Board



Erin Van Der Meulen, Research Ethics Advisor, ervandermeulen@uwaterloo.ca, 519-888-4567 x37046

This above named study is to be conducted in accordance with the submitted application and the most recently approved versions of all supporting materials.

Documents reviewed and received ethics clearance for use in the study and/or received for information:

file: Recruitment Email (2nd Revision).pdf
file: Interview Guide (Revised).pdf
file: Consent Form (2nd Revision).pdf
file: Information Letter (2nd Revision).pdf
file: Appreciation Email (2nd Revision).pdf
Approved Protocol Version 3 in Research Ethics System

This is an official document. Retain for your files.

You are responsible for obtaining any additional institutional approvals that might be required to complete this study.