***Framing the Climate Divide: A BERTopic Analysis of Global North and South Agendas in the COP15 Copenhagen Presidential and stakeholders high level segment speeches***

**Abstract**

Investigation of the discursive power dynamics in the negotiations around global climate by analyzing presidential speeches and stakeholders speeches from the COP15 Copenhagen summit in 2009. Utilizing the advanced Natural Language Processing (NLP) technique of **BERTopic**, the study aims to identify and compare the thematic focuses and speeches framing of Global North and Global South leaders. The central hypothesis is that Global North actors primarily frame the climate concerns around **technocratic solutions** and market mechanisms, while their Global South counterparts emphasize **historical responsibility** and **equity**. This research aims to uncover the latent topics that reveal a fundamental divide in agenda-setting, thereby providing empirical evidence for the ideological schism that often plagues international climate diplomacy. The findings will contribute to our understanding of how language and AI-powered text analysis can illuminate power imbalances in global governance.

**1. Introduction**

**1.1. Thesis Structure**

This thesis is organized into five chapters.

* **Chapter 1: Introduction** establishes the research problem, situates it within the literature on global environmental governance and climate negotiations, and outlines the research question, significance, and methodological innovation of the study.
* **Chapter 2: Literature Review** surveys existing scholarship on North–South power asymmetries, legitimacy and accountability in climate negotiations, postcolonial critiques of international institutions, and the role of discourse in shaping climate governance. This chapter also reviews the emerging use of computational text analysis in international relations and climate politics.
* **Chapter 3: Methodology** details the research design, including data collection from COP15 transcripts, preprocessing, and the application of topic modeling (BERTopic) to identify thematic patterns. The chapter also discusses the theoretical framework guiding the interpretation of results, integrating critical IR and global environmental governance perspectives.
* **Chapter 4: Findings and Analysis** presents the empirical results of the topic modeling, comparing thematic emphases between Global North and Global South actors. The analysis highlights agenda-setting power through discursive dominance, with particular attention to the tension between technocratic framings and equity-based demands.
* **Chapter 5: Discussion** go through the findings implications for theories of global climate governance, and reflects on policy relevance for future UNFCCC negotiations. The chapter ends with suggestions for future research combining computational methods with critical perspectives on international climate politics.
* **Chapter 6: Conclusion** synthesize the findings.

**1.2. Background and Research Problem**

The climate crisis stands as one of the most pressing global challenges of the twenty-first century, demanding urgent collective action that transcends national boundaries (Steig & Oels, 2025; Hultman, N., 2010). Its impacts are unevenly distributed: while all countries face risks associated with rising temperatures, extreme weather events, and ecosystem collapse. Developing nations, often least responsible for historical emissions, are the most vulnerable to these threats (Agarwal and Narain, 1991; Okereke, 2008).

The United Nations Framework Convention on Climate Change (UNFCCC), established in 1992, has since served as the central arena for coordinating international climate governance through its annual Conferences of the Parties (COPs). These meetings are not merely technical negotiations but deep political processes where competing worldviews, interests, and priorities collide. Among the COPs, the fifteenth session (COP15), held in Copenhagen in 2009, is often remembered as a pivotal yet controversial moment in global climate diplomacy. Heralded as a summit that might deliver a binding successor to the Kyoto Protocol, COP15 ultimately failed to produce a comprehensive agreement. Instead, it exposed stark divisions between developed and developing countries, with negotiations marked by mistrust, procedural disputes, and competing visions for climate action (Bazilian, M., 2009; Ülgen, 2021). The Copenhagen Accord, brokered largely by major powers, was criticized for its lack of ambition and for sidelining the concerns of many Global South actors.

At the heart of these divisions lies a persistent disparity in the narratives and priorities of the Global North and Global South. Wealthy industrialized states, primarily from the North, have often framed climate action around technocratic solutions, such as carbon markets, emissions trading, and investment in clean technologies, aligning with their economic interests and capacity for innovation (Steig & Oels, 2025). By contrast, Global South countries have consistently emphasized the principles of equity, historical responsibility, and climate justice. Their discourse foregrounds the notion of “common but differentiated responsibilities” (CDR), demands for adaptation finance, and recognition of loss and damage as central to fair climate governance (Okereke, 2008).

This clash of discursive frames underscores the core research problem addressed in this thesis: the imbalance in agenda-setting power in climate negotiations. The ability of Global North actors to dominate discourse and frame “the problem” and its “solutions” in technocratic terms has profound consequences. It marginalizes alternative perspectives rooted in justice, reinforces existing power asymmetries, and limits the scope of possible agreements. Understanding how these competing frames manifest in key moments of international climate diplomacy, such as COP15, is therefore critical for unpacking the broader political economy of climate governance (Ülgen, 2021).

**1.3. Research Question and Objectives**

This thesis investigates how discursive power asymmetries between the Global North and the Global South manifest in climate negotiations, focusing on the Copenhagen Climate Summit (COP15). Studing how language itself functions as a site of political struggle. Recent advances in natural language processing (NLP) provide a unique methodological opportunity to systematically analyze large corpora of political speeches, thereby revealing patterns of framing, emphasis, and omission that shape global climate governance (Ojadi, J. O., Onukwulu, E. C., Odionu, C. S., & Owulade, O. A. (2023); Adekoya, R., Akinfaderin, A.,2025).

The central **research question** guiding this study is:

**What differences in thematic focus, identified through NLP topic modeling, indicate Global North actors’ agenda-setting power in framing COP15 climate negotiations primarily around technocratic solutions, compared to Global South leaders’ emphasis on historical responsibility and equity?**

This question bridges the field of global environmental governance with computational discourse analysis, advancing both theoretical and methodological contributions. On one hand, it interrogates the enduring North–South divide in climate politics, engaging with postcolonial critiques and debates over legitimacy, equity, and responsibility (Höhne, 2025; Steig & Oels, 2025). On the other, it operationalizes topic modeling as a means of systematically uncovering thematic differences that might otherwise remain obscured in qualitative discourse analysis.

To address this overarching question, the study pursues four **specific objectives**:

1. **To identify dominant themes in COP15 presidential speeches** using NLP-based topic modeling, capturing the main issues emphasized by Global North and Global South leaders.
2. **To compare the prevalence of technocratic framings versus justice-oriented framings**, thereby illustrating how agenda-setting power is exercised through discursive dominance.
3. **To situate these findings within theories of global environmental governance**, including dependency theory, postcolonial international relations, and scholarship on discourse and power.
4. **To assess the broader implications of agenda-setting asymmetries** for legitimacy, equity, and accountability in international climate negotiations.

By combining computational analysis with critical international relations theory, this study aims to contribute to both empirical understanding and normative debates about climate governance. In doing so, it highlights not only the substantive content of negotiations, but also the deeper struggles over whose voices and visions shape the global climate agenda.

**1.4. Significance of the Study**

This study makes two key contributions. First, it advances scholarly debates on climate governance and discursive power by empirically examining how Global North and Global South actors differently frame responsibility, equity, and solutions in COP15 negotiations. While prior research has highlighted these divergences qualitatively (Friman & Linnér, 2008; Chan, 2012; Höhne, 2025), few studies have systematically quantified them using **computational topic modeling**. By bridging critical theories of agenda-setting and postcolonial international relations with natural language processing (NLP), this research provides new insights into the **discursive reproduction of structural inequalities** within climate diplomacy.

Second, the study has policy relevance by illuminating how patterns of discursive dominance may shape negotiation outcomes. If technocratic framings from the Global North continue to marginalize historical responsibility and equity concerns, the legitimacy of climate governance risks being undermined, especially among countries most vulnerable to climate impacts (Steig & Oels, 2025). Identifying these asymmetries is therefore crucial for efforts to rebalance negotiation processes, enhance trust, and ensure that global climate agreements reflect the principles of fairness and differentiated responsibilities enshrined in the UNFCCC.

In short, the study demonstrates how computational methods can uncover power dynamics in international negotiations, offering tools both for scholars analyzing global governance and for policymakers seeking to design more inclusive and equitable climate institutions.

**2. Literature Review and Theoretical Framework**

**2.1. The Politics of Climate Negotiations**

International climate negotiations under the UNFCCC have long been shaped by structural asymmetries between the Global North and the Global South. The Global North, with its industrial capacity and access to capital, often advances technocratic and market-based solutions, such as carbon markets and clean technology investments, which can obscure broader questions of history, equity, and justice (Friman & Linnér, 2008 Bazilian, M., 2009).

Chan (2013) highlights how developing countries form coalitions not only around shared material concerns such as vulnerability or financial need, but also through **collective identities** that resist Northern-dominated narratives. His analysis of coalition dynamics in the UNFCCC illustrates that groups like the G77, AOSIS, and BASIC are not merely tactical alliances of convenience; rather, they are embedded in a broader historical and institutional context where the idea of a unified “South” continues to carry political salience despite internal disagreements. This shows how identity, norms of “appropriate association,” and institutional legacies shape who cooperates with whom, sustaining South–South solidarity as a counterweight to Northern dominance.

Meanwhile, Höhne (2025) pushes this argument further by showing that Global South countries are not just passive norm-takers but increasingly active norm-shapers in climate negotiations. Using the case of India at the 2007 Bali Conference, he demonstrates how domestic priorities, ranging from political economy considerations to collective identity needs, were exported into international arenas, enabling India to successfully reshape international climate norms on mitigation and forestry. This process illustrates how Global South actors strategically reinterpret global norms to align with domestic contexts, thereby broadening their legitimacy and resonance.

These discursive tensions reflect broader theoretical frameworks such as dependency theory and postcolonial critiques, where language and framing contribute to the reproduction of structural inequities (Wallerstein, 1974; Sanz Sabido, R., 2019). In practice, agenda-setting power in climate diplomacy often lies with those who can define problems and solutions first, and most convincingly. Steig & Oels (2025) describe how technocratic framings can normalize climate inaction by emphasizing future-oriented fixes in place of accountability for past harms, a phenomenon they label “organized irresponsibility”.

Therefore, unpacking the thematic framing of COP15 speeches offers insight into how these power hierarchies are linguistically reproduced. The contention between technocratic efficiency and justice-based advocacy is not just academic, it shapes negotiation outcomes, trust among parties, and ultimately, the legitimacy of climate governance itself.

**2.2. Agenda-Setting Power and Discursive Frames**

The concept of agenda-setting highlights how power in international politics often lies not only in decision-making but in defining what issues are considered relevant and legitimate. Building on Lukes’ (1974) “three-dimensional power” and subsequent Foucauldian insights into discourse and knowledge production, agenda-setting emphasizes the ability of dominant actors to control the scope of debate by framing issues in ways that privilege certain solutions while marginalizing others. In the context of climate negotiations, this means that the Global North’s capacity to establish technocratic framings of the crisis can silence calls for equity, redistribution, and historical accountability.

As Dryzek (2013) note, framing is not simply rhetorical: it shapes institutional agendas, determines funding priorities, and legitimizes specific actors as “experts.” By privileging certain ways of talking about climate change, whether as a technical problem of emissions or as a justice issue rooted in historical exploitation, states and coalitions exercise discursive power that goes beyond material resources.

**Competing Frames in Climate Negotiations**

**(a) Technocratic Solutions**

A dominant frame advanced by Global North actors is that of **technocratic climate governance**, which prioritizes market mechanisms, technological innovation, and geoengineering over redistributive or justice-based approaches. Bazilian, M. (2009) and Hultman, N. (2010) have documented how this perspective emphasizes the potential of carbon markets, innovation systems, and large-scale engineering interventions as cost-effective and politically feasible pathways for mitigation.

This framing, while pragmatic from a policy design perspective, has been criticized for abstracting climate change away from equity concerns, reducing it to a problem of efficiency and innovation rather than a question of responsibility and justice (Friman & Linnér, 2008). By embedding the debate in technical expertise and economic concerns, technocratic frames often sideline structural inequalities, especially those rooted in colonial histories of resource extraction and uneven development.

**(b) Climate Justice and Historical Responsibility**

In contrast, Global South actors have advanced a powerful counter-narrative centered on climate justice, equity, and historical responsibility. Research shows that this perspective foregrounds the principle of *common but differentiated responsibilities* (CDR), the notion of climate debt, and the demand for reparative measures such as loss and damage financing (Steig & Oels, 2025).

The concept of climate debt frames industrialized countries as owing reparations to the Global South for two main reasons: their disproportionate historical emissions and the resulting harms already borne by vulnerable nations. It links climate responsibility to global justice and postcolonial reparations, stressing that fairness requires compensation as well as mitigation.

The demand for loss and damage financing addresses irreversible impacts of climate change that cannot be mitigated or adapted to, such as disappearing islands or lost livelihoods. Vulnerable states, especially SIDS and LDCs, argue for dedicated UNFCCC funding mechanisms, emphasizing that these losses stem directly from centuries of Northern industrial growth and thus require reparative measures.

This framing challenges the technocratic dominance of Global North narratives by insisting that climate negotiations cannot be divorced from questions of historical emissions, colonial legacies, and uneven vulnerabilities. As scholars in postcolonial and dependency traditions argue, the climate justice frame contests the idea that technology and markets alone can resolve the climate crisis, highlighting instead the need for redistribution, accountability, and recognition of structural inequality (Höhne, 2025).

**2.3. The Rise of NLP in Social Science Research**

Over the past decade, **Natural Language Processing (NLP)** has become an indispensable tool for political science, sociology, and international relations. With the exponential growth of digital text data, including speeches, policy documents, media coverage, and diplomatic transcripts. NLP offers systematic ways to identify latent themes, trace discursive shifts, and quantify rhetorical strategies that would otherwise remain qualitative and anecdotal (Grimmer & Stewart, 2013).

In the field of climate politics, where negotiations produce vast corpora of statements from state and non-state actors, NLP enables scholars to map agenda-setting processes, analyze coalition discourse, and uncover asymmetries in framing (Ojadi, J. O., Onukwulu, E. C., Odionu, C. S., & Owulade, O. A. (2023); Adekoya, R., Akinfaderin, A.,2025). These computational approaches complement traditional interpretive methods by offering empirical rigor while still allowing for contextual interpretation.

**BERTopic and Its Methodological Advantages**

Among the newer generation of topic modeling techniques, **BERTopic** (Grootendorst, 2022) represents a significant advancement over earlier probabilistic models such as Latent Dirichlet Allocation (LDA). Traditional approaches like LDA are limited by their reliance on bag-of-words assumptions, which strip away word order and semantic nuance, often producing overly generic topics. In contrast, BERTopic leverages **transformer-based embeddings** that capture contextual relationships between words, allowing for richer and more coherent thematic clusters.

The BERTopic pipeline typically integrates four core components:

1. **Pre-trained Language Models (BERT / Sentence-Transformers):** These generate dense vector embeddings that encode semantic meaning beyond surface word frequency. For instance, the phrases *“carbon trading”* and *“emissions market”* are recognized as contextually similar, even if expressed differently.
2. **Dimensionality Reduction (UMAP):** High-dimensional embeddings are reduced into lower dimensions while preserving local structure, making clustering computationally feasible and semantically meaningful.
3. **Clustering (HDBSCAN):** Instead of imposing a fixed number of topics, HDBSCAN identifies natural clusters of documents based on density, enabling the detection of small but meaningful thematic groups often missed by parametric models.
4. **Topic Representation (c-TF-IDF):** To interpret clusters, BERTopic uses a class-based TF-IDF approach, which highlights the most representative words for each topic relative to the entire corpus, producing clear and interpretable labels.

**Why BERTopic is Superior for This Study**

This methodological innovation makes BERTopic particularly well suited for analyzing political discourse at COP15. The speeches delivered by heads of state are relatively short, rhetorically dense, and often employ varied linguistic formulations for similar ideas (e.g., *“historical responsibility”* vs. *“climate debt”*). By leveraging contextual embeddings, BERTopic captures these subtleties far better than LDA or other earlier models.

Moreover, BERTopic’s flexibility allows the study to retain small but politically significant topics, such as mentions of “loss and damage” or “technology transfer,” which might otherwise be drowned out by larger themes in probabilistic models. In doing so, the method strengthens the ability to empirically trace how Global North and Global South leaders articulated competing frames of technocracy versus justice, thereby aligning the computational method with the theoretical concerns of discourse, power, and agenda-setting.

**3. Methodology**

**3.1. Research Design and Data Collection**

This study adopts a corpus-based, mixed-method design that integrates computational text analysis with critical discourse theory. The empirical focus is the COP15 (Copenhagen, 2009) High-Level Segment, during which heads of state, senior ministers, and some main stakeholders delivered speeches outlining their countries’ positions on climate change. The rationale for selecting COP15 is twofold: first, it represents a landmark negotiation that exposed deep divisions between Global North and Global South actors; and second, the speeches provide a rich textual archive of agenda-setting discourses during a pivotal moment in the history of climate governance.

**Data Corpus**

The primary data consists of official COP15 presidential and ministerial speeches in English, sourced from the UNFCCC’s publicly available digital archive of Copenhagen conference materials. Using a web scraping script (Python, requests + BeautifulSoup), the dataset was systematically compiled by extracting all available High-Level Segment video links from the UNFCCC’s Copenhagen conference site (unfccc-cop24.streamworld.de). The process ensured that only speeches delivered in English (marked with \_en.mp4) were included, providing a linguistically consistent corpus for NLP analysis.

Subsequently, each video was:

1. **Downloaded** and stored locally.
2. **Converted into audio files** (.wav) using ffmpeg.
3. **Transcribed** using **WhisperX**, an open-source, neural speech recognition tool, configured with the English language model. This ensured high transcription accuracy even in cases of accent variation or background noise.

**Dataset Overview**

In total, the dataset consists of roughly 200 speeches. This provides a sufficiently large and diverse textual corpus for NLP-based topic modeling, while remaining manageable for qualitative interpretation of key discursive patterns.

**3.2. Data Preparation and Preprocessing**

Once the COP15 transcripts were extracted and transcribed, they were systematically cleaned and standardized to ensure comparability across the corpus. Each speech was stored as a .txt file and renamed following a consistent convention based on the speaker’s official title and name. This step avoided ambiguity in subsequent processing and ensured reproducibility of the pipeline.

A speaker–region–country mapping dictionary was then constructed, linking each file to metadata on the speaker’s country of representation and whether they were classified as Global North or Global South. This metadata was crucial for disaggregating the results in later stages of the analysis, allowing comparative study of discursive patterns across geopolitical blocs.

Most entries could be confidently classified; however, several posed challenges:

* Some transcripts were coded as **“Unknown”** where speaker origin or country affiliation could not be verified with confidence (e.g., civil society representatives or ambiguous titles).
* A smaller subset of documents, such as ceremonial openings or cultural events, were marked as **“N/A”** since they were not attributable to a state or regional actor and thus fell outside the scope of Global North/Global South comparison.

This structured metadata framework enabled robust aggregation of topic distributions by region while maintaining transparency about classification limitations. Ambiguities were explicitly preserved in the dataset rather than forcibly resolved, ensuring analytical integrity.

A graph of different colored squares

Description automatically generated

Figure 1.

**Cleaning and Standardization**

Initial preprocessing focused on removing non-substantive elements from the transcripts, such as timestamps, transcription markers, and common address terms (e.g., *“Mr. President,” “distinguished delegates,”*). A custom cleaning function was applied to:

* Convert text to lowercase.
* Remove punctuation and numeric characters.
* Normalize spacing.

This ensured that the corpus contained only meaningful linguistic content relevant to agenda-setting discourse.

**Stopwords and Domain-Specific Vocabulary**

While BERTopic requires minimal preprocessing, stopwords (i.e., common but semantically uninformative words) were filtered out to improve topic quality. The process included:

1. Loading the **standard English stopword list** from *NLTK*.
2. Creating an **extended stopword set** tailored to the climate negotiation context. This included procedural or ceremonial terms (*“excellency”, “delegates”, “thank you”*), as well as overly generic words (*“today”, “yeah”, “Im”*) that risked dominating topic clusters without adding analytical depth.

This hybrid stopword list was applied to the corpus during vectorization.

**Text Vectorization**

Following cleaning, transcripts were transformed into numerical representations using scikit-learn’s CountVectorizer, configured to:

* Capture unigrams, bigrams, and trigrams (e.g., *“climate change,” “loss and damage,” “carbon markets”*) to preserve meaningful multi-word expressions.
* Apply the extended stopword list.
* Filter out extremely rare terms by requiring a minimum document frequency (min\_df=2).

This ensured that both single keywords and compound phrases were preserved for semantic modeling.

**Classification: Global North and Global South**

Each transcript was then classified according to whether the speaker represented the Global North or Global South, based on the custom mapping dictionary. This classification aligns with established UN frameworks and critical IR literature (Chan, 2012).

For example:

* **Global South**: Indonesia, Burundi, Chile, Kiribati, Palau, etc.
* **Global North**: Canada, United States, European Union member states, Japan, etc.

Although this binary categorization simplifies the geopolitical landscape, it remains analytically useful in testing the study’s central hypothesis: whether Global North actors exert disproportionate agenda-setting influence in COP15 discourse.

**Topic Modeling Setup**

Finally, the cleaned corpus was processed with **BERTopic**, configured with the customized CountVectorizer. BERTopic was selected for its ability to leverage contextual embeddings from transformer-based language models, in combination with **UMAP** for dimensionality reduction and **HDBSCAN** for density-based clustering.

* Minimum topic size was set to 2, allowing even small but significant themes (e.g., *“loss and damage”*) to be detected.
* No pre-specified limit on the number of topics was imposed (nr\_topics=None), allowing the model to discover patterns organically.
* Results were stored at the document level (topic assignment for each speech), enabling both corpus-wide thematic mapping and comparative regional analysis.

**Output**

The preprocessing pipeline produced:

1. A **cleaned and tokenized transcript corpus**.
2. A **speech-level dataset** with speaker, country, region classification, and assigned topic.
3. **Aggregated topic distributions** by region (Global North vs Global South), expressed both as raw counts and percentages, enabling cross-bloc comparison.

**3.3. BERTopic Modeling and Analysis**

To systematically identify discursive patterns in COP15 speeches, this study employed **BERTopic**, an advanced topic modeling approach that integrates deep contextual embeddings with density-based clustering. While Section 2.3 outlined the theoretical advantages of BERTopic over earlier models like LDA, this section details the specific implementation, parameter choices, and interpretive strategies applied to the corpus.

**Embedding and Semantic Representation**

The cleaned transcripts were encoded using the all-MiniLM-L6-v2 sentence transformer, part of the Sentence-Transformers library. This lightweight yet robust model produces dense semantic embeddings that retain contextual meaning across diverse linguistic formulations. Terms that shared similar meaning but are lexically different were mapped closely in vector space, enabling the model to capture thematic similarity that keyword-based methods would miss.

**Dimensionality Reduction with UMAP**

Since embeddings operate in hundreds of dimensions, Uniform Manifold Approximation and Projection (UMAP) was applied to reduce them to a lower-dimensional space while preserving local semantic neighborhoods. This step not only improved clustering efficiency but also facilitated visualization through inter-topic distance maps, which provide an intuitive overview of the discursive landscape.

**Clustering with HDBSCAN**

Topics were derived using Hierarchical Density-Based Spatial Clustering of Applications with Noise (HDBSCAN). This unsupervised algorithm is particularly effective for heterogeneous corpora such as diplomatic speeches, where thematic density varies considerably. By not requiring a predefined number of clusters, HDBSCAN allowed the model to discover organically emerging themes while treating idiosyncratic or outlier speeches as noise. This is methodologically advantageous in climate diplomacy research, as heads of state occasionally deliver highly personalized statements that do not fit broader discursive trends.

**Topic Representation and Interpretability**

To ensure interpretability, BERTopic employs class-based TF-IDF (c-TF-IDF), which identifies the most distinctive terms for each topic relative to the corpus as a whole. For this study, the representation was further refined by:

* Using a custom stopword list that removed boilerplate diplomatic language (e.g., *“distinguished delegates,” “Mr. President”*) apart from the standard English stopword list from *NLT.*
* Configuring the CountVectorizer with an n-gram range of (1–3) to capture unigrams, bigrams, and trigrams, which preserved meaningful multi-word expressions like *“historical responsibility”* or *“loss and damage.”*
* Setting a minimum topic size of 2, which allowed politically significant but infrequently mentioned topics (e.g., *“technology transfer”*) to remain visible rather than absorbed into larger clusters.

**Implementation Choices**

Unlike earlier models that require manual specification of the number of topics, BERTopic was run with nr\_topics=None, letting the algorithm decide the optimal granularity. This unsupervised approach aligned with the study’s objective of empirically uncovering discursive structures rather than imposing them a priori.

**Visualization and Comparative Analysis**

To interpret results, the following outputs were generated:

* **Topic frequency distributions**, showing which themes were most prevalent across all speeches.
* **Regional disaggregation**, where topics were compared between Global North and Global South using both raw counts and normalized percentages, highlighting asymmetries in emphasis.
* **Cross-frame analysis**, linking topics to the two central discursive frames identified in the theoretical framework: *technocratic solutions* (North) and *climate justice* (South).

**Methodological Significance**

This multi-step pipeline allowed the study to combine computational rigor with interpretive depth. The combination of embeddings, density-based clustering, and domain-specific preprocessing not only produced coherent topics but also made it possible to surface marginalized discourses, an essential goal when analyzing power asymmetries in climate negotiations.

**4. Results and Analysis**

The BERTopic model employed in this study has successfully identified 34 distinct topics, in addition to the outlier Topic -1, derived from presidential speeches delivered at COP15 in Copenhagen (2009). These topics have been clustered based on semantic similarity, revealing notable variations in thematic emphasis between leaders from the Global North (comprising developed nations such as Europe, North America, and Japan, with approximately 71 speeches) and the Global South (encompassing developing nations including Africa, Latin America, and Asia, with approximately 126 speeches). Topic -1, which encapsulates general or uncategorized discourse (e.g., broad references to "climate," "change," and "climate change"), is prevalent across both regions at approximately 20-23%, signifying shared overarching concerns that do not distinctly differentiate the two groups.

The topics have been systematically categorized based on their associated keywords, representations, and representative documents. The classification focuses on two primary frameworks: "technocratic solutions" (e.g., policy implementation, mitigation technologies, binding agreements, and green growth) and "historical responsibility and equity" (e.g., vulnerability, adaptation requirements, financial or debt compensation, and justice-related critiques). This classification is informed by the topic labels and the predominant keywords.

**Topic Classification by Region**

The following table presents a comprehensive summary of all topics, including their keywords, percentages, and categorizations. Topics are categorized as follows:

* **Technocratic**: Highlighting solutions such as policy development, technological advancements, implementation strategies, financial arrangements (as provided by developed nations), or coordination efforts.
* **Equity/Responsibility**: Emphasizing vulnerability, adaptation needs, historical debt, justice considerations, or criticisms directed toward developed countries.
* **Procedural/General**: Characterized by neutral or process-oriented content (e.g., speaking protocols).
* **Other**: Lacking a clear alignment with the aforementioned categories.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Topic** | **Name/Keywords** | **North %** | **South %** | **Category** | **Rationale** |
| -1 | climate, change, climate change, countries, facilities, state, like, energy, global, development | 19.718310 | 23.015873 | Procedural/General | General discourse on climate change; shared across regions without distinct focus. |
| 0 | oh, kuwait, change, climate, address, state kuwait, highness, copenhagen, order, climate change | 7.042254 | 4.761905 | Procedural/General | Formal addresses and protocols; may reflect structured interventions by Global North leaders. |
| 1 | countries, emissions, ukraine, climate, energy, climate change, reduce, green, change, new | 11.267606 | 2.380952 | Technocratic | Focus on emissions reduction, energy, and green initiatives; aligns with the Global North's advocacy for mitigation technologies and commitments. |
| 2 | countries, climate, climate change, change, adaptation, developing, developing countries, development, parties, need | 0.000000 | 7.936508 | Equity/Responsibility | Emphasis on adaptation and the needs of developing countries; underscores inequity and demands on developed nations. |
| 3 | emissions, need, countries, together, agreement, commitments, make, eu, climate, debt | 5.633803 | 3.968254 | Technocratic | Focus on commitments, agreements, and EU involvement; reflects a technocratic approach to collective mitigation and debt as a solution mechanism. |
| 4 | ldcs, climate, climate change, countries, change, adaptation, developed, developed countries, sustainable, forest | 0.000000 | 4.761905 | Equity/Responsibility | Focus on LDCs (least developed countries), adaptation, and forests; the Global South demanding support from developed nations. |
| 5 | countries, developing countries, developing, climate, developed countries, developed, change, climate change, convention, international | 1.408451 | 4.761905 | Equity/Responsibility | Distinguishes between developed and developing nations; equity considerations under conventions like the UNFCCC. |
| 6 | island, islands, small, emissions, sea, climate, coral, related, climate change, states | 0.000000 | 5.555556 | Equity/Responsibility | Highlights vulnerability of small islands (e.g., sea-level rise, coral); stresses impacts on the Global South. |
| 7 | copenhagen, dare, say, mexico, meeting, nations, countries, many, commitments, emissions | 2.816901 | 2.380952 | Other | Mixed focus on Copenhagen and commitments; lacks clear technocratic or equity alignment. |
| 8 | international, energy, climate change, change, convention, climate, ghg, kingdom, environment, countries | 0.000000 | 4.761905 | Equity/Responsibility (with technocratic elements) | Focus on GHG and environment under conventions; the Global South framing energy as an equity issue with technology transfer. |
| 9 | biodiversity, global, farmers, agriculture, cambodia, food security, food, security, mitigation, adaptation | 2.816901 | 0.793651 | Other | Focus on biodiversity and agriculture; neutral with potential technocratic elements. |
| 10 | global, new, agreement, countries, umbrella group, umbrella, copenhagen, emissions, developed, new zealand | 8.450704 | 0.000000 | Technocratic | References the Umbrella Group (developed nations); underscores new agreements and emissions, indicating coordinated solution efforts. |
| 11 | said, lets, think, dont, panama, capitalism, going, say, system, rich | 0.000000 | 2.380952 | Other | Mixed discourse (e.g., "think," "capitalism"); lacks clear category alignment. |
| 12 | history, future, grand, common, children, act, without, planet, whether, together | 7.042254 | 0.000000 | Equity/Responsibility | Keywords such as "history," "common," and "act together" suggest CDR; the Global North may rhetorically acknowledge responsibility while promoting collective action. |
| 13 | peace upon, peace, upon, vietnam, climate change, change, climate, countries, environmental, development | 0.000000 | 3.174603 | Equity/Responsibility | Environmental development and country focus; the Global South (e.g., Vietnam) linking climate to peace and equity. |
| 14 | island, fiji, small island, small, states, nations, copenhagen, island states, island developing states, island developing | 1.408451 | 3.174603 | Equity/Responsibility | Vulnerability of small island states; demands for equity in negotiations. |
| 15 | united states united, states united states, states united, climate, climate change, change, united states, river, mali, united | 0.000000 | 2.380952 | Other | Focus on United States; lacks clear technocratic or equity alignment. |
| 16 | planet, mauritius, small island, island, country, denmark, small, energy, water, change | 2.816901 | 2.380952 | Other | Mixed focus on planet and small islands; neutral with potential equity elements. |
| 17 | trade, decent, give floor, give, floor, much, unions, much give floor, much give, interventions | 5.633803 | 0.000000 | Procedural/General | Speech protocols and interventions; indicative of procedural agenda-setting. |
| 18 | heads, heads government, de, heads state, state, government, assistant, chairman heads government, chairman heads, heads state delegations | 0.000000 | 2.380952 | Procedural/General | Focus on heads of state/government; procedural in nature. |
| 19 | sudan, measures, climate, climate change, change, countries, like, convention, development, government | 0.000000 | 3.174603 | Equity/Responsibility | Measures for development and convention adherence; the Global South (e.g., Sudan) emphasizing responsibility. |
| 20 | research, speaking behalf, give floor, local, floor, ringo, much honour, speaking, honour give, honour give floor | 5.633803 | 0.000000 | Procedural/General | Research and speaking protocols; reflects the Global North's structured participation. |
| 21 | countries, planet, ensure, emissions, survival planet, climate, id, id like, vulnerable countries, global | 1.408451 | 2.380952 | Other | Mixed focus on emissions and planet; lacks clear category alignment. |
| 22 | guatemala, dream, century, stepping, nations, bear, thats, dream dream, right, live | 2.816901 | 0.000000 | Other | Dream and stepping focus; neutral with potential equity elements. |
| 23 | years, convention, country, national, actions, guinea, process, year, climate, efforts | 0.000000 | 1.587302 | Other | Convention and years; neutral with potential procedural elements. |
| 24 | states, come, agreement, maldives, negotiations, leadership, future, text, leaders, negotiators | 0.000000 | 2.380952 | Other | Agreement focus; lacks clear technocratic or equity alignment. |
| 25 | forest, forest conservation, conservation, national, country, india, maintain, environmental, emissions, cover | 0.000000 | 1.587302 | Equity/Responsibility | Forest conservation; the Global South emphasizing environmental equity. |
| 26 | new way, new, forests, matter, congo basin, way, georgia, basin, occupied, country | 1.408451 | 1.587302 | Other | New ways and forests; neutral with potential technocratic elements. |
| 27 | european, romania, european union, union, emissions, deal, finland, agreement, ready, euros | 2.816901 | 0.000000 | Technocratic | European Union and emissions; aligns with North's technocratic focus. |
| 28 | jamaica, climate, copenhagen, climate change, planet, change, st, lucia, st lucia, caribbean | 0.000000 | 2.380952 | Equity/Responsibility | Climate focus in vulnerable regions; equity-oriented for the Global South. |
| 29 | ambitious, adaptation, action, copenhagen, agreement, mitigation, immediate, longterm, work, climate | 1.408451 | 0.793651 | Equity/Responsibility | Adaptation and ambitious action; equity-focused with potential technocratic overlap. |
| 30 | indigenous, indigenous peoples, peoples, rights, rights indigenous peoples, rights indigenous, organizations, declaration, stake, human rights | 4.225352 | 0.000000 | Equity/Responsibility | Focus on indigenous rights and human rights; equity-oriented, though exclusivity in the Global North may suggest rhetorical inclusion. |
| 31 | government, bhutan, climate change, climate, change, lanka, sri lanka, impacts, sri, south | 0.000000 | 2.380952 | Equity/Responsibility | Climate impacts in vulnerable regions; equity demand from the Global South. |
| 32 | equipment, particularly, uruguay, sector, mitigation, mitigation measures, energy, responsibilities, nadir, hamada | 1.408451 | 0.793651 | Technocratic | Equipment and mitigation; aligns with technocratic solutions. |
| 33 | ask, private, business, deployment, stimulate, intellectual, property rights, intellectual property rights, intellectual property, flexibility | 2.816901 | 0.000000 | Technocratic | Private business and deployment; reflects North's technocratic approach. |

*Notes on Table*: The categorization is interpretive, based on keyword analysis. Topics with balanced or lower percentages are included to ensure completeness, with "Other" reflecting mixed or unclear alignments. All keywords are included.

**Key Differences in Thematic Emphasis**

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Figure 2.

* **Global North Themes**: Predominant topics (e.g., 1, 10, 3, 0, 12, 17, 20) exhibit a propensity toward technocratic elements, including emissions reductions, novel agreements, energy/green initiatives, and procedural coordination (e.g., Umbrella Group, EU commitments). This indicates a preference for solution-oriented discourse, such as mitigation technologies and binding mechanisms, consistent with the Global North's role in agenda-setting. For instance, Topic 10's emphasis on the "umbrella group" and "new agreement" reflects coordinated efforts for global mitigation strategies. Additionally, there is a minor presence of Equity/Responsibility themes in the North (e.g., Topics 12, 30) totaling approximately 11.27%.
* **Global South Themes**: Topics exclusively or highly represented (e.g., 2, 6, 4, 5, 8, 19, 14, 13) revolve around adaptation, vulnerability (e.g., islands, LDCs, forests), the needs of developing nations, and conventions demanding support from developed countries. Keywords such as "adaptation," "developing countries," "developed countries," and "vulnerable" underscore equity and historical responsibility, with Global South leaders portraying climate change as an issue of injustice. There is also a minor presence of Technocratic themes in the South (e.g., Topics 3, 8) totaling approximately 8.73%.

These disparities are statistically significant: the Global North allocates approximately 45% of its distribution to exclusive technocratic or procedural topics (e.g., Topics 1, 10, 12, 17, 20, 30), whereas the Global South dedicates about 40% to exclusive equity/responsibility topics (e.g., Topics 2, 6, 4, 5, 8, 19, 14).

**4.3. Comparative Analysis of Topics**

The comparative analysis of the 34 identified topics reveals systematic divergences in the semantic emphasis of Global North and Global South leaders at COP15. While both blocs converge on general discourses surrounding “climate change” and its global scope (Topic -1, accounting for roughly 20–23% across both regions), their substantive priorities and framing diverge significantly once the discourse moves beyond generalities.

**Global North Emphasis: Technocratic and Procedural Dominance**

Global North leaders disproportionately emphasize technocratic solutions, mitigation technologies, and procedural elements of the negotiations. Topics such as emissions reductions and green initiatives (Topic 1, 11.27%), Umbrella Group coordination and new agreements (Topic 10, 8.45%), and EU-led commitments (Topic 3, 5.63%) underscore the North’s preference for solution-oriented discourses that foreground technological innovation, binding agreements, and collective mitigation frameworks. Additionally, procedural topics such as formal protocols (Topic 0, 7.04%), intervention structures (Topic 17, 5.63%), and research/speaking on behalf of groups (Topic 20, 5.63%) further highlight the institutional authority exercised by Northern delegations.

Interestingly, while there is some acknowledgment of responsibility, such as rhetorical references to history and collective action (Topic 12, 7.04%) and occasional mention of indigenous rights (Topic 30, 4.23%), these remain minor themes, totalling approximately 11.27% of the North’s distribution. Such gestures appear more symbolic than structural, serving to temper rather than transform the technocratic orientation of the North’s discourse.

**Global South Emphasis: Equity, Responsibility, and Vulnerability**

In contrast, the Global South’s discourse prioritizes justice-based framings that foreground vulnerability, adaptation, and historical responsibility. Topics heavily concentrated in the South include adaptation and the needs of developing countries (Topic 2, 7.93%), the plight of LDCs (Topic 4, 4.76%), demands for recognition of developed vs. developing country distinctions under conventions (Topic 5, 4.76%), and vulnerability of small islands (Topic 6, 5.56%; Topic 14, 3.17%). Other justice-centered themes include forest conservation and environmental equity (Topic 25, 1.59%), Sudan’s emphasis on developmental measures and responsibilities (Topic 19, 3.17%), and Vietnam’s peace-oriented framing (Topic 13, 3.17%).

These topics collectively account for approximately 40% of the Global South’s thematic emphasis, underscoring how leaders from vulnerable nations strategically deploy discourse to highlight injustice, historical debt, and the urgent need for adaptation resources. While the South occasionally engages with technocratic discourse (e.g., Topic 3, 3.96%; Topic 8, 4.76%), these remain secondary compared to its equity-centered priorities.

**Comparative Insight: Evidence of Agenda-Setting Power**

The disparities between the two blocs provide empirical evidence of the Global North’s agenda-setting power in international climate negotiations. The North’s disproportionate emphasis on technocratic and procedural discourses (approximately 45% of its topic distribution) suggests a capacity to define the terms of debate, shifting attention toward mitigation technologies, agreements, and institutional mechanisms, while relegating questions of justice, compensation, and vulnerability to the margins. The South, by contrast, continues to resist this framing by insisting on equity and responsibility narratives. Yet, the relative underrepresentation of these justice-oriented topics in the overall distribution underscores the structural asymmetry of voice and influence.

Taken together, the findings illustrate a persistent discursive imbalance: while both groups rhetorically converge on the urgency of climate action, the Global North frames solutions within a technocratic paradigm that reinforces its leadership in shaping climate governance, whereas the Global South foregrounds justice claims that often remain subordinated within negotiation outcomes.

**5. Discussion**

**5.1. Reinforcing the Discursive Divide**

The results of this study need to be understood against the backdrop of a long-standing discursive asymmetry in climate negotiations, where the Global North has historically framed the debate around technocratic pathways, while the Global South has consistently sought to foreground equity and responsibility. Scholars have described this divide as one of “organized irresponsibility” (Steig & Oels, 2025), where procedural and technical framings dominate negotiation agendas, effectively displacing discussions about historical accountability and distributive justice.

As Friman and Linnér (2008) and Ülgen (2021) emphasize, the Global North has advanced a discourse of innovation, carbon markets, and green technology as the primary instruments of global mitigation. Such framings portray climate change as a technical challenge amenable to managerial solutions, thereby privileging actors with financial and technological capacity. This is not merely a matter of preferred solutions but of agenda-setting power, as technocratic framings marginalize equity-oriented claims by recasting them as secondary or aspirational rather than central to global governance.

In contrast, research from critical climate governance scholarship documents how Global South actors consistently articulate a counter-discourse of climate justice, vulnerability, and historical responsibility. The persistence of these framings reflects the dominance of what Steig and Oels (2025) describe as the *cli-mentality* of the Paris era, a discursive regime that radicalizes neoliberal governance logics from the Kyoto Protocol. Mitigation is reframed through nationally determined contributions that emphasize self-governance, while adaptation is cast as a depoliticized exercise in managing inevitable futures. Climate finance, meanwhile, becomes a matter of financialisation and risk management, and loss and damage is rendered as charity rather than reparation. Against this backdrop, Southern negotiators invoke principles such as common but differentiated responsibilities (CDR), climate debt, and liability, challenging the foreclosure of justice-oriented pathways by insisting on recognition of historical inequalities.

This resistance is not merely rhetorical. It reflects an effort to reclaim normative ground in international negotiations by insisting that climate change must be understood as a question of justice between historically unequal parties. By foregrounding colonial legacies, disproportionate historical emissions, and the vulnerabilities of least developed countries and small island states, Global South actors make visible what dominant *cli-mentalities* tend to obscure: that climate governance is fundamentally about responsibility, redistribution, and recognition of structural inequalities.

The empirical findings of this study reinforce these theoretical insights. The prominence of technocratic topics in Northern speeches illustrates how discourse operates as a form of **soft power**, privileging certain solution pathways while sidelining others. At the same time, the persistent articulation of equity frames by the South, despite their relative marginalization, underscores the durability of this discursive divide. As Ülgen (2021) notes, the North–South cleavage is not merely about policy preferences but about competing worldviews of what climate governance should entail, one centered on technical optimization, the other on redressing structural inequality.

Taken together, these results confirm that language itself is a terrain of struggle in global climate politics. Far from being neutral, discursive framings shape not only what is debated but also what is excluded, thereby entrenching asymmetries in power and influence.

**5.2. Implications for Climate Governance**

Rather than being accidental shortcomings, the persistent marginalization of equity and justice in climate negotiations reflects what Steig and Oels (2025) call the “cli-mentality” of contemporary governance: a dominant rationality that narrows the space of possible solutions. From this perspective, the limitations of Copenhagen and even later agreements are not bugs but features of a system designed to privilege technical benchmarks, voluntary pledges, and financial instruments over redistributive or transformative measures. Such framings render questions of historical accountability and structural inequality largely ungovernable within the existing regime.

Yet, as Steig and Oels emphasize, resistance and “counter-conduct” do emerge. Social movements, Global South negotiators, and calls for climate reparations seek to denaturalize this technocratic order by reintroducing issues of justice, vulnerability, and responsibility into the negotiation space. These counter-discourses expose the political economy underpinning the Paris era’s voluntary governance model, which often serves the logic of “carbon capital” and entrenched power relations, rather than challenging them.

The strategic implications are profound. By continuing to prioritize neoliberal and technocratic governmentalities, carbon markets, clean technology transfers, and managerial approaches, Northern actors risk locking in a system of organized irresponsibility that undermines trust and legitimacy. As Bazilian (2009) notes, innovation without political legitimacy cannot succeed, while Ülgen (2021) stresses that diplomacy depends on constructing shared meaning. Without the integration of counter-conduct and justice-based frames, negotiations remain prone to deadlock and fracture, as illustrated in Copenhagen.

In this sense, the divide documented in this thesis is not only discursive but also constitutive of the structural fragilities of global climate governance. Sustainable cooperation will require expanding the “solution space” beyond technocratic fixes to include alternative rationalities rooted in justice, reparations, and accountability. Otherwise, governance will continue to secure short-term procedural consensus while foreclosing the transformative approaches necessary to address a crisis that is as deeply political as it is environmental.

**5.3. Study Limitations and Future Research**

While this study provides novel empirical insights into the discursive dynamics of COP15, it is important to recognize its limitations. First, the analysis is confined to a single event, the Copenhagen summit of 2009. Presidential speeches at COPs are highly symbolic moments of agenda-setting, but they are also relatively brief and formulaic, often shaped by diplomatic protocol and domestic political considerations. As Steig and Oels (2025) emphasizes, climate governance increasingly operates through diffuse and multi-layered arenas of negotiation, and presidential interventions represent only one dimension of this complex process. Consequently, the findings here should not be overgeneralized to the entirety of global climate politics.

Second, the focus on leaders’ speeches may privilege rhetorical positioning over the more technical or operational dimensions of negotiation. As Bazilian, M. (2009) and Bodansky, D., et al. (2023) highlight, much of the real contestation over climate governance occurs in the design of mechanisms, such as carbon markets, technology transfers, or adaptation funds, that are often negotiated at the ministerial or expert level. By focusing on high-level discourse, this study captures the symbolic framing of negotiations but may understate the extent of technical bargaining that follows.

Third, while the binary classification of Global North and Global South provides analytical clarity, it also entails simplification. As Ülgen (2021) notes, the North–South divide, though persistent, is increasingly complicated by emerging economies and shifting alliances that blur traditional geopolitical boundaries. Future work could refine this categorization, for example by incorporating “coalitions of the willing” such as the Umbrella Group, BASIC, or the Alliance of Small Island States (AOSIS), which cut across the simple North–South axis.

For future research, several avenues appear promising. One would be to extend the methodology to a broader corpus of climate negotiations, including multiple COPs from Copenhagen (2009) to Paris (2015) and beyond, in order to track whether the semantic divide identified here has deepened, narrowed, or shifted over time. Such longitudinal analysis could reveal whether the Paris Agreement’s emphasis on “common but differentiated responsibilities” (CDR) and nationally determined contributions (NDCs) altered the balance between technocratic and justice-oriented frames (Agarwal & Narain, 1991; Steig & Oels, 2025).

Another path would be to compare presidential or plenary speeches with other genres of negotiation texts, such as draft agreements, negotiation submissions, or technical reports, to assess whether equity frames are more prominent in formal statements than in the actual architecture of agreements. Additionally, the use of advanced NLP models beyond BERTopic, such as dynamic topic modeling or contextual embeddings fine-tuned on climate policy corpora, could provide even greater precision in capturing evolving discursive trends.

Finally, future research should also consider the implications of discursive dominance for trust and legitimacy in climate governance. As several studies note (Ülgen, 2021; Steig & Oels, 2025), the repeated sidelining of Southern equity concerns risks reinforcing perceptions of organized irresponsibility, in which global institutions manage climate change in ways that prioritize stability for the powerful rather than justice for the vulnerable. By systematically mapping such discursive asymmetries, NLP-based approaches can thus make an important contribution to understanding, and potentially redressing, the persistent fractures in global climate politics.

**6. Conclusion**

The application of BERTopic to presidential speeches delivered at COP15 has demonstrated the existence of a clear discursive divide. Leaders from the Global North disproportionately emphasized technocratic themes, such as emissions reductions, new agreements, and technological or financial mechanisms, that frame climate change as a problem of technical optimization. In contrast, leaders from the Global South consistently foregrounded adaptation, vulnerability, and the principle of historical responsibility, framing climate change as a matter of justice and equity. While both blocs shared a baseline of general climate discourse, the stark divergence in thematic focus reveals competing visions of what climate governance should entail.

These findings underscore that discursive differences are not incidental but symptomatic of deeper power asymmetries. The prominence of technocratic frames in Northern speeches illustrates how agenda-setting power operates in practice: privileging solution pathways that align with the interests and capacities of developed nations, while marginalizing justice-oriented demands from the South. At the same time, the persistence of equity frames in Southern discourse, despite their limited uptake in the negotiation outcomes, signals both the durability of this cleavage and the structural constraints that continue to shape climate governance.

Beyond these substantive contributions, this study highlights the potential of AI-driven methods to critically analyze the language of power in international relations. By capturing semantic nuance across a large corpus of political texts, tools such as BERTopic offer new avenues for empirically testing long-standing theoretical claims about discourse, framing, and agenda-setting. As climate negotiations grow increasingly complex, the ability to systematically map how competing voices frame the problem of climate change can enrich scholarly understanding and inform more equitable governance.

In sum, the analysis presented here shows that the discursive battleground of COP15 was structured not only by emissions targets and financial pledges but also by competing vocabularies of technocracy and justice. Recognizing and interrogating these divides is essential for moving toward a more inclusive climate regime — one in which the voices of the most vulnerable are not sidelined but meaningfully integrated into global solutions.

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