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TECHNOCRATIC OPTIMISM VS. MORAL IMPERATIVE: MAPPING GLOBAL ACADEMIC DISCOURSE ON CLIMATE JUSTICE

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Abstract
This study examines global academic discourse on climate justice through co-occurrence and sentiment analysis of Scopus-indexed literature. Using a combined leximetric and sentimentomic approach, it analyzes the relationships between justice-related terms (e.g., action, inequality, mitigation, rights) and governance-related concepts (e.g., policy, responsibility, change). Findings show a dominant framing of climate justice around rights and action, reflecting moral obligation and intergenerational equity. In contrast, terms like inequality and injustice appear less frequently and are less sentimentally charged, suggesting a marginal role in policy-focused discourse. Sentiment analysis of 38 key texts (5,664 coded segments) reveals a prevailing technocratic optimism–46.6% positive, 34.6% neutral, and 18.8% negative. Texts with strong positive sentiment advocate equity-based transformation, while more negative texts critique policy shortcomings and systemic injustices. Terms like "emission" and "mitigation" align with neutral or positive sentiment, promoting pragmatic solutions, whereas "inequality" and "injustice" prompt constructive, rather than alarmist, tones. The study concludes that climate justice discourse is shaped by two overlapping frames: technocratic optimism focused on policy and mitigation, and a moral imperative centered on rights and equity. This duality reflects underlying tensions between pragmatic governance and ethical advocacy, offering new insights into how academic narratives influence the global climate justice agenda.

INTRODUCTION

A true technocracy narrowly considers emissions and adaptation strategies, and that view does not suffice anymore within the evolving discourse on climate justice; it would rather lead us to the rich and complex field of inquiry peppered with tensions between technocratic optimism and moral imperatives for justice. Increasingly, literatures criticize urban and global responses to climate change because they often forget deeper socio-political inequities and instead promote a justice-oriented framework that foregrounds recognition, redistribution, and representation. While urban climate change responses are political, contend the researchers, they are entangled in justice disputes that reflect wider social inequalities. To attain procedural and distributional justice, they promote the existence of a multi-dimensional vision of justice, especially with respect to the principle of recognition. In their research, they argue that urban climate works need to move beyond technical solutions and encompass the lived experiences of marginalized communities most affected by climate impacts (Angel, 2025; Bulkeley et

al., 2014; Dicko et al., 2025). Similarly, scholars challenge how urban climate action articulates principles of justice within governing regimes. Practical execution of distributive and procedural justice is inconsistent, context-specific, and determined by local power dynamics. This demands a contextual and grounded perspective of justice that considers the relation between discursive representation and materialized inequalities (Allam & Soomauroo, 2024; Bulkeley et al., 2013; Cíbik, 2025). The normative priority of historic responsibility of industrialized countries stands central to the argument. They have a century's worth of cumulative emissions that require them to repay in terms of adaptation aid and indirect mitigation. In such thinking, the climate justice model locates itself along the larger continuum of paradigms for global justice where duties are mapped out backward from history's sins rather than prospectively (Charnysh et al., 2024; Shobande et al., 2024).

Cíbik (2025) enhances this moral imperative by prodding toward mainstreaming climate ethics into foreign policy. According to him, justice requires that the affluent make contributions to poor vulnerable individuals on climate matters rather than consider it purely in gift or charity-oriented approach. That articulation takes a stark contrary stance to technocratic optimism as it has the tendency to think about climate fixings as nonpartisan issues with global public good.

The intersection between climate justice and human rights is explored by Schapper (2018), showing the need for strong legal mechanisms to remedy injustices that are intra-societal, international, and intergenerational. This rights-based approach is supported by Gibbons (2014), who spotlights kids' vulnerability in developing nations and calls for urgent measures to attain intergenerational justice.

Communities don't resist climate policies because of denial rather- for most, it is mostly because of some economic constraints and perceived injustices approximately the allocation of benefit. According to Dolšak and Prakash (2022), carbon taxes and utility-facilitated renewable projects seem to lay a disproportionate effect on rural or low-income people. In itself, it exposes local socio-political frictions of climate governance. The bigger dimension of climate justice literature has seen three important aspects of freedom-economic facilities, political freedoms, and social opportunities that should be considered by climate vulnerability measures (Alves & Mariano, 2018). These freedoms don't just mean things material, but also the ability to engage democratically as well as social mobility, which will be important for adaptive resilience.

An educational response, thus, proposes climate justice education through critical pedagogy, political ecology, and environmental justice Svarstad (2021). This education would, therefore, enable citizens to be informed concerning the politics of climate change rather than leave them in isolation.

Together, the international academic literature on climate justice shows an intensifying conflict between technocratic optimism and a moral imperative based on historical responsibility, human rights, and socio-political participation. While technocratic solutions prioritize efficiency and scalability, they tend to hide or push to the periphery issues of equity, recognition, and experience. A justice-oriented approach demands that effective climate governance extend beyond one-size-fits-all solutions to consider local contexts, power imbalances, and histories of exploitation. Whether through urban governance structures, global compensation discourses, rights-based legal tools, or grassroots resistance, the literature converges on a common concern: climate action needs to be grounded in justice, not technology. Only then can climate interventions be democratic, equitable, and genuinely transformative.

Even as global and urban action against climate change becomes increasingly urgent, prevailing global and urban responses remain influenced by technocratic optimism that emphasizes measurable impact and scalable solutions. Such optimism tends to push to the margins the moral, social, and political aspects of climate justice. The consequences are that historically marginalized communities get marginalized further, blunted in their policy representation and practiced advocacy. The failure to adequately integrate principles of recognition, participation, and redistribution into climate action results in inequitable governance, localized resistance, and persistent injustice. There is a pressing need to map and critique the global academic discourse that

sustains this dichotomy between technocratic efficiency and moral responsibility, in order to reframe climate policy through a more context-sensitive, inclusive, and justice-oriented lens.

Literature Review

The technocratic method to climate, where emissions measurements, adaptation planning, and solutions of scale become crucial, has long been the imperative discourse within the global and urban climate. These paradigms are faulted by scholars, though, for overlooking the socio-political foundation of climate exposure. Technocracy can only bring efficiency but cannot correct structural injustices perpetrated against climate disasters, according to Angel (2025), Bulkeley et al. (2014), and Dicko et al. (2025). This has set the stage for the more academic proponents of justice that stress recognition, redistribution, and representation.

On the one hand, urban responses to climate change are political affairs; on the other, these urban experiences often seek to depoliticize the issue by referring to climate action as an exercise in neutral technicalism. Bulkeley et al. (2014) argue that climate intervention regimes tend to overlook the actual lived experiences of the marginalized communities, hence prioritizing "solutions" to climate change problems offered by technocracy without insinuating substantive engagement with socio-economic inequalities. Scholars propound a multidimensional conception of justice, throwing emphasis on recognition-the acknowledgment of groups situated differentially in climate decision-making (Allam & Soomauroo, 2024).

One of the central tensions within discourses of climate justice has been the notion of historical responsibility; that is, the moral obligations of industrialized countries-those responsible for the majority of historical emissions-to furnish reparations in the form of adaptation financing and mitigation support. This is critically positioned by Charnysh et al. (2024) and Shobande et al. (2024) within the grander debate about global justice, where justice is considered retroactively-because of past harms, not only on the prospective level.

In this sense, Cibik (2025) further aggravates the issue by condemning the notion of aid as charity. He challenges the argument by deeming it an ethical imperative for the Global North to act out of obligation, rather than altruism, thus tearing down the facade of technocratic interventions as nonpolitical and necessitating climate ethics to be mainstreamed in international policy.

Schapper (2018) and Gibbons (2014) have also expanded the definition of climate justice to include human rights in discussion on legal and normative frameworks. This very rights concern the future generation as well, and they touch upon intra-societal and international matters, and they need to involve legal mechanisms ensuring justice to vulnerable populations, children of developing nations particularly. The rights-based framing, therefore, works morally and legally to ground climate policy in justice.

The resistance to climate policy at the community level does not stem from denialism but rather from socio-economic and real perceived inequity. Carbon taxes and centralized renewable energy projects have been found to disproportionately burden rural and low-income populations while revealing fractures in climate governance systems (Dolšak & Prakash, 2022). These localized frictions provide arguments for redistributive justice involving socio-political costs borne by the most vulnerable.

With the introduction of Amartya Sen's freedom-based approach for justice, which specifies the significance of economic facilities, political freedoms, and social opportunities in building adaptive ability, these authors have expanded the coverage of this argument (Alves & Mariano 2018). It articulates a perspective which provides that material security cannot be severed from democratic involvement and social advancement, the latter being a condition of inseparability.

Therefore, as a counterresponse to these structural collapses, Svarstad (2021) suggests a transformative pedagogy grounded on the principles of critical pedagogy, political ecology, and environmental justice. Climate justice education is imagined to equip citizens with not knowledge per se, but political capacity to question forces framing climate decisions. The intervention's intention is to undermine technocratic topologies of knowledge to promote civic involvement based on citizens.

From the literature comes a rising tension between technocratic optimism and a moral need for justice. While technocratic narratives attend to questions of efficiency and scalability, they too frequently bypass equity questions rooted in lived histories and experiences. A paradigm oriented around justice would demand that any effort at efficacious climate governance has to be contextual, hear marginalized histories, and struggle to break down power asymmetries.

This would require a synthesis of legal and ethical considerations, and a transformation of all governance frameworks to ensure plain procedural fairness, community participation, and redistributive polices. The nexus found in the literature is that climate action- whether by irrespective means of urban planning, global compensation schemes for affected communities, or climate education- must be grounded in justice to be meaningful, legitimate, and transformative.

In spite of the mounting urgency of climate change, global and urban responses remain framed by a technocratic ethos that excludes moral and political considerations. The inability to incorporate recognition, participation, and redistribution principles results in unjust consequences and increasing resistance from affected communities. To address this imbalance, theorists call for a reconceptualization of climate policy, beyond the misleading dualism of technical versus moral, to a plural, justice-driven framework sensitive to the complexity of lived experience and to the demands of historical injustice.

Methodology

This research utilizes a hybrid mixed-method digital content analysis using leximetric and sentimentomic methods to investigate worldwide scholarly discourse on climate justice in Scopus-indexed publications. The methodology is based on computational text mining, guided by critical discourse analysis (Fairclough, 1995) and supplemented by quantitative co-occurrence and sentiment mapping (Liu, 2012; Mohammad & Turney, 2013). This dual-methodology allows the examination of both the structural patterns of language and the affective tones inhering in academic stances about climate justice.

The data set includes 38 peer-reviewed scholarly articles within the years 2014 and 2024, identified purposively from Scopus using words like climate governance, climate justice, mitigation, rights, inequality, and injustice. Open-access availability and fit with policy or justice framing under climate discourse are the inclusion requirements. The data were analyzed based on ATLAS.ti 24 software, from which 5,664 sections of text have been coded semi-automatically and manually to sentiment (neutral, positive, negative) as well as assigned by key concepts and terms in justice.

Leximetric analysis was performed to determine patterns of co-occurrence among terms related to justice (action, inequality, injustice, mitigation, right) and terms related to governance (change, policy, responsibility, response). Analysis indicated which terms co-occurred most regularly, representing hegemonic discursive pairings and the structural integration of justice in climate discourses (Blei, 2012). Sentimentomic coding was subsequently employed to measure the polarity of content related to justice, demonstrating affective direction of texts toward optimism, critique, or neutrality (Taboada et al., 2011).

This combined methodology reveals the ideological tensions within climate justice literature—between technocratic policy framing and moral advocacy—thus providing a meta-critical examination of how knowledge production not only reflects and reproduces prevailing paradigms but also structures their emotional and structural framing. Through combining co-occurrence mapping with sentiment analysis, the study redresses a major shortcoming in research on climate discourse, i.e., the lack of adequate probing into how academic texts emotionally and structurally frame justice issues.

Result and Findings

Table 1

Selected Scopus-Indexed Peer Reviewed Research Articles for Analysis

Sr. No.	Topics	Scholars

1	How legitimate expectations matter in climate justice.	Meyer & Sanklecha (2014).
2	Contesting climate justice in the city: Examining politics and practice in urban climate change experiments.	Bulkeley et al., (2014).
3	Identifying burdens of coping with climate change: A typology of the duties of climate justice.	Duus-Otterström & Jagers (2012).
4	Equity, climate justice and fossil fuel extraction: principles for a managed phase out.	Muttitt & Kartha (2020).
5	Climate justice and human development: A systematic literature review.	Alves & Mariano (2018).
6	Climate Justice: Vulnerability and Protection.	Kelleher (2016).
7	Climate justice and human rights.	Schapper (2018).
8	Three Faces of Climate Justice	Dolšak & Prakash (2022).
9	Enfranchising the future: Climate justice and the representation of future generations.	Gonzalez-Ricoy & Rey (2019).
10	Critical climate education: studying climate justice in time and space.	Svarstad (2021).
11	Climate justice and the international regime: before, during, and after Paris.	Okereke & Coventry (2016).
12	From Global Justice to Climate Justice? Justice Ecologism in an Era of Global Warming.	Goodman (2009).
13	Climate justice, commons, and degrowth.	Perkins (2019).
14	Contextualizing climate justice activism: Knowledge, emotions, motivations, and actions among climate strikers in six cities.	Martiskainen et al.(2020).
15	Setting energy justice apart from the crowd: Lessons from environmental and climate justice.	Jenkins (2018).
16	Climate justice in a non-ideal world	Wells (2017).
17	Achieving a climate justice pathway to 1.5 °C. Nature Climate Change	Robinson & Shine (2018).
18	Climate justice is not just ice.	Forsyth (2014)
19	Climate change, children's rights, and the pursuit of intergenerational climate justice.	Gibbons (2014).
20	The politics of environmental migration and climate justice in the Pacific region.	Klepp & Herbeck (2016).
21	Gender Equality and Climate Justice: A Cross-National Analysis.	McKinney & Fulkerson (2015).
22	Climate Justice in Rural Southeastern United States: A Review of Climate Change Impacts and Effects on Human Health.	Gutierrez & LePrevost (2016)
23	From environmental to climate justice: climate change and the discourse of environmental justice.	Schlosberg & Collins (2014).
24	Common human identity and the path to global climate justice.	Reese (2016)
25	The emerging geographies of climate justice.	Fisher (2015)
26	Climate Justice and Inequality.	Harlan et al. (2015).
27	No climate justice without gender justice: an overview of the issues.	Terry (2009)
28	Climate Refugees or Migrants? Contesting Media Frames on Climate Justice in the Pacific.	Dreher & Voyer (2015).
29	A Su31rvey of Global Climate Justice: From Negotiation Stances to Moral Stakes and Back.	Pottier et al. (2017).
30	Climate Justice in a Climate Changed World.	Porter et al. (2020).

31	Critical climate justice.	Sultana, F. (2022).
32	Conceptualizing Learning in the Climate Justice Movement.	Kluttz & Walter (2018).
33	States of just transition: Realising climate justice through and against the state.	Routledge et al. (2018).
34	Carbon Trading, Climate Justice and the Production of Ignorance: Ten examples.	Lohmann, L. (2008).
35	US cities increasingly integrate justice into climate planning and create policy tools for climate justice.	Diezmartínez & Short Gianotti (2022).
36	Toward transformative climate justice: An emerging research agenda.	Newell et al. (2021).
37	Climate justice in lieu of climate change: a sustainable approach to respond to the climate change injustice and an awakening of the environmental movement.	Saraswat & Kumar (2016).
38	Human rights versus emissions rights: Climate justice and the equitable distribution of ecological space.	Hayward (2017)

The keyword "action" appeared 531 times, an indication of the prominence of the demand for concrete, urgent action on the climate crisis. But the constant appeal to action also means that there is a disconnection between awareness and action, that although appeals to action are plentiful, the actual advancement is behind. "Adaptation," found 456 times, refers to the continued focus on adapting to the effects of climate. Adaptation, however, can itself be viewed as a reactive process, perhaps insufficient to address the source of the cause of climate change and its unequal effects, particularly in the Global South.

"Change" was the single most common word (1,413 occurrences), emphasizing the wide spread acknowledgment of climate change itself as well as of the systemic changes required. But overutilization of this term also indicates a general conceptualization of change and lack of clear, actionable measures. On the emissions front, the word "emission" appeared 540 times, reflecting the uniform interest in minimizing carbon footprints. But even as there is an emphasis on this, the sustained presence of emissions-based discussions also indicate an inability to bring about actual reductions, questioning the effectiveness of existing policies and strategies.

The keyword "expectation" was mentioned 149 times, which is indicative of the broken promises of climate justice. This s indicative of the disappointment with promises that have not translated into actual change in the world. "Injustice," which was said 199 times, underscores the negative consciousness of injustices embedded in climate change, especially concerning vulnerable groups. Nevertheless, it can be said that defining the problem in terms of only injustice can be larger structural changes required to tackle the underlying causes of ecological damage.

Policy was the overarching theme, with 551 references, indicating that climate justice rhetoric still places emphasis on creating legal frameworks. This emphasis on policy, though, can be criticized for perhaps overshadowing the necessity for bottom-up action and local community mobilization, which tend to get lost in top-down policy-making.

The dominance of positive sentiment (2,641 mentions) is understood as a sign of hope and optimism among the climate justice movement, betraying the confidence in possible solutions and revolutionary change. But a closer analysis of this positivity implies that it can hide the imperative for action. This extremely high level of positive sentiment is in fact a sign of idealized or aspirational language, which is not necessarily translated into action on the ground to address climate injustices.

On the other hand, the great number of neutral sentiment (1,961 mentions) is astonishing. This is a reflection of the recognition of the complex, multifaceted realities of climate justice without clear-cut solutions or solutions to escape debate. The neutral tone is itself a mark of guarded or analytical style in the literature, a reflection of an ongoing fight against climate injustice under uncertainty and lack of clear solutions. But also, neutrality is symptomatic of

paralysis or lack of consensus in policy-making and activism in the field of climate justice.

The negative sentiment (1,062 mentions) reflects the distrust, anger, and criticisms that pervade climate justice discourse. It suggests a growing disillusionment with the glacial pace of climate action, especially in terms of the failure of global systems to address the structural injustices at the root of climate exposure. The sustained bad mood can also be a result of increasing consciousness of the systemic barriers that are slowing down progress towards a fairer and more just climate future, alluding to criticism about the efficacy of international climate agreements, insufficient finance, and the deep-seated power imbalances fueling ecological degradation.

In addition, the variety in the origin of these feelings—across a collection of academic articles, indicates that climate justice is being discussed in different and sometimes opposing terms. The repeated mentions of words such as “policy,” “injustice,” “expectation,” and “emission” indicate attention to the political and legal aspects of climate justice, while these arguments primarily point out the disconnection between policy pronouncements and on-the-ground realities. The occurrence of the terms involving rights, vulnerability, and protection indicates the focus of climate justice in the context of human rights, but the ongoing occurrence of the negative and neutral feelings questions whether the measures are adequate in addressing the limitations against ultimate justice.

Sentiment analysis shows that although the debate on climate justice is rich and encompasses an optimistic vision of revolutionary change, there is a pervasive tension between rhetoric and reality.

The overall occurrences of keywords like “action,” “adaption,” “change,” “emission,” and “policy” indicate a far-reaching discourse on the multi-faceted dimensions of climate justice. For example, the term "action" appears 531 times, indicating heightened focus on material action towards resolving climate-related issues, whereas terms like "adaption" (456) and "emission" (540) indicate renewed interest in societies' adaptation to climate change as well as how greenhouse gas emissions contribute to an increase in climate issues.

The information also reflects the high frequency of words related to justice, rights, and inequalities, such as "inequality" (114), "injustice" (199), and "right" (622). These figures reflect that the discourse of climate justice is embedded in the concerns of social justice, human rights, and the fairness of climate change policy. Specially, terms such as "policy" (551) and "responsibility" (241) reflect the emphasis on governance, responsibility, and structural transformation defining the climate justice agenda.

Sentiment analysis paints a more dynamic picture. While the lion's share of references is attributed to neutral sentiment (1961), the data also reflects a significant number of positive (2641) and negative (1062) sentiments. This trend can be read as a latent tension in the discourse of climate justice—a vision of potential solutions and hopeful change on one hand, and concerns over urgency and the negative impacts of climate change and the challenges of stopping them on the other hand.

The heavy reliance on vocabulary words for human vulnerability (i.e., "protection" and "vulnerability") and descriptive words for future generations ("representation of future") also further strengthens the ethical dimension of climate justice. It speaks of an acknowledgment that climate justice is not about present measures, but intergenerational obligation as well.

Generally, this dataset captures the richness and diversity of the climate justice discourse, marking crucial areas of emphasis like adaptation, policy, human rights, and the contribution of emissions to the current climate crisis. It further indicates the natural conflict between positive and negative schools of thought, demonstrating the dynamic and controversial nature of climate justice discourse among scholars and policymakers. The prevalence of words such as “need, ” “expectation, ” and “responsibility” refers to the sense of urgency to act collectively, and that debate is not merely about diagnosing the issue but also about delineating the ways toward significant solutions and the moral underpinnings that must sustain them.

Table 2
Coefficient Analysis of Climate Justice in Scopus-Indexed Research Papers 2014-2024

	Sentiment: Negative Gr=1062		Sentiment: Neutral Gr=1961		Sentiment: Positive Gr=2641	
	count	coefficient	count	coefficient	count	coefficient
emission Gr=540	90	0.06	239	0.11	213	0.07
inequality Gr=114	14	0.01	38	0.02	64	0.02
injustice Gr=199	25	0.02	63	0.03	113	0.04

The findings provide an informative but intricate representation of how the issues of climate justice—emissions, inequality, and injustice—are couched in terms of sentiment. Given attention to emissions, with which 540 mentions are concerned, most sentiment (239 mentions) is neutral or positive (213 mentions), whereas a small amount (90 mentions) expresses negative sentiment. This trend indicates an overall tendency to approach emissions debates with a sense of pragmatism or guarded optimism, perhaps fueled by the continued global attention to technological advances and global climate treaties. But the relatively low level of negative sentiment suggests that the seriousness of the climate crisis, especially in terms of emissions reductions, is not fully appreciated in some quarters, perhaps downplaying the seriousness of the situation. The absence of more intense negative sentiment reflects a disconnection from the wider implications of climate change, including its disproportionate effects on vulnerable groups.

For inequality, where 114 references were made, positive sentiment (64 references) far exceeds neutral (38 references) and negative (14 references) sentiment. This bias indicates that dialogue around inequality within the climate justice framework is widely couched in optimistic terms, possibly fueled by increasing demands for global equality, climate finance to developing countries, and a wider emphasis on social justice in the climate agenda. But the relative lack of negative sentiment is a problem, as it minimizes the entrenched structural injustices that still hold back climate action. By concentrating on positive sentiments, there is a danger of missing the obstacles to true equity and the imperative for redistributive policies. The inequality coefficients, from 0.01 for negative to 0.02 for positive, represent a fairly balanced but ultimately hopeful perspective, perhaps an attempt to muster support for climate justice efforts.

Injustice, with 199 occurrences, shows the most polarized language, as seen by the wider spread of sentiment along the spectrum. The positive tone (113 references) is significantly more than the negative tone (25 references), but the negative tone still holds prominence, demonstrating the profound aggravations and sense of moral indignation linked with systemic grievances heightened through climate change.

Table 3
Sentiment Analysis of Climate Justice in Scopus-Indexed Research Papers 2014-2024

	Sentiment: Negative Gr=1062		Sentiment: Neutral Gr=1961		Sentiment: Positive Gr=2641	
	count	coefficient	count	coefficient	count	coefficient
Action Gr=531	72	0.05	193	0.08	268	0.09

Adaption Gr=456	62	0.04	179	0.08	217	0.08
Change Gr=1413	210	0.09	554	0.20	651	0.19
Expectation Gr=149	27	0.02	65	0.03	59	0.02
Need Gr=206	22	0.02	77	0.04	109	0.04
Practice Gr=198	20	0.02	70	0.03	110	0.04

The information in Table 3 shows differing opinions on major climate justice terms like action, adaptation, change, expectation, need, and practice, in the different categories of sentiment: negative, neutral, and positive.

For action (531 mentions), the positive sentiment (268 mentions, coefficient 0.09) is significantly greater than both the neutral (193 mentions, coefficient 0.08) and negative (72 mentions, coefficient 0.05) sentiments. This implies quite an optimistic reading of climate action, perhaps influenced by increasing conviction in the value of existing and planned action. Yet, relative low negative sentiment—albeit significant—yet implies a potentially low estimation of the obstacles and systemic resistance constraining decisive action. The ambiguous sentiment, as less dominant but still present, means that considerable amounts of the discussion are as yet uncertain or ambivalent over the practical repercussions of suggested climate action. This subtle sentiment portrait emphasizes the contrast between desire for change and the recognition of current constraints, urging a closer critical examination of whether what is being done now is enough and really transformative.

For adaptation (456 mentions), positive sentiment (217 mentions, coefficient 0.08) once more overwhelms both neutral (179 mentions, coefficient 0.08) and negative (62 mentions, coefficient 0.04)

sentiments and presents a rather positive attitude toward adaptation measures. Yet this optimism can cover up the truth of adaptation woes for vulnerable populations, especially in the Global South, where adaptation is poorly funded and executed. The sentiment balance here indicates that adaptation is accepted as inevitable, but there is still a possibility of oversimplifying its dynamics, particularly in areas most hit by climate change. The neutral sentiment further suggests some skepticism or lack of confidence in the global capacity to implement effective adaptation strategies at scale.

Change (1413 mentions) stands out with the highest number of mentions, and the sentiment breakdown is more varied: 651 mentions (coefficient 0.19) are positive, 554 mentions (coefficient 0.20) are neutral, and 210 mentions (coefficient 0.09) are negative. The high level of neutral sentiment here reflects a general state of doubt regarding the likelihood of effective, systemic change in dealing with climate challenges. While positive sentiment expresses optimism and improvement in climate change reduction, the significant level of negative sentiment reveals skepticism to be common, especially considering political resistance, economic motivations, and uneven bearing of climate costs. The evidence presented here indicates a dynamic approach where both desire for and resistance to change exist together, evidencing the struggle to attain the drastic changes required in order to mitigate climate change.

As far as expectation is concerned (149 mentions), the positive and negative sentiments are comparatively low (59 mentions with a coefficient of 0.02 for positive, and 27 mentions with a coefficient of 0.02 for negative), whereas neutral sentiment (65 mentions with a coefficient of 0.03) dominates the conversation. This is a hesitant or uncertain trajectory regarding climate action and change expectations, where citizens are not yet sure they have faith in the commitments of governments, business, or global institutions. The low positive and negative sentiment levels here indicate that public views are still be

evolving or that expectations are muted by past frustrations or uncertain outcomes.

In terms of need (206 mentions), the positive (109 mentions, coefficient 0.04) opinion is more robust than the neutral (77 mentions, coefficient 0.04) and negative (22 mentions, coefficient 0.02) opinions, indicating general acknowledgment of the immediate need for action on climate change. This opinion profile highlights growing recognition of the climate crisis and its call for instant solutions. Nonetheless, the relatively low negative sentiment indicates a reluctance to face the harsh reality of resource and political limitations, which will hinder or detract from timely and effective responses. The data show a general agreement regarding the need for action but also that challenges in responding to the need for climate solutions are frequently downplayed.

Finally, practice (198 mentions) has a mild bias towards favorable sentiment (110 mentions, coefficient 0.04) in relation to neither (70 mentions, coefficient 0.03) nor unfavorable (20 mentions, coefficient 0.02) sentiment. This indicates that although there exists overall optimism about practical action leading to climate justice, the comparably low overall levels of adverse sentiment might suppress the practical obstacles and systemic barriers to adopting climate-friendly practices on a large scale. In addition, the higher level of neutral sentiment reflects continuous discussion and hesitation regarding the feasibility and effectiveness of these practices, particularly in environments where political will or funding is lacking to enable large-scale application.

Overall, the statistics indicate a generally positive attitude towards climate justice issues but indicate uncertainty and lack of direction in many categories by reflecting the higher levels of neutral sentiment. Negative opinion, though frequently in the minority, is important to highlight the critical challenges that still exist—most notably around political inertia, financial limitations, and the disproportionate effects of climate change. Consequently, the evidence shows a demand for greater openness and critical debate regarding these topics so that optimism does not obscure the need to confront the deeper structural and systemic impediments to effective climate action.

Table 4
Cross-Coefficient (Technocracy vs. Morality) Analysis of Climate Justice in Scopus-Indexed Research Papers 2014-2024

	Action Gr=531		Inequality Gr=114		Injustice Gr=199		Mitigation Gr=282		Right Gr=622	
	count	co.	count	coeff	count	coeff	count	coeff	count	coeff
Change Gr=1413	260	0.15	61	0.04	106	0.07	146	0.09	247	0.14
Need Gr=206	50	0.07	18	0.06	18	0.05	35	0.08	53	0.07
Policy Gr=551	98	0.10	32	0.05	52	0.07	80	0.11	99	0.09
Practice Gr=198	31	0.04	11	0.04	21	0.06	15	0.03	33	0.04
Response Gr=191	57	0.09	17	0.06	25	0.07	33	0.07	42	0.05
Responsibility Gr=241	51	0.07	15	0.04	18	0.04	43	0.09	101	0.13

The information given under the different climate justice ideas shows important insights into public opinion and debate concerning the most important issues such as action, inequality, injustice, mitigation, and rights, with specific focus on feeling categories

like positive, neutral, and negative. Let us deconstruct this critically.

With action (531), the strongest sentiment is positive (268 mentions, coefficient 0.09), indicating a general positivity towards climate action. Still, the relatively lower level of negative sentiment (72 mentions, coefficient 0.05) and neutral sentiment (193 mentions, coefficient 0.08) suggests that even with the optimism, a considerable amount of the discussion is still uncertain or even pessimistic. This indicates that although there is hope that something will happen, pragmatic restraints like political opposition, resource constraints, and institutional inertia still inhibit complete dedication. The gap between positive and neutral opinions highlights a disconnection between willingness to act and faith in the action being productive.

For inequality (114 references), sentiment analysis finds far greater equilibrium. Negative sentiment (63 references, coefficient 0.04) considerably dominates neutral (38 references, coefficient 0.02) and positive (14 references, coefficient 0.01) sentiments. This negative finding highlights deeply ingrained recognition of inequality, especially in the context of climate justice, where poor and vulnerable groups tend to be affected disproportionately. The prevalence of negative tone implies increasing popular discontentment with the way climate policies might be further aggravating inequalities. The fairly low positive tone indicates that most equity solution ideas for inequality in climate discussions are still in the works or not yet scaled up.

Injustice (199 mentions) also captures a lot of negative sentiment (113 mentions, coefficient 0.04), indicating that individuals see climate change as inherently unfair, especially if looking at its disproportionate effects. The positive sentiment (25 mentions, coefficient 0.02) is still in the minority,

which means justice-related policy shifts or solutions are not commutating as well with the public. The neutral sentiment (63 mentions, coefficient 0.03) reflect ambivalence or confusion regarding the feasibility of addressing climate injustice. The data underscores the need for a stronger global commitment to climate justice, especially in the face of worsening environmental inequalities.

Mitigation (282 references) has the highest density of positive emotion (146 references, coefficient 0.09), with the implication that there is overall optimism towards activities aimed at minimizing or stopping additional harm caused by climate change. Despite this, neutral (80 references, coefficient 0.11) and negative emotion (56 references, coefficient 0.07) remain large in number, reflecting skepticism regarding the efficacy of mitigation activities. The relative balance of neutral opinion is a response to worries regarding the adequacy of current mitigation action, particularly against the backdrop of international political challenges and glacial rates of implementation. This implies a paradox: though the concept of mitigation is well-entrenched, there are severe reservations about its ability to address the scale of the crisis.

The theme of rights (622 times) displays an almost even-handed sentiment pattern with positive sentiment (247 times, coefficient 0.14) in the majority, closely followed by neutral sentiment (146 times, coefficient 0.09) and then negative (260 times, coefficient 0.15) sentiments. The major negative sentiment identifies a pervasive unease with regards to the impacts of climate change on fundamental human rights, particularly in at-risk areas. This means that although there is a wide recognition of the necessity to protect rights in climate policy, there remains strong discontent with the way these rights are being disregarded or disrespected in climate policy. The high neutral sentiment may also refer to a general uncertainty regarding how these rights will be legally acknowledged or enforced at the international level.

Throughout these climate justice topics, change (1413 instances) is the most widely debated term, with a greater level of negative sentiment (210 instances, coefficient 0.09). This indicates that although most people identify the necessity for change, there is plenty of pessimism about its feasibility. The comparatively more neutral sentiment here (554 mentions, coefficient 0.20) also captures the uncertainty around what concrete change could be and the structural impediments to such change.

Likewise, the urgency (206 mentions) to take action comes with a strong positive feeling (109 mentions, coefficient 0.04), but also indicates resistance or doubt by negative (22 mentions, coefficient 0.02) and

neutral (77 mentions, coefficient 0.04) sentiments and emphasis that everyone realizes the urgency but is not certain if practicality or feasibility is possible in a timely fashion.

Lastly, the emphasis on responsibility (241 mentions) indicates that individuals more and more perceive climate justice as a collective responsibility. The positive sentiment (101 mentions, coefficient 0.13) is quite high, but it is important to note that this responsibility is usually couched in terms of something that others—governments, companies, or international organizations—need to do. This is an expression of a collective action problem, with public opinion aware of the necessity of international cooperation but actions constantly being put off or delegated to those in authority.

Discussion

The results of the frequency analysis and sentiment analysis of climate justice keywords are a valuable addition to the ongoing debate on climate change, aligning with earlier research in this area. Earlier research has repeatedly emphasized the gap between global rhetoric and local realities in climate justice, where hopes tend to exceed real progress. For example, repeated use of phrases such as "action," "adaptation, " and "change" fits within the expanding pool of literature citing the disparity between policy pronouncement and actuality. Research by experts like McKibben (2019) has criticized the high number of appeals for action being held up by political inactivity and self-serving interests, which is also echoed in the statistics where "action" (531 references) sharply contrasts with the sluggish pace of mitigation and adaptation measures.

In addition, the salience of words such as "injustice" (199 occurrences) and "inequality" (114 occurrences) echoes earlier research on the disproportionate effects of climate change, especially on vulnerable groups in the Global South (Shue, 2014). This is in line with the broad consensus in climate justice literature that climate vulnerability is not just an environmental concern but one that is strongly embedded in social and economic inequalities. The combined feelings of optimism, neutrality, and pessimism reflects what scholars such as O'Neill et al. (2017) have identified: the idealistic rhetoric typically linked to climate justice is balanced by skepticism and frustration, particularly over the efficacy of global pacts and the inability to fulfill prospects of climate equality.

In addition, the high frequency of "policy" (551 occurrences) and "responsibility" (241 occurrences) reflects the increased priority on governance and legislation in the last few years. Research such as that of Hulme (2009) contends that, although policy structures are imperative for structural change, they should be supplemented by local action and community movements in order to be inclusive and effective, a problem which the evidence indicates is still not adequately addressed.

On the emissions side, the sentiment data indicates a prevalence of positive and neutral sentiments, with comparatively lesser negative sentiment. Previous research, for instance, Giddens (2009) and Norgaard (2011), points out that climate change debate is characterized by a "cautious optimism," with technological advances and global climate policies perceived as hopeful fixes. This is reflected in the trend of the current data, indicating that although emissions are more and more recognized as a core concern, the urgency of their diminishment is muted in popular discussion. But as Hulme (2009) contends, the absence of more intense negative emotion in climate debate is suggestive of a wider distance between society and the actual consequences of emissions, including environmental degradation and disproportionate harm to vulnerable populations.

On inequality, positive sentiment (64 mentions) over negative sentiment (14 mentions) is in keeping with increased demands for world equity in climate discussions, such as in the scholarship of researchers like Roberts and Parks (2007), which presents climate justice as a tool to address world inequalities through policy and climate finance. The scant negative sentiment, though, is underplaying structural impediments to realizing authentic equity. Here, findings align with critical views of experts like Pelling (2011), who highlight that although rhetoric around climate justice is encouraging, policy implementations rarely deal with inherent socio-economic differences that cause ongoing vulnerability to climatic effects. This cautionary approach is needed because optimistic labelling can be misleading at times by hiding inequality depth in climatic discourse.

The discovery that discourse on injustice is polarized, both positively and negatively, demonstrates an increasing awareness of moral indignation and irritation with systemic inequalities, a thread developed in the work of Klein (2014) and others who criticize the glacial speed of climate action and the uneven burden on marginalized communities.

In terms of climate action and mitigation, the overall optimism, together with significant skepticism, is in line with previous research that investigates the "optimism bias" typically present in climate debates. Researchers like O'Neill and Nicholson-Cole (2009) have found that positive framing of climate action and mitigation is typical, but substantial uncertainty exists on whether these actions are effective, especially in the presence of political opposition and economic interests. This is consistent with the results of the present analysis, wherein neutral sentiment tends to capture public ambivalence regarding the practical implementation of climate action measures. The comparatively higher neutral sentiment in mitigation (80 mentions, coefficient 0.11) indicates the disconnection between the recognition of the need for action and the skepticism regarding its actual implementation.

Additionally, the research finds there is a rich and multifaceted emotional landscape concerning the term "change" and that the overwhelming positive neutral tone (554 times, coefficient 0.20) emphasizes that there is general uncertainty about how possible effective, systemic change truly is. This aligns with previous research by Moser (2010) and others who argue that while the need for change is broadly accepted, there is significant public skepticism about the feasibility of achieving it, particularly in light of entrenched political and economic systems that resist transformative change. The simultaneous emotional responses to change emphasize the high level of polarization and tensions in climate discourse, portending optimism about progress and resistance to the scale of change required.

Conclusion

The findings of this study offer an integrated perspective of the evolving climate justice discourse, both its optimism and setbacks, in international climate debates. The keyword frequency and sentiment analysis of climate justice keywords highlight a constant tension between local realities and global rhetoric. The high occurrences of "action," "adaptation," and "change" point to increasing acknowledgment of climate change as an emergent issue. However, the gap between these aspirations and the reality of how fast progress is being made remains extreme. The saliency of terms like "injustice" and "inequality" underscores the deeply entrenched socio-economic inequalities that organize vulnerability to climate change. While a growing awareness of these inequalities has been evident, the optimistic sentiment for climate action and inequality can disregard the structural barriers to achieving real climate equity. The study brings to the fore the conflict between the climate justice rhetoric and the established political, economic, and social barriers to its realization.

Recommendations

The findings call for a critical re-examination of climate justice rhetoric, questioning a prioritization of the dismantling of structural disparities and the systemic barriers to the realization of concrete, equitable solutions to climate change. The need for a holistic, action-oriented approach to climate justice remains necessary in the crafting of good climate policy.

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