



THE COLONIALISM-VULNERABILITY NEXUS: A POLITICAL ECOLOGY STUDY OF STRUCTURAL INEQUALITY IN CLIMATE CHANGE

Abdul Gani

Universiti Malaysia Sabah

correspondence: abdgani.salahuddin@gmail.com

Abstract

This literature study examines the interdisciplinary fields of political ecology and climate justice, analyzing the connections between climate change, structural inequality, colonialism, and human rights. The research investigates how political ecology explains the causal relationship between colonial structures, global economic disparities, and the uneven distribution of climate vulnerability. It further explores how social movements define, advocate for, and expand the understanding of environmental justice in response to the climate crisis. The findings reveal that climate change is a symptom of a global economic system built on a history of extraction and inequality, where vulnerability is politically produced. Climate justice movements successfully reframe the crisis as one of human rights and structural injustice, emphasizing historical responsibility, intergenerational equity, and substantive participation. The study concludes that effective and equitable responses to climate change require a fundamental transformation of power relations, a decolonization of knowledge, and the centering of the rights and agency of frontline communities. Technical and market-based solutions are insufficient without addressing these underlying political and economic structures.

Keywords: political ecology, climate justice, colonialism, vulnerability, social movements, structural inequality, human rights.

Introduction

Climate change has long been discussed through the lens of atmospheric science, physical models, and global environmental policy. This dominant discourse tends to center its attention on greenhouse gas concentrations, average temperature increases, and emission reduction targets as the primary technical parameters. In fact, every social phenomenon in this modern era cannot be separated from the development of information technology that changes the way we perceive the world (Wahyudi et al., 2021). This approach, while scientifically critical, often abstracts climate change from the social, economic, and political histories that shaped it. In reality, the impacts of global warming are not distributed evenly across the Earth's surface (Diffenbaugh & Burke, 2019; Seinfeld, 2011). Certain communities, countries, and generations face a disproportionate burden from climate disruption, while other actors who have contributed significantly to historical emission accumulation are often better protected geographically and economically. This inequality demonstrates that climate change is not merely an environmental issue, but rather a matter of the distribution of power, resources, and structured vulnerability. Therefore, an adequate understanding requires us to examine the intertwining of ecological processes with the political and economic relations that govern access to nature, determine who has the right to pollute, and who must bear the consequences (Swyngedouw, 2011). It is from this point that political ecology emerges as a vital analytical framework.

Political ecology provides the tools to investigate how power relations shape human interaction with the environment, and conversely, how environmental changes affect and are affected by political conflict and inequality (Abrahams & Carr, 2017). This perspective rejects the view of nature as a separate entity that can be managed in a technically neutral manner. Instead, political ecology sees the environment as something that is always already politicized, interpreted, and contested. This is closely related to how an organization is run based on behavioral principles that regulate the mindset of its members in taking action (Darmawan, 2013). It questions who benefits from the exploitation of certain resources, who bears the environmental costs, and which narratives of science or development are used to legitimize specific arrangements (Perreault et al., 2015). In relation to climate change, political ecology traces its root causes

to a global economic system based on fossil fuel extraction and limitless growth. This system did not emerge from a vacuum, but was nurtured by colonial and post-colonial structures that positioned parts of the world as providers of raw materials and as dumping grounds for waste both ecological and social for the prosperity of other regions. Thus, political ecology analysis links carbon emissions to the legacy of colonialism, unequal global trade, and ownership regimes that alienate communities from their land and resources.

The concept of climate justice developed as a normative response and social movement to the structural inequalities exposed by climate change. Climate justice argues that climate change is fundamentally a matter of ethics and justice. It raises questions about the historical responsibility of industrialized nations, the right of developing nations to achieve prosperity, and the human rights of vulnerable communities to be protected from climate hazards. Climate justice encompasses several dimensions: distributive justice regarding the sharing of burdens and benefits; procedural justice regarding participation in decision-making; and corrective justice regarding compensation for damages that have occurred (Schlosberg & Collins, 2014). In practice, the spirit of this justice is strongly influenced by how individuals balance personal freedom and their responsibility toward the wider society (Saputra & Darmawan, 2021). The climate justice movement demands that climate solutions not only reduce emissions but also address the underlying injustices of the crisis. These demands include the recognition of indigenous knowledge and rights, reparations for unavoidable damage, and a just energy transition that protects workers and communities dependent on extractive industries. In this way, climate justice seeks to reframe climate change from a technical-environmental problem into an urgent issue of human rights and social justice.

The linkage between climate change, structural inequality, and colonialism becomes clear when examining specific impacts such as water scarcity, crop failures, or extreme weather events. Poor communities, indigenous peoples, and minority groups often reside in vulnerable geographies, have a high dependency on natural resources, and possess limited adaptive capacity due to long-standing political and economic marginalization. This issue is further complicated in suburban areas where regional development often disrupts social relations and the mobility of its

inhabitants (Wisnujati & Mardikaningsih, 2021). Their vulnerability is not a natural state but rather a product of historical processes such as land dispossession, discrimination, and exclusion from development. At the same time, global trade regimes and the policies of international financial institutions can force Global South countries to prioritize the production of export commodities over local food security, thereby increasing their vulnerability (Suliman et al., 2019). This pattern reveals the continuity of colonial logic within the contemporary political-economic architecture, where value extraction and the externalization of environmental costs persist, albeit through more subtle mechanisms. Thus, climate change acts as a threat multiplier that exacerbates existing injustices, while simultaneously serving as a mirror reflecting global power imbalances.

Examining social movements that demand environmental justice is an integral part of political ecology and climate justice studies. These movements serve as agents that politicize the ecological crisis, reject depoliticized technical narratives, and articulate alternative demands based on direct experience. The success of these movements certainly requires the active involvement of citizens through social support based on community togetherness (Zulkarnain et al., 2021). They connect local struggles against mines, power plants, or deforestation with global narratives of rights, justice, and responsibility (Martinez-Alier et al., 2016). Such movements operate at various scales, from grassroots community protests to transnational coalitions like the Climate Justice Alliance. They practice a new form of politics that emphasizes participatory democracy, solidarity among affected communities, and a different vision of development rooted in ecological sustainability and social justice. The study of these movements reveals not only resistance but also a political imagination of a possible future, offering a way out of the logic that created the climate crisis and inequality itself. Therefore, understanding the dynamics, strategies, and discourses of environmental social movements is key to mapping the possibilities of socio-ecological transformation.

The primary problem in this study lies in the persistent gap between the techno-scientific understanding of climate change and an adequate political-economic analysis of its root causes and the distribution of its impacts. Mainstream climate policy approaches often focus on market solutions such as carbon trading or clean development mechanisms, which

can overlook the dimension of justice and even potentially exacerbate inequality by turning pollution into a commodity that can be traded by those with capital (Böhm et al., 2012). This situation demands high moral integrity, especially for those working in the legal field to ensure that justice is maintained amidst a competitive system (Saktiawan et al., 2021). The fundamental question is how these technical and economic mechanisms interact with existing power structures, and whether they effectively address or instead perpetuate exploitative relationships between humans and nature as well as among humans. In many regions, mitigation and adaptation efforts have actually resulted in the dispossession of land or new resources under a "green" pretext, a process referred to as "green grabbing." This indicates that the transition to a low-carbon economy is not inherently just and can be hijacked by the same interests that caused the crisis.

Another problem relates to the difficulty of operationalizing climate justice within policy and legal practices. Principles such as "common but differentiated responsibilities" recognized in the UN framework face massive implementation challenges, as major emitting nations often reject legally binding commitments to provide adequate funding and technology transfer. On the other hand, political choices made by society, including the educated class, are often based on various complex rational considerations (Ujianto & Darmawan, 2003). At the local level, the participation of vulnerable communities in adaptation planning is often symbolic, lacking actual decision-making power (Chu et al., 2016). Furthermore, there is an inherent tension between the logic of economic growth that dominates development discourse and the demands of climate justice to deconstruct such extractive economic models. Social movements advocating for climate justice also face challenges of political repression, the criminalization of activists, and limited resources. They must negotiate within a complex political arena where corporate and state powers often ally against radical change. Thus, the path toward climate justice is fraught with political contestation, debates over the meaning of justice itself, and resistance from those who benefit from the status quo.

The importance of examining this topic today is driven by the increasingly tangible impacts of climate change and the ever-clearer patterns of injustice they produce. Heatwaves, massive floods, and droughts hitting various parts of the world are no longer theoretical future

threats, but realities disrupting the lives and livelihoods of millions (Watts et al., 2019). Every climate disaster clearly demonstrates how the dividing line between those who survive and those who suffer is often drawn by the boundaries of class, race, and geography. At the same time, public awareness regarding the intersection of the climate crisis and social injustice is rising, fueled by global youth movements and scientific reports that increasingly highlight the human dimension. This political momentum creates space for critical questions about development models and global governance. A systematic study is needed to consolidate knowledge from various disciplines, provide a strong conceptual foundation for advocacy, and identify strategic opportunities for more equitable policy interventions.

Discourse on the green transition and sustainable post-pandemic recovery has dominated the global agenda. However, without a critical political ecology analysis, there is a significant risk that this transition will be replicated within the same framework that created the crisis, resulting in a "green" version of capitalism that does not touch the roots of inequality. Examining the topics of political ecology and climate justice provides analytical tools to evaluate such transition proposals, test their commitment to justice, and propose more radical alternatives (Newell & Mulvaney, 2013). This study is also essential for recognizing and strengthening the epistemologies of knowledge from affected communities, whose experiences and struggles offer vital insights into resilience and alternatives. In this period of global uncertainty and transformation, a clear understanding of the relationship between power, ecology, and justice becomes a prerequisite for shaping a future that is not only ecologically sustainable but also socially just.

The objective of this study is to critically analyze the synthesis of academic discourse regarding political ecology and climate justice, focusing on the interdisciplinary connections between climate change, structural inequality, and human rights. Theoretically, this study aims to construct a coherent analytical framework that links the legacy of colonialism with contemporary political-economic dynamics that exacerbate the climate crisis and injustice. Practically, this research seeks to provide a mapping and evaluation of the strategies and narratives of climate justice social movements, so it can serve as a reference source for activists, policymakers,

and researchers working to promote equitable climate solutions. Its primary contribution lies in the effort to integrate the structural analysis of political ecology with normative and empirical studies of climate justice, offering the comprehensive perspective necessary to understand and address the socio-ecological crisis of this century.

Method

This research is conducted as a qualitative literature study that is exploratory and interpretative in nature. The qualitative approach was chosen because it aligns with the objective of understanding the complexity of meanings, power relations, and social processes underlying the issues of political ecology and climate justice, which cannot be reduced to quantitative data alone (Denzin & Lincoln, 2005). This study functions to synthesize, criticize, and build arguments based on the existing body of knowledge, including scientific journal articles, monographs, research reports from think tanks, and social movement documents. By analyzing these texts, the research seeks to identify dominant themes, discursive developments, points of intersection and contradiction between disciplines, and knowledge gaps that need to be filled. The focus is on a deep understanding of how various authors have conceptualized the relationship between climate change, structural injustice, and political responses, thereby allowing the researcher to construct a coherent and substantial analytical narrative.

The execution of this literature study adopts a systematic method based on the principles of a systematic literature review, modified for qualitative and theoretical study. The process began with protocol planning that defined the scope, inclusion and exclusion criteria, and search strategy. The search for primary sources was conducted using multidisciplinary academic databases such as Scopus, Web of Science, and ProQuest, using a combination of keywords such as "political ecology," "climate justice," "colonialism," "environmental movement," and "structural inequality." The analysis phase involved iterative critical reading of the selected sources, thematic coding to draw out argument patterns, and discourse analysis to understand how key concepts are constructed and debated. The synthesis was performed not through statistical aggregation, but through comparative and integrative interpretation to

build arguments that address the research questions (Bryman, 2012). To ensure credibility, the research applied source triangulation by comparing perspectives from different literatures and maintaining an audit trail that documents the decision-making process throughout the study

Result and Discussion

Colonial Structure and the Construction of Vulnerability in the Climate Crisis

The political ecology analysis of climate change rejects explanations that oversimplify it as a technical failure or merely a problem of emissions. Instead, this approach traces the lineage of the climate crisis back to the heart of the European modernity and colonialism project. Colonial expansion since the 15th century was not only about political conquest but was also a massive ecological extraction project that drove primary capital accumulation in Europe. Monoculture plantations, mining, and the accompanying land dispossession transformed ecological landscapes in the Global South, replacing diverse local management systems with export-oriented economies geared toward the global market. This condition was exacerbated by a heavy focus on specific export commodities that serve as the economic backbone but often ignore natural balance (Darmawan et al., 2021). The global economic system emerging from this history was built upon an unequal international division of labor, where colonies and former colonies served as providers of raw materials and recipients of waste (Moore, 2017). This extraction pattern created structural dependency and depleted the natural resource base in many countries, while simultaneously concentrating industrial capacity and high energy consumption in industrialized nations. Therefore, the historical accumulation of greenhouse gases in the atmosphere cannot be separated from the logic of capital accumulation made possible by colonial relations. Carbon emissions are the metabolic social footprint of an economic system rooted in institutionalized global inequality.

Post-colonial political-economic structures continue and adapt this extractive logic through subtler yet no less influential mechanisms. Institutions such as the World Bank and the International Monetary Fund, through structural adjustment programs in the late 20th century, forced many developing nations to liberalize their economies, prioritize debt

repayment, and exploit natural resources to generate foreign exchange. In such situations of economic uncertainty, organizations are required to have flexible methods to survive (Arifin & Darmawan, 2022). These policies often weakened environmental regulations, ignored indigenous rights, and promoted industrial agriculture models dependent on fossil fuels. The ecological debt accumulated by industrialized nations through resource exploitation and the use of atmospheric space as a carbon dumping ground has never been adequately recognized within the global financial architecture (Rice, 2009). On the contrary, Global South countries are trapped in financial debt that limits their capacity to invest in clean energy and climate adaptation. Thus, vulnerability to climate change is not randomly distributed; it is systematically produced by a network of economic policies, trade regimes, and power relations that perpetuate the dependency and marginalization inherited from colonialism.

The concept of "vulnerability" in climate change discourse is often presented as a technical characteristic of a population or geography. Political ecology deconstructs this concept by demonstrating that vulnerability is a politically produced condition (Wescoat, 2015). This often causes specific groups to feel marginalized and find it difficult to thrive within existing social structures (Hartono, 2021). Factors such as poverty, lack of access to secure land, dependence on climate-sensitive resources, and lack of social protection are not natural states, but the result of historical processes of dispossession, discrimination, and exclusion. Indigenous peoples, for example, often possess high ecological resilience based on traditional knowledge, yet they become vulnerable when their territorial rights are not recognized, when their forests are converted for plantations or mines, or when large-scale development projects sever their ties to livelihood resources. This process is a form of colonial continuity, now operating through legal and investment regimes that prioritize extraction over the sustainability of community life. Thus, vulnerability is the end product of a series of political and economic decisions that sacrifice the security of one group for the profit of another.

The physical impacts of climate change interact with these pre-existing vulnerabilities to produce specific injustices. Sea-level rise, for example, threatens small island nations and coastal communities. The rapid growth of major cities also brings its own challenges in maintaining

harmony among residents (Mardikaningsih, 2021). These threats turn into disasters when communities have been previously impoverished by overfishing from foreign industrial fleets, or when coastal protection infrastructure is not built due to inadequate budget allocations. Similarly, droughts exacerbated by climate change will most severely impact subsistence farmers whose land has been degraded due to the pressure to grow export commodities or who lack access to irrigation and insurance. These environmental changes ultimately also affect what families consume and how they maintain food security at home (Aisyah & Issalillah, 2021). In every case, climate hazards worsen conditions created by long-standing social, economic, and political injustices. This pattern shows that adaptation to climate change cannot succeed if it only focuses on technical interventions such as building levees or drought-resistant seeds (Reddy, 2014). It must address the root causes of vulnerability, which are often political, such as agrarian reform, recognition of collective rights, and the redistribution of power in decision-making regarding resources.

The scientific knowledge regimes that dominate global climate discussions are also not free from structural bias. Hegemonic climate science, while providing vital evidence, often ignores local and indigenous knowledge about weather patterns, ecosystem resilience, and adaptation practices. In fact, maintaining traditions amidst the onslaught of modern times is crucial for the identity of indigenous peoples (Amri & Khayru, 2022). This knowledge, developed through direct observation and generational interaction with specific environments, offers rich insights but is often discredited as unscientific. This neglect is a form of epistemic violence that is a colonial legacy, where Western ways of knowing are positioned as universal and legitimate, while other knowledges are devalued (Ulloa, 2017). In adaptation planning, this can result in project designs that are incompatible with local conditions, fail to engage communities meaningfully, and are ultimately ineffective. The political ecology approach emphasizes the need for epistemic justice—the recognition and integration of diverse ways of knowing in understanding and responding to climate change. Without epistemic justice, efforts to address the climate crisis risk reproducing colonial hierarchies in knowledge production.

The structural relationship between the legacy of colonialism and climate change is clearly visible in the geopolitical dynamics of international climate negotiations. The principle of "common but differentiated responsibilities and respective capabilities" (CBDR-RC) embedded in the UNFCCC is a formal recognition of the unequal historical responsibility of industrialized nations (Roberts & Parks, 2009). However, in practice, the meaningful application of this principle faces strong political resistance. Stricter legal regulations are needed to ensure our environment remains preserved and public health is protected (Herisasono et al., 2021). Major emitting nations, often former colonial powers, strategically attempt to focus discussions on future and current emissions, effectively erasing emission history from the calculation of obligations and shifting the burden of adaptation to developing countries (Bulkeley & Newell, 2015). They also actively promote market-based mitigation mechanisms, such as carbon trading and REDD+ schemes, which allow them to continue producing domestic emissions by paying for emission reductions that often occur in Global South countries (Bachram, 2004). These mechanisms have been criticized for risking new forms of land grabbing (green grabbing) for large-scale carbon sequestration projects, which actually disrupt the livelihoods, land rights, and food sovereignty of local communities (Bumpus & Liverman, 2008; Fairhead, Leach, & Scoones, 2012). Thus, the architecture of global climate governance itself becomes an important political battlefield, where colonial powers and logic seek to maintain their privilege to pollute while simultaneously minimizing financial obligations and retaining control over the form and location of climate solutions.

This structured inequality is exacerbated by contemporary political-economic dynamics such as the financialization of nature. Concepts like "ecosystem services" or "payment for environmental services" attempt to assign monetary value to nature's functions, such as carbon sequestration or water filtration. While well-intentioned, this approach risks further commodifying nature and deepening corporate and financial institution control over resources. The role of women is also very important here, especially in making decisions to consume products that are more environmentally friendly (Halizah & Nuraini, 2021). REDD+ projects, for example, can shift forest ownership and management from local

communities to outside entities interested in carbon credits. This is a new form of dispossession, where access to nature and its benefits are diverted under the logic of the global carbon market. This process reflects the adaptation of colonial logic to the era of climate crisis, where control over resources and space continues to be concentrated, now with "green" justifications (Sullivan, 2013). Political ecology analysis is essential to uncover such contradictions and risks within proposed climate solutions.

Resistance against the injustice produced by these structures is an integral part of political ecology analysis. Many of the most vulnerable communities are not passive; they are engaged in daily struggles to defend their livelihoods, land rights, and ways of life. However, in these struggles, women often must bear an incredibly heavy double burden in their social lives (Khairi, 2021). These struggles, though often labeled as "local resource conflicts," are actually the front lines of a broader political battle over who has the right to define and manage the relationship with nature. The fight against coal mines, large-scale hydroelectric plants, or palm oil plantations is a direct struggle against extractive development models that contribute significantly to climate change and reinforce colonial dependence. Thus, addressing the root causes of climate change is inseparable from supporting struggles for land rights, food sovereignty, and ecological justice at the local level (Martinez-Alier et al., 2015). Furthermore, paying attention to the welfare of people working in the public sector will greatly help improve services to the community (Gautama et al., 2021). This connection links the dots between global climate breakdown and local politics, showing that climate justice must begin with the recognition and restoration of the rights of the most affected communities.

The implications of this analysis for climate policy and action are profound. It suggests that technical and market solutions alone will always be inadequate, and potentially even counter-productive, if they fail to disrupt the power structures underlying the crisis. An approach rooted in political ecology would prioritize measures that directly address the production of vulnerability, such as a moratorium on land grabbing, recognition of indigenous territorial rights, debt cancellation for climate-vulnerable nations, and the termination of subsidies for the fossil fuel industry. Justice must also be upheld in all aspects, including in handling legal issues that harm human dignity, such as human trafficking

(Lukmantara et al., 2022). This will demand a radical redistribution of resources and power, not just efficiency and technological innovation. This vision challenges the foundations of current global governance and demands a new political solidarity that crosses national borders, connecting the struggles of those harmed by the same system (Bond, 2012). It recognizes that climate security is impossible to achieve without social justice, and that social justice requires the decolonization of human relationships with nature and with one another.

The political ecology framework provides a strong and coherent explanation of the causal links between colonial legacies, global economic inequality, and the uneven vulnerability to the impacts of climate change. It demonstrates that the climate crisis is a symptom of a global economic system built on the logic of extraction, accumulation, and inequality that began with colonialism and continues today through financial, trade, and knowledge mechanisms. Vulnerability is not seen as a technical condition, but as the result of ongoing political processes of dispossession, marginalization, and exclusion. It is also important to ensure that everyone receives equal opportunities in human resource management regardless of gender differences (Infante & Darmawan, 2022). Climate impacts interact with these pre-existing vulnerabilities, deepening injustice. Furthermore, this analysis reveals how dominant climate solutions, including knowledge regimes and market mechanisms, often reproduce colonial logic in new ways, risking green grabbing and strengthening corporate control (Ciplet & Roberts, 2017). Therefore, the path toward climate justice cannot be separated from the broader project of decolonization, which challenges global power structures, recognizes the rights and knowledge of affected communities, and envisions social-ecological relationships that are truly new and just.

Social Movements as Agents of Definition and the Struggle for Climate Justice

Social movements for climate justice serve as a primary force actively redefining the parameters of climate change discussions. They reject mainstream narratives that focus solely on emission targets and technological solutions, firmly placing questions of justice, responsibility, and human rights at the center of the discourse. These movements

demonstrate the vital importance of public political participation in maintaining the course of democracy and voicing collective aspirations (Rojak et al., 2021). This process of definition is both political and constitutive; these movements do not merely demand justice in the application of existing climate policies, but they build a substantive understanding of what climate justice is from the ground up (Schlosberg & Collins, 2014). This understanding is often rooted in the direct experiences of communities facing the impacts of fossil fuel extraction, environmental degradation, and climate disruption. Through their own testimonies, campaigns, and analyses, these movements connect the dots between local pollution and global consumption patterns, between energy poverty and overconsumption, and between current vulnerability and historical injustice. Thus, they transform climate change from an abstract "environmental" problem into a concrete series of moral and political demands regarding the distribution of power, resources, and opportunities to survive and thrive.

The activities of these social movements expand the horizons of environmental justice beyond narrow legalistic or distributive concepts. They introduce and advocate for principles such as intergenerational justice, recognizing the rights of future generations to a stable climate; restorative justice, which demands environmental restoration and compensation for communities already harmed; and epistemic justice, which demands the recognition of local and indigenous knowledge in designing solutions. These efforts align with the government's mission to create a balance between economic progress, social welfare, and natural sustainability (Mardikaningsih & Hariani, 2021). They also emphasize authentic procedural justice—that is, the full and effective participation of the most affected groups in all stages of decision-making, from planning to monitoring (Ruano-Chamorro et al., 2022). This conceptual expansion shifts the focus from merely "fixing" the distribution of costs and benefits toward transforming the social and political relations that allow the crisis to occur. For example, movements opposing oil pipelines or coal mines do not only protest pollution but also question the legitimacy of governments granting permits without the consent of affected communities, thereby challenging the foundations of liberal democracy and sovereignty that ignore specific rights.

The strategies of climate justice movements are highly diverse and operate across various geographical and political scales. At the local level, movements often use place-based approaches, mobilizing communities to protect their land, water, and forests through direct protests, blockades, and legal lawsuits. Good cooperation between local communities and modern science is greatly needed to safeguard our natural wealth (Nurmalasari & Nuraini, 2021). Resistance against these specific extractive projects directly hinders the expansion of fossil fuel infrastructure and preserves natural carbon sinks. At national and international levels, movements build broad coalitions, engage in lobbying, and utilize arenas such as UN climate conferences to voice their demands and shame governments and corporations (Fisher & Nasrin, 2021). Fridays for Future and other climate strike movements have successfully mobilized millions globally, using strike tactics and mass action to create a legitimacy crisis for political leaders. Meanwhile, groups like the Climate Justice Alliance emphasize long-term power building in low-income communities and communities of color in the Global North, linking their struggles with movements in the Global South. This multi-pronged strategy allows movements to press different leverage points, from corporate finance to public opinion, while simultaneously building cross-border solidarity.

Social movements also serve as vital spaces for articulating and practicing alternatives to dominant socio-political and economic systems. Amidst their "oppositional" demands, they also construct "progressive" visions and praxes of the desired world. This often begins with the formation of small urban communities sharing similar interests and goals (Rejeki, 2021). This includes promoting a just energy transition that creates quality jobs and empowers communities, advocating for food sovereignty that reduces dependence on carbon-intensive agro-industrial systems, and advancing a solidarity economy centered on needs and ecological regeneration. Many community movements, especially those led by indigenous peoples, practice distinct forms of governance based on principles such as reciprocity with nature, consensus-based decision-making, and collective responsibility (Claeys & Delgado-Pugley, 2017). These practices serve as living laboratories for post-extractive socio-ecological relations. Thus, social movements do not merely oppose the status quo; they actively shape alternatives by demonstrating that other

ways of organizing society and its relationship with nature are both possible and currently underway.

The interaction between social movements and formal policy arenas is complex and often strained. While some movements seek direct engagement in policy processes to influence legislation and international agreements, others choose more direct confrontational strategies and reject co-optation by institutions they perceive as part of the problem (Bourne, 2017). To achieve maximum results, leadership is required that truly focuses on providing the best service for the public interest (Rojak, 2021). For example, participation in UN climate conferences has yielded some success in incorporating language on human rights and indigenous peoples into treaty texts, yet many activists feel frustrated by the slow pace of progress and the dominance of corporate interests in the process (McGregor et al., 2020). This tension reflects a deep strategic dilemma: whether to work within the system to reform it, or to build power outside of it to ultimately transform it. Regardless of their approach, the existence and pressure of these movements have successfully kept the issue of justice alive on the global climate agenda, preventing it from being entirely reduced to technical negotiations between states. They ensure that the voices and demands of those most affected cannot be completely ignored.

The capacity of movements to redefine climate justice depends heavily on their ability to build powerful narratives and competing frameworks of understanding. They actively reframe climate change not as an "environmental problem" but as a "crisis of justice," a "human rights crisis," or a "crisis of capitalism." This shift in perspective also influences how the roles of men and women are viewed in contemporary social life (Negara & Khayru, 2022). This reframing possesses great mobilizing power because it connects climate concerns with issues of inequality, racism, and economic injustice already felt by many (Wahlström et al., 2013). Such movements also create new collective identities, such as "climate victims," "climate refugees," or "climate justice warriors," which build a sense of solidarity among geographically dispersed individuals and groups. They utilize powerful stories and symbols, such as images of sinking island nations or communities besieged by wildfire smoke, to evoke empathy and a sense of moral urgency. Through cultural work and independent knowledge production, these movements create alternative archives of the

climate crisis centered on human experience and structural responsibility, in contrast to official archives that often focus on data and models.

The challenges faced by climate justice social movements are significant. They face often harsh political repression, including criminalization, violence, and even the murder of their leaders, particularly in countries where human rights protections are weak and extractive interests are strong. Therefore, strong law enforcement and good environmental management are essential to protect citizens' rights (Nuraini et al., 2021). In many places, activists are labeled "anti-development" or "terrorists" to discredit their struggle. Internally, movements must navigate differences in priorities, strategies, and resources among their various constituent groups, such as between professional urban-based non-governmental organizations and community-based grassroots organizations (Del Bene et al., 2018). Furthermore, there is the risk of activist burnout and the difficulty of maintaining momentum in a long-term struggle against adversaries with vast resources. Despite these challenges, movements continue to adapt, finding new ways to organize and utilizing technology for coordination and information dissemination. Their resilience is a testament to the steadfast commitment to the vision of justice for which they strive.

The influence of social movements on policy and public awareness, although difficult to measure linearly, can be observed in several significant changes. Movement demands have contributed to the formation of funding mechanisms such as the Green Climate Fund and discussions regarding loss and damage within UN negotiations. All these public policies must essentially be based on social welfare theory to provide a tangible impact for the people (Rizky & Udjari, 2021). They have influenced investment decisions, driving divestment from fossil fuels by major financial institutions and pension funds. Perhaps most importantly, they have transformed public discourse, making terms like "climate justice" and "just transition" part of the mainstream political lexicon, even among actors who might not fully support the movements' radical agendas (McGregor & Thomas, 2017). This discursive shift opens political space for more ambitious and equitable policies. By refusing to accept existing political constraints, these movements constantly push the boundaries of

what is possible, turning what were previously considered marginal demands into negotiable positions.

The relationship between movements in the Global North and South is a critical dimension of contemporary climate justice politics. There are growing efforts to build transnational solidarity that acknowledges differences in responsibility and capacity while identifying common enemies in the form of multinational fossil fuel corporations and the government policies that support them. One primary focus is addressing the inequality of access to basic needs, such as education, across various developing countries (Rojak & Khayru, 2022). Such coalitions work to hold these corporations accountable across different jurisdictions, sharing legal and campaign strategies, and ensuring that the struggles of communities at extraction sites are connected to the fight against centers of corporate power and consumption (Peel et al., 2022). This solidarity seeks to overcome colonial legacies by building alliances based on equality and mutual respect, rather than charity. However, building such alliances is not easy; it requires constant recognition of the power and resource imbalances within the movements themselves, and a commitment to addressing internal biases and assumptions.

The future of the climate justice movement will likely be marked by an intensification of both opportunities and challenges. On one hand, the worsening impacts of climate change may drive greater mobilization and expand the support base for decisive action. On the other hand, states and corporations may escalate repression and promote more exclusive or authoritarian technological solutions that marginalize demands for justice (Feldstein, 2021). The ability of movements to build inclusive collective power, articulate compelling alternative visions, and seize moments of crisis will determine their role in shaping humanity's response to this existential threat. What is clear is that social movements have become unavoidable actors in the landscape of climate politics. They have successfully established the question of justice as a central inquiry, ensuring that any proposal to address climate change must, at the very least, confront the moral and political demands of those most harmed by the crisis and by the systems that caused it.

Social movements play a vital and multifaceted role in defining, advocating for, and expanding the understanding of environmental justice

in response to the climate crisis. They act as defining agents that reframe climate change as a crisis of structural justice, broadening the conceptual horizons of justice to include generational, restorative, and epistemic dimensions (Sultana, 2022). Through diverse strategies across various scales, they directly challenge the causes of the crisis and build practical alternatives. Their interaction with policy arenas is fraught with tension but has resulted in discursive shifts and some institutional progress. Their ability to build strong narratives and solidarity is crucial, even as they face significant challenges in the form of repression and internal differences. Their influence is visible in the transformation of public discourse and the pressure exerted on policy.

Conclusion

This literature review has revealed that political ecology approaches and climate justice frameworks provide a profound and complementary analysis of the climate change crisis. This study demonstrates that climate change cannot be understood in isolation from global political-economic structures rooted in colonialism that continuously produce injustice. Political ecology analysis exposes the causal links between the logic of historical extraction, postcolonial structural dependency, and the social construction of vulnerability that causes climate impacts to be distributed unevenly. The concept of climate justice, championed and expanded by social movements, emerges as a vital normative and political response to these inequalities. These movements have successfully reframed climate change as a human rights and justice crisis, introducing principles such as historical responsibility, intergenerational justice, and substantive participation. The core finding of this study is that both the causes and solutions of the climate crisis are inherently political. Technical and market-based solutions, without a transformation of the power relations underlying the global economic system and without recognition of the rights and knowledge of affected communities, will not only be inadequate but potentially reproduce injustices in new forms, such as green grabbing.

The implications of this study's findings are substantive for both theory and practice. Theoretically, this study reinforces the need for interdisciplinary approaches that consistently link ecological analysis with critical investigations of power, history, and political economy. It demands

that environmental science and climate policy more seriously integrate insights from postcolonial studies, sociology, and political geography. Practically, for policymakers and climate negotiators, the primary implication is the necessity to redesign climate policies with justice as the foundation, rather than as an afterthought. This means prioritizing policies that directly address the root causes of vulnerability, such as land reform, recognition of indigenous rights, debt cancellation, and the termination of fossil fuel subsidies. For funding agencies and development organizations, the implication is the need to re-evaluate all mitigation and adaptation projects through a justice lens, ensuring that these projects do not cause displacement or reinforce existing inequalities. For civil society and social movements, this study provides intellectual legitimacy for their struggles and affirms the importance of building transnational solidarity that acknowledges differences in responsibility and capacity.

Based on the analysis conducted, several recommendations are proposed for future research and action. First, more research is needed to document and analyze specific forms of "green grabbing" and how carbon market mechanisms, large-scale renewable energy projects, or certain conservation programs can shift the burden of transition onto the most vulnerable. Such research is crucial to provide empirical evidence that can be used to hold these actors accountable. Second, in-depth studies on decision-making processes at national and local levels are required to understand how climate justice principles can be effectively institutionalized, overcoming bureaucratic and political resistance. Third, research on the effectiveness of different social movement strategies ranging from litigation to land occupation in achieving just outcomes would be invaluable for strategic learning among activists. Finally, it is essential to support and expand platforms for dialogue and knowledge co-production between scientists, policymakers, and communities facing direct climate impacts, to ensure that responses to the crisis are built from frontline experiences and needs.

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