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Conflicting injustices in decolonization and indigenous land rights: The case of the Lake Turkana Wind Power project

Jacobo Ramirez [a,*], Eleonora Costantino [a], Christiane Durach [a], Jury Flickenschild [a], Han Chen Sun [b], Ikal Ang'elei [c], Paul Lekapana [d]

[a] Department of Management, Society and Communication (MSC), Copenhagen Business School (CBS), Denmark
[b] Copenhagen Business School (CBS), Denmark
[c] Friends of Lake Turkana, 4H8X+HRC, KE/Marsabit, Kenya
[d] Gurapau, P.O. Box 322, Marsabit, Kenya

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ABSTRACT

This study examines the injustices faced by Indigenous peoples when they are not clearly recognized in green energy investments, taking the Lake Turkana Wind Power (LTWP) project in Kenya as a case study. The Indigeneity of Lake Turkana's self-identified Indigenous communities is deeply rooted in their ancestral lands. However, Kenya's ambiguity in categorizing Indigenous peoples and its detachment from international frameworks such as ILO 169 contribute to the perpetuation of energy injustices. The LTWP consortium exploits this ambiguity to detach itself from claims of "illegal" land acquisition. Meanwhile, the affected communities face fragmentation, restricted mobility, and involuntary resettlement. This research, grounded in decoloniality and pluriversalism approach, highlights the dynamics of symbolic attachment and detachment that influence Indigenous energy justice and land rights. By recognizing multiple ways of knowing and being, it argues for a decolonial shift that respects Indigenous sovereignty and integrates their perspectives into sustainable development frameworks. This study underscores the necessity of respecting Indigenous rights as a pathway toward achieving true justice and sustainability in energy projects.

1. Introduction

Research on Indigenous peoples, energy justice, land rights, and renewable energy projects in Kenya highlights a complex interplay between the recognition and compensation of local communities and green development initiatives [1–3]. This complexity is exacerbated by policy frameworks that fail to address the unique needs and rights of Indigenous communities [4]. Indigenous communities are disproportionately affected by climate change, despite contributing minimally to it [5–7]. However, governments often overlook the unique characteristics and needs of local communities when implementing green energy projects [8], hindering the effectiveness of these initiatives and, ultimately, the sustainable integration of energy justice [9,10]. Moreover, it casts doubt on the sustainability of Western narratives of climate change mitigation through technological solutions like wind farms [5].

Kenya's Lake Turkana Wind Power (LTWP) project exemplifies this complexity. This project inflicted profound injustices on local pastoralist communities [11,12], increasing poverty, and environmental degradation [1]. Scholars have largely attributed this to inadequate consultation and compensation processes [2,13–15]. Compensatory measures like solar mini-grid projects, while technologically promising, reinforced existing inequalities [16] and excluded self-identified Indigenous communities such as the Turkana. This suggests these projects unintentionally perpetuated the very disparities they aimed to mitigate [16]. These issues reflect a broader trend whereby the socio-political dynamics and environmental concerns of Indigenous communities are not sufficiently integrated into development planning [17].

More recently, Kenya's Kipeto Wind Power Project attempted to balance modern development with traditional livelihoods by promoting dual land use for grazing and wind turbines, as well as providing financial compensation to local communities [3]. While some community members supported this approach, others were dissatisfied or

* Corresponding author at: Department of Management, Society and Communication (MSC), Copenhagen Business School (CBS), Office 2Ø.024, Dalgas Have 15, 2000 Frederiksberg, Denmark.
E-mail addresses: jara.msc@cbs.dk (J. Ramirez), ec.msc@cbs.dk (E. Costantino), cd.msc@cbs.dk (C. Durach), jf.msc@cbs.dk (J. Flickenschild), hasu23ab@student.cbs.dk (H.C. Sun), ikal@friendsoflaketurkana.org (I. Ang'elei), lepenoi.paul@gmail.com (P. Lekapana).

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excluded, highlighting the need for more equitable and comprehensive engagement strategies [3].

The Kenyan Constitution of 2010 and Community Land Act of 2016 provide a legal framework for protecting ethnic communities' land rights. This legislation formally acknowledges, for the first time in Kenya's history, the rights of communities to own and manage their land [18], marking a significant step toward the recognition, protection, and registration of community land rights. This legal recognition is particularly important for pastoralist communities, whose livelihoods are reliant on livestock [19]. However, despite this promising legislation, green energy investments in Kenya continue to negatively impact pastoralists' mobility and access to grazing land [18].

In this research, we posit that the difficulties faced by Kenyan ethnic groups in securing community land stem from a lack of recognition of Indigeneity. Indigeneity—the state of being Indigenous—is crucial for appreciating the complexities of Indigenous identity and preserving cultural heritage [20]. However, its definition is debated [21] and complicated by the diversity of tribes, ethnicities, and marginalized groups, each with unique histories and narratives [22]. The Kenyan government's ambiguity in recognizing Indigenous peoples contributes to contention over renewable energy investments [2,17,23].

While past research has provided insights into the objective and subjective dimensions of land rights and green development initiatives, it often overlooks the contested definition of Indigeneity [5]. To deepen our understanding of the intricate relationship between climate change mitigation efforts and Indigenous rights, a key question arises: How does the lack of clear recognition of Indigenous peoples affect justice and land rights in large-scale green energy developments? This study explores this question based on the interplay between Indigeneity and land rights among the self-identified Indigenous peoples of Lake Turkana, Kenya.

Energy justice has emerged as a crucial framework for examining how climate change mitigation strategies intersect with Indigenous rights [24,25]. However, we argue that the energy justice framework, rooted in Western thought, fails to adequately address colonial and post-colonial power dynamics entrenched in energy systems [26]. Therefore, we integrate this concept with decoloniality and pluriversalism, advocating for a more inclusive approach that genuinely respects Indigenous sovereignty and ecological wisdom [26–28].

Lake Turkana's complex historical, social, and political fabric provides a rich context for examining the conflicting implications of the lack of recognition of Indigenous peoples in climate change mitigation efforts. The LTWP is crucial to Kenya's green transition [29]. Meanwhile, Lake Turkana's nomadic and resident ethnic groups emphasize their deep historical bonds with the land and the importance of preserving their cultural identity [11], leading to land rights issues that are exacerbated by the government's disengagement from recognizing Indigeneity [17,30].

While our study focuses on Lake Turkana, its insights have broader implications for renewable energy projects and Indigenous land rights worldwide [5,6]. Similar challenges of recognition, compensation, and community engagement are evident in renewable energy projects in other regions, such as wind farms in Sámi territories [24]. By examining the Kenyan context, we contribute to a global discourse on harmonizing renewable energy development with the rights and needs of Indigenous peoples [5]. The lessons learned from Kenya can inform policy frameworks and engagement strategies elsewhere, helping stakeholders and policymakers to better support the livelihoods and rights of Indigenous peoples across the globe, ensuring that development benefits all members of society [11].

In the following sections, we delve into the relevant literature and research context, elaborate on our methods, and present findings that illuminate the complex interplay between Indigeneity and land rights in shaping sustainable development.

2. Reassessing land rights and development: the case of Indigenous peoples in Kenya

Our research aims to explore how a lack of clear recognition affects Indigenous peoples' justice and land rights in large-scale green energy developments. To achieve this, we must first acknowledge the difficulties in defining Indigeneity and critically examine the energy justice framework through a lens that prioritizes the lived experiences of Indigenous peoples [24].

2.1. Indigeneity

Understanding Indigeneity is crucial for achieving energy justice, as Indigenous peoples are often excluded from decision-making processes and remain marginalized in global forums like the United Nations Framework Convention on Climate Change [31]. Moreover, despite constituting 5 % of the global population, they represent 15 % of those living in extreme poverty [20]. The displacement of Indigenous peoples due to green energy projects [32] underscores the need for culturally sensitive approaches to address systemic injustices [7].

However, defining Indigeneity has proven difficult [21]. Indigenous peoples are traditionally considered the "original" inhabitants of a region [33], but this "temporal priority" is difficult to substantiate and does little to differentiate among African groups. In the 1990s, African representatives at the United Nations Working Group on Indigenous Populations advocated for a shift in definition toward self-determination, marginalization, and non-dominance [17]. This relational concept emphasizes the interactions between marginalized minorities and the state [7,32,34] and highlights the ongoing displacement and systematic eradication of Indigenous peoples [35].

Various academic sources and international bodies define Indigenous peoples as having deep historical connections to specific territories, with identities closely tied to their ancestral lands and cultural practices [36]. They are characterized by self-identification, external recognition, and distinct social, cultural, economic, and political systems [23], such as communal ownership and non-market exchange [37]. Despite modern societal pressures, they preserve unique languages, beliefs, and customs [38]. However, debates over the definition of Indigeneity persist.

2.2. Indigenous energy justice: decolonization and pluriversalism

Scholars from the Global South [39–41] emphasize the need to decolonize power structures and confront the ongoing coloniality of power, knowledge, and being [39,41]. The lasting impacts of colonialism continue to influence energy systems and policies globally [24,42]. While international legal frameworks like the International Labour Organization's Indigenous and Tribal Peoples Convention (ILO 169) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) exist, inconsistencies in their ratification and implementation result in continued environmental dispossession and marginalization of Indigenous communities in both extractive industries and renewable energy projects [24,43].

The energy justice framework is widely used to discuss injustices in energy systems concerning Indigenous peoples, emphasizing power dynamics and moral considerations [24,25]. However, Tornel [26] contends that conventional energy justice frameworks frequently reproduce, rather than challenge, hegemonic power relations owing to their reliance on universalistic and Western-centric notions of justice. He [26] further suggests that a pluriversal approach should be adopted to rethink the imposition of singular, universal models of energy development and justice. The pluriverse, as defined by Escobar [28], advocates for recognition and validation of multiple ways of being, knowing, and organizing life. This perspective supports the decolonization of energy justice by acknowledging ontological and epistemological differences between dominant (often Western-centric) perspectives and

those of Indigenous and marginalized groups.

Building on Tornel's work [26], we integrate the energy justice framework with decoloniality and pluriversalism, advocating for a more inclusive approach that respects Indigenous sovereignty and ecological wisdom. Comparative literature emphasizes the need for frameworks that are sensitive to local contexts and that prioritize Indigenous self-determination [44]. The ontological conflict between marginalized groups and external stakeholders is key to understanding the injustices faced by Indigenous communities, whose ways of knowing and relating to the land often clash with capitalist modes of production [45]. These insights are crucial for understanding why frameworks like ILO 169 and UNDRIP, while important, often fail to fully protect Indigenous sovereignty [45].

This issue is part of the wider impact of resource extraction on Indigenous rights globally [46]. Mining and renewable energy projects have disproportionately impacted Indigenous lands, leading to legal disputes and social unrest [43]. In the Global South, Indigenous communities face challenges over land rights and autonomy in the context of extractivist projects, including renewable energy developments [42,44]. Similar experiences are seen in mining projects, where Impact and Benefit Agreements have become tools for negotiating resource extraction terms and asserting Indigenous agency [45].

3. Research context

To contextualize our research on decolonial energy justice, we next provide an overview of the LTWP project and explore Kenya's legal framework concerning Indigeneity and land rights, particularly the Kenyan Constitution of 2010 and Community Land Act of 2016 [47,48].

3.1. Overview of the LTWP

Lake Turkana, situated in a remote region of Kenya, is home to diverse ethnic communities, including the Turkana, Rendille, El Molo, and Samburu peoples (Fig. 1). Pastoralism, fishing, and small-scale agriculture are deeply entrenched in their livelihoods and the region's traditions and history. Despite rich cultural heritage, these communities face severe socio-economic challenges such as water scarcity, harsh climates, and periods of food insecurity.

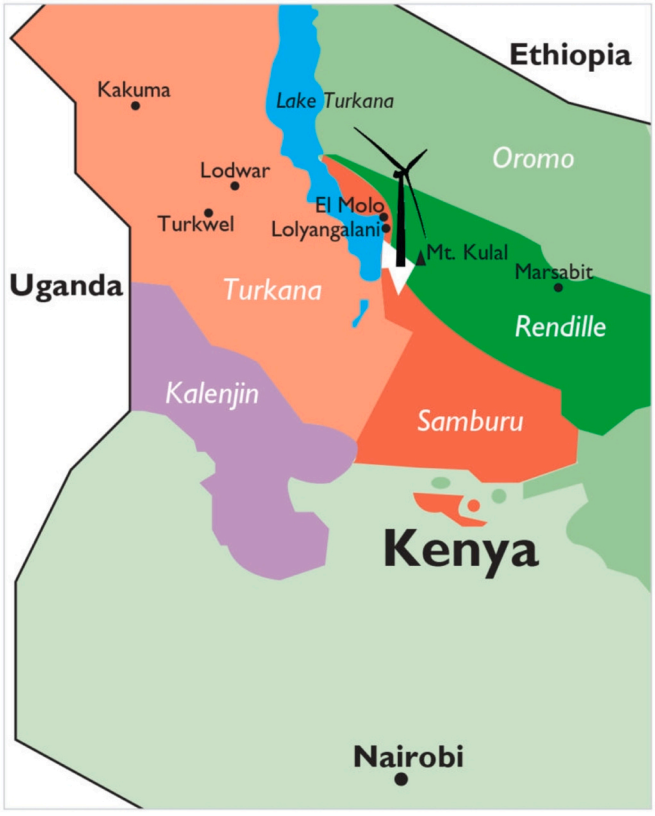

Fig. 1. Spatial context of the LTWP [49].

Amid these challenges, Lake Turkana possesses significant electricity generation potential, leading the Kenyan government, in collaboration with international partners, to establish the LTWP [2]. At 310 MW, the project contributes nearly 17 % of Kenya's total energy generation capacity [50,51] and is the largest-capacity wind farm in Africa, making it integral to Kenya's energy transition plans. Key project milestones are listed in Table 1.

The LTWP was Kenya's largest single private investment, involving stakeholders from the UK, Denmark, Finland, and Kenya. Major financers included national finance entities like the Finnish Fund for Industrial Cooperation and the Danish Climate Fund, with support from regional entities such as the African Development Bank and European

Table 1
Key milestones in Kenya's wind energy development.

Phase	Date	Event/description
Development	2005	Initial conception of the LTWP project.
	2009	Land lease agreement for 150,000 acres in Marsabit County.
	2009–14	Community consultations conducted.
	Mar 2014	Financial closure achieved with specific debt and equity structure.
	Dec 2014	Formal end of the development phase.
Construction	Oct 2014	Construction begins.
	Jul 2015	Ground-breaking ceremony by President Kenyatta.
	2015	Vestas-Google agreement for a 12.5 % stake in LTWP.
	Oct 2014–Feb 2016	Road construction, encountering community protests.
	Mar 2016	First wind turbine erected.
	Mar 2017	Final wind turbine erected. A total of 365 wind turbines delivered by the Danish firm Vestas.
	Sept 2018	Completion of 430 km transmission line to Suswa substation.
Operation	Mar 2019	Full commercial operation begins.
	Jul 2019	Official project launch by President Kenyatta.
Legal and social impacts	Oct 2014	Initial court case against 2009 land lease.
	Apr–May 2015	Ethnic conflicts in project area.
	Apr 2018	Court case updated, declared of great public importance.
	Jan 2020	Court case resumes.
	Feb 2020	Google-Vestas contract terminated.
	Mar 2024	BlackRock acquires stakes previously held by Vestas, Finnfund, and IFU.
Social initiatives and community engagement	2015–Present	Winds of Change Foundation activities initiated.
External reviews and assessments	2009, 2011	Environmental and social impact assessments.
	2016	Danwatch report on social impacts.
Employment and investment	During construction	Approximately 2500 workers hired.
	Post-construction	200 full-time staff at the power station.
	Total investment	Project cost between 613 million and 623 million EUR.
Court case timeline	Oct 14, 2014	Filing of plaint.
	Nov 5, 2014	Court information on land utilization.
	Mar 9, 2016	Court visits and report.
	Nov 9, 2016	Court ruling.
	Mar 15, 2017	Directions for future proceedings.

Reference: The Authors, based on archival data.

Investment Bank.

3.2. Kenyan Constitution of 2010

The 2010 Kenyan Constitution defines "marginalized communities" as those unable to fully participate in Kenya's socio-economic activities owing to their small populations or cultural distinctiveness [48]. This includes communities preserving unique cultures and identities; Indigenous groups living traditional lifestyles and sustaining themselves through hunting or gathering; and pastoral communities, whether nomadic or settled, that are geographically isolated [48]. In addition, the Constitution defines "marginalized groups" as those who have been, or continue to be, disadvantaged by discriminatory laws or practices ([48]: Art. 27(4)). It emphasizes the importance of protecting these communities' cultural and ecological rights and enhancing their participation in Kenya's socio-economic landscape.

Notably, the Constitution [48] formally recognizes community land ownership—for the first time in the nation's history—declaring that all land in Kenya belongs collectively to the people—whether as a nation, as communities, or as individuals. Land is categorized as public (held by the government in trust for the people), private (owned by individuals or private entities), or [48] community land (vested in and held by communities) ([48]: Art. 61, 63). This formal recognition is of great significance for Indigenous and pastoralist groups, whose traditional livelihoods are reliant on communal land use.

3.3. Community Land Act 2016

The 2016 Community Land Act acknowledges customary land tenure, reinforcing the legal status of communal landholdings and providing a framework for securing land rights that have historically been undermined by state policies and external pressures. This holds particular significance for pastoralist communities, whose livelihoods are rooted in shared land and customary governance systems [18]. Their survival depends on mobility and flexible land use to sustain their livestock, which provide essential food as well as goods [19,52].

The Act offers protection against land fragmentation and external encroachment, enabling communities to collectively manage their land and preserve traditional practices such as rotational grazing and seasonal migration, which are both essential for maintaining livestock in Kenya's arid and semi-arid regions. By formalizing these customary rights, pastoralist communities can assert greater control over their resources amid increasing pressure from agriculture, infrastructure development, and energy projects [18]. The Act also offers legal avenues for resolving land disputes through customary law, ensuring culturally relevant resolution mechanisms that reflect the realities of the communities involved [18]. This is particularly relevant in pastoralist regions, where there are frequent conflicts over grazing land and water resources.

However, challenges in the practical implementation of these rights persist, including difficulties with land registration, county governments' roles as trustees, and local institutions' capacity to manage land effectively [18]. Reliance on county governments to hold unregistered community land in trust also introduces potential governance challenges owing to competing interests or limited resources [18].

4. Methods

The data collection methods for this work included archival research, face-to-face and online interviews, and digital ethnography. Our research began in 2012 with an initial analysis of secondary data to examine discrepancies in the LTWP's consultation process. This early research aimed to explore the interactions among government entities, businesses, self-identified Indigenous peoples of the Lake Turkana region, and non-governmental organizations (NGOs) engaged with the project. In 2022, the first author collaborated with four business and development master's students from a European higher education institution, all with research experience, to further develop the project. To enrich the study with local insights, two Indigenous Kenyans from the Lake Turkana region, who work for a local NGO and do not have academic backgrounds, were also invited to participate in the research.

4.1. Data collection

We collected both primary and secondary data (Table 2), adhering to the ethical principles of informed consent and ensuring all participants were fully aware of the research objectives, methods, and potential

Table 2
Structure for theoretical sampling and timeline.

Year	Data collection method	Actors/ participants	Key concepts/ theoretical focus	Sampling outcome/next steps
2012	Archival research (secondary data)	Government and NGOs reports, legal documents, energy policies in Kenya	Climate change mitigation strategies, energy transition in Kenya	Identified key actors (government, NGOs, LTWP investors)
2013–16	Archival research	Kenyan Constitution, Community Land Act, international conventions on human rights and Indigenous peoples' rights, investors' sustainability reports	Indigenous rights, FPIC, legal frameworks, sustainable business	Refined focus on Indigenous' rights, corporate involvement in the LTWP
2017–19	Interviews (Europe)	European investors, NGOs, business consultants	Investment motivations, land acquisition, energy transition	Identified gaps in consultation processes, leading to focus on ethnic communities
2019–23	Digital ethnography initiated	Social media, local and international journalists	Consultation processes, land disputes	Identified actors' activities in digital forums for/against LTWP
2020	Face-to-face interviews (Lake Turkana)	Indigenous communities (Turkana, El Molo, Samburu, Rendille)	Land ownership, cultural impacts, consultation process	Shifted focus to understanding Indigenous experiences of displacement
2021	Interviews, archival research (court cases)	LTWP consortium, Kenyan government officials, NGOs	Legal challenges, community resistance, court cases	Deepened inquiry into protest movements and LTWP responses
2022	Digital ethnography, semi-structured interviews (Online)	Indigenous people (online), business leaders	Protests, environmental impacts, compensation initiatives	Expanded interview scope to understand community consultations
2023–24	Face-to-face and online interviews, archival research (legal disputes)	Indigenous communities, legal experts, and LTWP investors	Ongoing ethnic disputes, unresolved land claims	Addressed evolving legal frameworks and implications for energy justice

implications of their involvement. We continuously engaged with the Indigenous communities in our research to ensure their perspectives and rights were respected. For example, we shared our preliminary findings with them, which helped us adjust our interview protocols. Our approaches were grounded in established guidelines and protocols for conducting research with Indigenous peoples while prioritizing their well-being and autonomy. To minimize disruptions to local communities, especially in politically sensitive environments, we incorporated digital ethnography [53,54].

Our research design [55] employed theoretical sampling [55], allowing data collection to be guided by emerging theory rather than representativeness. This approach allowed us to select participants and incidents that would best contribute to refining our theoretical framework until theoretical saturation was reached [56]. This method allowed us to adapt our data collection to shifting socio-political and environmental contexts, ensuring both methodological rigor and practical relevance. Finally, by embracing a pluriversal approach, we integrated Indigenous worldviews and relational practices, fostering a decolonial understanding of energy justice that respects diverse ways of knowing and interacting with the land.

4.2. Interviews

Interviews (Table 3) began in 2017, focusing on actors in Europe, with additional interviews from 2020 to 2023 conducted by the Kenyan authors in the Lake Turkana region, concentrating on local communities and their perspectives.

Owing to the sensitive nature of the topics and security risks at Lake Turkana, we omitted a detailed list of interviewees and anonymized all quotations. Most participants consented to having their interviews recorded, but for five participants, we relied on detailed notes to develop transcripts.

Face-to-face interviews in the Lake Turkana region were conducted by native Turkana-speaking authors, eliminating the need for translators. These interviews were conducted in Swahili, Turkana, Samburu, and Rendille, with the transcripts translated into English by the researchers. Online interviews and those conducted in Europe were held in English.

4.3. Digital ethnography

We developed a digital ethnography [54] to capture digital interactions and communications of ethnic group members, NGOs, and journalists, providing real-time insights into the impacts of the LTWP (2019–24; Table 4). We reviewed an extensive corpus of archival documents to provide a historical and contextual understanding of land rights and green energy projects in Indigenous territories. Data were systematically organized around a timeline tracking the LTWP's development phases, infrastructure challenges, and legal disputes (2019–24; Table 1), enabling us to adapt our data collection protocols in response to socio-economic and policy shifts affecting the region.

Table 4
Secondary data: archival data (2012–23).

Type	No. of documents	Description
Kenyan government reports	20 (approx. 300 pages)	Documents in relation to Kenya's energy transition and energy systems
Kenyan laws, regulations, and LTWP court case	4 (approx. 150 pages)	Kenyan Constitution 2010, Trust Land Act 2012, Community Land Act 2016, LTWP civil court case
Kenyan and foreign firms' sustainability reports and press-releases	45 (approx. 675 pages)	Reports and newsletters from three European investors
NGOs' reports in relation to the energy transition in Lake Turkana	25 (approx. 375 pages)	NGOs' perspectives on UNDRIP, ILO 169, FPIC; insights about the case, including land acquisition, human rights concerns, and the consultation process; impacts and planned measures to mitigate them (e.g., perception that social initiatives will make up for damages)
Newspaper reports (Kenyan and international press)	150 (300 pages)	Newspaper reports (retrieved online) from FACTIVA and Kenyan newspapers from November 2019 to November 2023, focusing on the LTWP, as well as investment and social issues in the region
Videos	5 videos	Historical records of Indigenous livelihoods (pastoralism) and cultural practices; LTWP's social initiatives
Total	244 documents/5 videos	

4.4. Data analysis and interpretation

Using NVivo 11 for data storage and analysis, we triangulated our interview data, prior research, and digital ethnography to ensure the credibility of our findings. To address potential bias, we used narrative prompts, cross-referenced accounts with field notes, and sought multiple validations to thoroughly understand the socio-political dynamics of the LTWP project and Lake Turkana region. This approach helped us capture the realities and experiences of actors within their respective contexts [57].

Table 3
Summary of interviews conducted (2017–23).

Year	Interview location	No. of interviews	Interviewee group	Details	Acronym
2017–23	Europe	46	Business, NGO, investor, and consultancy representatives	Forty-six interviews with business, NGO, investor, and consultancy representatives	F2F-EU-BUS, F2F-EU-NGO, F2F-EU-INV, F2F-EU-CON
2017–23	Geneva, Switzerland	2	Self-identified Indigenous people from Lake Turkana (Turkana, El Molo)	Two interviews with Indigenous representatives at human rights forums	F2F-GE-ILK
2020–23	Lake Turkana	55	Members of different ethnic groups (Turkana, El Molo, Samburu, Rendille)	Fifty-five face-to-face interviews	F2F-KEN-TRK, F2F-KEN-ELM, F2F-KEN-SAM, F2F-KEN-REN
2022–23	Online Interviews	48	Self-identified Indigenous people from Lake Turkana (Turkana and El Molo) and business, NGO, and investor representatives	Eighteen interviews with Indigenous people; thirty interviews with business, investor, and NGO representatives	OL-ILK, OL-BUS, OL-NGO, OL-INV
Total		151			

Notes: F2F, Face-to-face interview; EU, Europe; GE, Geneva; KEN, Kenya; OL, online interview; BUS, business representative; NGO, NGO representative; INV, investor representative; CON, consultancy representative; ILK, Indigenous people from Lake Turkana; TRK, Turkana representative; ELM, El Molo representative; SAM, Samburu representative; REN, Rendille representative.

We employed thematic analysis to identify themes related to land rights, socio-politics on Indigeneity, and business investments at Lake Turkana, adapting Braun and Clarke's approach [58]. Our coding process, based on Miles and Huberman's methodology [57], organized our interview and archival data into distinct sets.

All authors independently reviewed and coded the empirical material, with several sessions to compare and reconcile our independent coding to ensure consensus on the emerging themes. The initial coding was based on interview data (Table 3) and supplemented by document analysis (Table 4). Non-recurring themes were eliminated to reduce complexity. We progressed from specific (450 first- and 140 seconds-order codes) to general (five aggregate dimensions) through multiple iterations of open coding [57], oscillating between different elements of our data corpus and our evolving conceptualization of Indigenous land rights, energy justice, and its socio-political dimensions. This interactive data collection and analysis process laid the groundwork for theory building on Indigeneity in the context of renewable energy investments.

4.5. Adapting to contextual challenges and ethical considerations

Ethical approval for this research was granted by the International Work Group for Indigenous Affairs (IWGIA), Denmark, and Copenhagen Business School (CBS), Denmark, through the project "*Professionalism as a Foundation for Commitment*" (No. 301383, signed on January 7, 2022). Data collection, storage, analysis, and dissemination were conducted in accordance with the guidelines of the CBS Ethics Council.

Additionally, we followed the ethical framework proposed by Devine-Wright and Ryder [53] when working with marginalized communities, which emphasizes minimizing disruptions to local communities, ensuring participant safety, and respecting the autonomy and rights of Indigenous groups. We also adhered to the recommendation of the Ministry of Foreign Affairs of Denmark for European researchers to rely on secondary data collection, digital ethnography, and online interviews [54] in volatile settings in light of political risks and safety concerns [59]. Meanwhile, our Kenyan colleagues contributed critical on-the-ground insights, allowing the study to be conducted safely and ethically.

The Lake Turkana region poses unique challenges, including heightened inter-ethnic conflicts following the LTWP's construction [2]; research fatigue among communities, officials, and investors [1,4,15,16]; and reluctance to engage due to ongoing legal proceedings against the LTWP [47,60,61]. To navigate these sensitivities, we avoided intrusive and extractive research methods, aligning with decolonial thought to ensure our research does not exploit or further marginalize the communities involved [62]. Our approach aimed to foster genuine collaboration and respect for Indigenous ways of knowing, while being mindful of the area's complex socio-political landscape [53].

We engaged with various ethnic groups from Lake Turkana, both online and at European forums on Indigenous rights, over a five-year period. Access was facilitated through European NGOs and the first author's participation in seminars on business and human rights, which were attended by Kenyan representatives. These efforts led to the authorship of two Indigenous individuals from the region.

4.6. Authors' positionality

Conducted within a "post"-colonial setting, our empirical research was influenced by the dynamic interactions between us as researchers and the phenomena we observed. While the full complexity of the historical and cultural contexts, researcher identities, and local realities cannot be conveyed here [16,63], we all reflected both individually and collectively on our positionality [62] regarding Indigeneity, wind energy investments, land rights, and climate change mitigation efforts, and [63] recognize our multiple and complex identities.

The first author, Jacobo Ramirez with ancestral roots in the Global South, is motivated by research on human rights issues, Indigenous peoples, and the history of colonization in the Global South. His perspectives, informed by his Indigenous heritage and experiences living and working internationally, contributed to the group's discussions on Indigeneity, land tenure, and wind energy investments. Eleonora Costantino, the second author, focuses on integrating Indigenous perspectives into development efforts to promote equitable progress while preserving cultural heritage. She also volunteers with an NGO advocating for Indigenous peoples' rights, adding a practical dimension to her academic work. Christiane Durach, the third author, examines green colonialism and how green development projects can perpetuate inequalities, drawing from her background in economics and psychology. Jury Flickenschild, the fourth author, a white male early-career researcher, has experience with research methods involving Indigenous and non-Indigenous scholars and interviewing Sámi participants, which provided perspective on the role of participants as expert informants sharing knowledge and lived experiences. Aware of potential biases from his prior engagement with the renewable energy sector and energy diplomacy, he refrained from participating in interviews with representatives from multinational enterprises. The fifth author, Han Chen Sun, born and raised in Singapore, has professional experience in renewable energy and sustainability, and is motivated to critically investigate the unintended effects of large-scale energy projects, particularly in rural areas of emerging markets. The sixth author, Ikal Ang'elei, an Indigenous person from Lake Turkana, advocates for the protection of Lake Turkana's ecosystem and supports the sovereignty of local Indigenous communities for sustainable development. Finally, the seventh author, Paul Lekapana from the El Molo ethnic community, is dedicated to protecting Indigenous rights, especially concerning land tenure. The Kenyan authors were crucial in contextualizing this research, providing insights into the struggles of Indigenous communities affected by the LTWP and deepening our understanding of the project's impact on Indigenous peoples, fostering a more nuanced perspective within the team.

We acknowledge that the five academic researchers affiliated with European institutions occupy positions of relative privilege owing to their access to resources, networks, and institutional legitimacy, which inevitably shapes our processes, perspectives, and positionality. Recognizing that our insights provide only a partial understanding of the lived realities of Indigenous communities affected by the LTWP, we remained attentive to the knowledge and experiences that our Kenyan colleagues brought to each discussion. They, too, hold positions of relative privilege compared to the communities they work with. This awareness led us to adopt a humble and collaborative approach to ensure our positionality did not overshadow the voices of those most impacted by these energy projects.

Throughout the research—from data collection to interpretation—we remained open to feedback and suggestions from all team members. This inclusive approach ensured that Indigenous perspectives were not just integrated but prioritized in our work. We are committed to sharing our research findings in ways that materially support ongoing advocacy and climate justice. We aim not just to critique but to actively contribute to decolonizing knowledge by dismantling the structures that perpetuate disparities. Through introspection, humility, and collaboration, we strive to ensure that this research challenges—rather than reinforces—existing power dynamics, ultimately serving as a tool for meaningful change.

5. Findings

This section presents our findings, organized by the aggregate themes (Fig. 2).

5.1. Injustices in recognizing Indigenous peoples

Kenya's legal framework and ratification of international conventions provide a basis for the protection of ethnic communities' land

First-order codes	Second-order codes	Aggregate themes
[The definition of Indigeneity] is a political debate.	Selective legal recognition of Indigenous people	Injustices in recognizing Indigenous peoples
Kenya has not ratified ILO Convention 169.		
The Kenyan Constitution recognizes marginalized people.		
We don't have an accepted definition for Indigenous communities' groups, like the El Molo.	Questionable definition of Indigenous peoples	
Some groups and researchers tend to romanticize Indigenous people.		
We (NGOs) struggled with the definition.		
Traditional religions.	Traditional practices and rituals	Preservation of cultural identity and traditions
Building a Cultural Center.		
Honor our elderly.		
In the past, hunting crocodiles and hippos.	Historical roots	
Fishing is central.		
Family and clan systems.		
Places of great cultural significance.	Territorial bonds and holistic land conception	Foundations of Indigenous land claims
Claim to land.		
Terra nullius: Nobody's land.		
Land a cultural attachment.	Place attachment	
Cultural attachment to the lake.		
Memory mapping method to contest and unify community voices regarding land claims.	Challenging documentability of Indigenous peoples' land	Injustices in Indigenous peoples' land rights
Priority legal procedure in recognition of land.		
Trust Land Act 2012 & Community Land Act 2016.	Land acquisition and governance	
Trust Land Act and municipal authority.		
Constitutional for compulsory community consultation under Art. 10.		
Psychological stress among ethnic communities.	Costs for indigenous communities induced by LTWP	Fragmentation of cultural identity and the peril of cultural loss
Communities' costs (e.g., missing grazing areas, rearranging livelihoods).		
Allocation of 150,000 acres in a procedurally flawed manner.	Civil court case	
Lasting 10 years, resulted in the fragmentation of the ethnic groups involved.		
Social initiatives used to mask injustices and lack of compensation.	Challenging engagement with ethnic groups	
Social initiatives raise the question of which actor should provide this infrastructure.		

Fig. 2. Data structure.

rights [64], which was supported by our face-to-face interviews at Lake Turkana. Although Kenya has not ratified ILO 169 [65], it is party to the Convention on Biological Diversity and the Rio Declaration on Environment and Development, which underscores its commitment to respecting, preserving, and promoting traditional knowledge in environmental management and biodiversity ([66]: Art. 8(j); [67]: Principle 22). These commitments reinforce constitutional protections for Indigenous communities in environmental governance and sustainable development.

Despite this, the Kenyan government's recognition of Indigenous peoples remains ambiguous. The Constitution defines "marginalized groups" as those disadvantaged by discriminatory laws or practices ([48]: Art. 27(4)) and acknowledges the need to safeguard these communities' cultural and ecological rights, but does not formally recognize Indigenous peoples as a distinct group. A female Kenyan elaborated:

> Yes, Kenya does recognize marginalized communities. However, there seems to be a hesitance to use the term "Indigenous people." This reluctance could stem from the substantial international obligations that come with it, including principles like self-determination. When a country uses "Indigenous people," it engages with a whole framework of international standards. In this context, it appears to be a strategic approach by the government to avoid committing to these global standards (F2F-KEN-TRK).

The Turkana, Samburu, Rendille, and El Molo are among Kenya's "42 tribes" [68], which carries significant implications for their citizenship rights [48]. Nevertheless, discrepancies exist in how the term "Indigenous people" is interpreted and applied. For example, the LTWP consortium recognizes the El Molo as Indigenous owing to their hunter-gatherer lifestyles, while labeling the Turkana, Rendille, and Samburu as "dominant tribes" [69]. This stance deviates from international standards [15]. However, it reflects broader debates over the definition of Indigeneity. A Kenyan man elaborated:

> The understanding of who qualifies as Indigenous varies, and it really depends on whom you ask. In Kenya, for example, there's no widely accepted legal definition for Indigenous communities. […] This is compounded by the debate over who is truly Indigenous (OL-NGO).

The debate on Indigeneity is further complicated by the fact that it often intertwines with political debates. An El Molo man elaborated:

> What compounds [the] complexity [of understanding Indigeneity] is the fact that the term "Indigenous" has become a subject of political debate at various international levels (F2F-KEN-ELM).

Our analysis underscores the notion that land rights and cultural identity are central to Indigeneity [30]. Therefore, recognizing ethnic groups' Indigeneity would significantly impact projects like the LTWP. We posit that this plays a key role in the government's ambiguity in defining Indigeneity.

5.2. *Preservation of cultural identity and traditions*

Despite pressures toward modernization, Lake Turkana's communities actively preserve their cultural identities by performing and documenting traditional practices. An El Molo man shared:

> …we continue to celebrate our culture through traditional dances and music, which I have documented in audio-visual formats. As an organization we are dedicated to preserving our culture while ensuring our livelihoods remain unaffected by external influences (OL-ILK).

He further described their efforts to sustain cultural heritage:

> We are currently involved in building a Cultural Center [that] will serve as a museum or exhibition space where we can showcase all aspects of our culture, whether it's material culture, written or unwritten traditions. It will provide a platform where our elders can impart our cultural heritage to the younger generation (OL-ILK).

These diverse cultural expressions distinguish Lake Turkana's ethnic groups (F2F-KEN-SAM, TRK) from mainstream society and define their self-identity. This aligns with the Constitution's definition of marginalized communities [48]. However, government's failure to recognize the Turkana, Rendille, and Samburu as Indigenous denies them Indigenous rights.

5.3. *Foundations of Indigenous land claims*

Our findings emphasize the deep ancestral connections between Lake Turkana's ethnic groups and their land. Regarding the El Molo people, a Kenyan man explained:

> The El Molo people are intimately connected to their region and are its sole permanent residents. […] They have a lot of cultural attachment to the lake, which is central to their identity (F2F-KEN-ELM).

This intimate relation to the lake and land extends beyond cultural heritage to survival. A self-identified Indigenous El Molo resident explained:

> These locations are not only culturally and spiritually important but also crucial for our socio-economic activities, particularly fishing (OL-ILK).

The Samburu also depend on the land for activities like fishing and grazing. They consider the land "*nkop ang* [our place]" [11], a concept that extends beyond physical space to encompass their community,

livestock, and divinity. The Turkana and Rendille also define the natural environment through holy and spiritual connections to the land, which is essential to their cultural traditions and beliefs (F2F-KEN-TRK). An El Molo man stated:

> I am an Indigenous person from an Indigenous community called El Molo found in the northern part of Kenya. […] Our practices are unique in the African traditional context […]. Originally from southern Ethiopia […,] our people chose to move to Kenya and settle on the southeastern shores of Lake Turkana (OL-ILK).

The fishing and (semi)-nomadic lifestyles of Lake Turkana's ethnic groups are not merely a strategy for survival; they are a holistic way of engaging and connecting with the land [11,15]. Displacement or denial of their land threatens their cultural identity, disrupts their livelihoods, and violates their rights [15,70]. A female human rights defender highlighted:

> It is their grazing areas that are being taken, their livelihoods. These are cultural identities that are being fragmented and denied of their existential essence (F2F-GE-ILK).

Despite these communities' deep ties to the land, external entities often perceive it differently. Our digital ethnography suggests businesses see it as "empty" or "nobody's land," overlooking the dynamic nature of pastoralist lifestyles. A female Kenyan NGO representative explained:

> [Businesses] did not take time to understand the nature of the communities who live within this region. Pastoralist communities move from one area to another […] in search of pasture and water. […] [So] when [businesses] arrived in the region to set up the project, they may have found only a few people settled there at that time. However, this area is a transit point for various communities (OL-ILK).

She also questioned the notion of "nobody's land":

> "*Terra nullius*" means it is nobody's land, but in reality, […] [the entity was] holding it for the host communities. […] If it was truly "no one's land," then why was it being held in trust for these communities? (OL-ILK).

These findings underscore the complexities of Indigenous land rights. The lack of formal land recognition and pressures toward privatization challenge Indigenous cultures and livelihoods, forming the basis of land claims against the LTWP.

5.4. Injustices in Indigenous peoples' land rights

The land occupied by the LTWP was considered trust land before the Trust Land Act was replaced by the Community Land Act in 2016. The new framework recognizes community land as being collectively owned and managed (F2F-EU-NGO). However, in many regions, including Lake Turkana, multiple Indigenous groups share and use the land collectively [Secondary Data], with no single community laying claim to specific parcels of land. Each groups' historical territories and migratory routes are tied to their pastoral livelihoods and often overlap for grazing and water (OL-ILK).

Therefore, despite a legal framework that seeks to secure land rights for these communities, in practice, the land tenure system remains ambiguous (OL-ILK). This ambiguity has led to competing claims over land use, particularly during acquisitions for projects like the LTWP (Secondary Data). Development projects inevitably alter the dynamics of collective land use, as land access becomes mediated by investors and the state (F2F-EU-NGO). This affects pastoral routes and increases competition for remaining land, leading to inter-community conflicts (Secondary Data).

Community leaders stressed that formal legal recognition of their communal land rights is essential for reducing inter-community conflicts. For example, a male El Molo elder emphasized:

> If our collective rights to this land [now occupied by LTWP] were legally recognized, we could manage it together as we have done for generations. This would reduce conflicts between our communities (F2F-KEN-ELM).

Similarly, a Samburu community leader suggested that proper legal recognition could lead to fairer negotiations:

> Legal recognition of our communal land rights—through registration—would give us an upper hand in negotiations with the project and the government, potentially leading to fairer outcomes for all communities involved (F2F-KEN-SAM).

Although Indigenous peoples' claims to land are not specifically mentioned in the Kenyan Constitution [48], Art. 63(d) states that communities are to hold land on which they are registered, which has been transferred to them, as well as that which is "(i) lawfully held, managed or used by specific communities as community forests, grazing areas or shrines; (ii) ancestral lands and lands traditionally occupied by hunter-gatherer communities; or (iii) lawfully held as trust land by the county governments."

When developments like the LTWP affect community land, it must be converted to private land. The Trust Land Act, in place at the time of the LTWP's land conversion, required "non-discrimination and protection of the marginalized," "participation, accountability and democratic decision making within communities, the public and the Government," and "democracy, inclusiveness and participation of the people" (Art. 4(2h, k, l)). It also stipulated a procedure for land alienation, including public participation and consultation (Art. 13(2)). However, despite consultations with 70 individuals, including official representatives [61], some community members reported their exclusion (F2F-KEN-ELM). Moreover, these consultations occurred after the land acquisition [49], undermining the legitimacy of the proceedings. The Kenyan Supreme Court ruled that lawful procedures were not followed [61].

Although the LTWP's construction began before the 2016 Community Land Act came into force, prior land conversions are still subject to the new Act (Art. 34(2)). Importantly, the new Act requires community approval for privatizing community land (Art. 23) and ensures equal treatment of marginalized groups in all dealings with community land (Art. 30(1)). It defines a community as a group who share common ethnicity, cultural practices, livelihoods, and geographical space (F2F-EU-NGO). However, the Act primarily focuses on land use and management rather than the broader human rights of Indigenous communities. At Lake Turkana, where pastoralist communities rely on communal land, the Act has only been partially successful (Secondary Data). Communities continue to face injustices, including escalating conflicts over dwindling resources.

A Turkana woman shared:

> With less land available, conflicts over remaining pastures have increased, especially during dry seasons. While [the Community Land Act] has provided a framework for recognizing communal land rights, many communities still face difficulties in registering their land, leaving them vulnerable to land grabs and displacement due to large-scale development projects like the LTWP (OL-ILK).

Some interviewees felt the Act had actually increased the legal complexity of determining rightful landowners when multiple communities use the land. A male Kenyan NGO representative explained:

> The Community Land Act grants the community autonomy and direct ownership, with titles to the land. However, given this context, there's considerable ambiguity regarding […] the rightful landowners, especially since this land spans across the territories of four different communities (F2F-KEN-TRK).

A male El Molo community member further explained:

> The land occupied by the LTWP project is community land. [But,] It does not belong to a specific community but is owned collectively by

[multiple] communities […], including the Turkana, Samburu, Rendille, and El Molo (OL-ILK).

Interviewees also stressed challenges with implementing the Act. A Turkana man noted:

The Act, as we are told, is going to give us power to manage our ancestral lands, but we have not seen real changes on the ground. Our lands are still not fully protected (F2F-KEN-TRK).

A Samburu woman also expressed her frustration:

The community land registration process is complex and sluggish. Many of us do not understand how to go about it (F2F-KEN-SAM).

Finally, a male El Molo community leader added:

We require support and resources from the government to make this Act work for us (F2F-KEN-ELM).

Indigenous peoples' land rights are at the heart of their fundamental rights. When these rights are abused, various injustices can arise; these are elaborated in the next section.

5.5. Fragmentation of cultural identity and the peril of cultural loss

Our findings highlight the struggles of smaller ethnic groups, such as the El Molo, in accessing legal remedies for the LTWP's impacts. Claiming their land was illegally sold without proper consultation or consent (F2F-KEN-ELM), several groups filed a lawsuit against the acquisition, stating that it violated their rights to free, prior, and informed consent (FPIC), as stipulated in ILO 169 and UNDRIP. A representative from a European NGO explained:

[The right to] FPIC [means] you have to inform people in a language that they understand… you have to actually have a dialogue and, in the end, have the consent from these people so they have the right to say yes and no (F2F-EU-NGO).

The legal battle resulted in fragmentation of the ethnic groups involved. A human rights defender elaborated:

…some community elites, such as those from the Rendille, have leveraged their personal connections with influential figures like senators to make strategic political maneuvers. As a result, the land rights case now predominantly involves the Rendille community (F2F-GE-ILK).

In addition, while some community members are accepting of compensation, others resist, perceiving the loss of land as a threat to their cultural survival [Digital Ethnography], which exacerbates inter-community tensions. A male Rendille herder explained:

The wind power project has made some of our traditional grazing routes inaccessible. This forces us into areas used by other communities, causing tensions and conflicts (F2F-KEN-REN).

Furthermore, a male Turkana community leader stated:

This project has turned communities against each other. Land that was once shared is now in the hands of foreign investors. They displaced families without proper compensation or alternatives. Now, young men from different communities clash over the remaining pastures. It's a wound that keeps bleeding (F2F-KEN-TRK).

The decade-long legal process caused significant frustration. A female Kenyan NGO representative noted:

…one of the petitioners has, if I'm not mistaken, already passed away. […] When [judicial processes] take this long to deliver justice, it often arrives too late. […] The community doesn't necessarily see any benefits from even a favorable decision (OL-ILK).

The court eventually ruled in favor of the Indigenous communities, declaring the land sale unlawful:

The allocation of 150,000 acres [to LTWP Ltd.] was carried out in a procedurally flawed manner, without adherence to the due process of law. […] The process of compulsory acquisition was not followed as required under the Land Act, which mandates public participation and proper notice to affected parties. [71]

However, investors appealed the decision, leaving the case unresolved. Despite further rulings that the land was unlawfully sold and discussions about removing the turbines, the LTWP continues to operate, leading to ongoing legal battles, compounded by financial constraints (F2F-KEN-ELM).

This case illustrates the disconnect between the Kenyan government, international climate change mitigation efforts, and Indigenous communities' rights, reflecting broader tensions over land use. The ongoing legal battle has caused community stress, fragmentation, and psychological strain (F2F-KEN-TRK). We posit that this conflict arises from a clash between different ontologies of land use [28]. While the LTWP holds economic significance through energy production, employment, and social investments [15], it disrupts the pluriversal view of land held by Lake Turkana's ethnic groups, for whom land is central to cultural and spiritual life. Restricting their mobility—an integral part of pastoralism—therefore disrupts their traditional lifestyles and economic activities. A respondent expressed:

…the costs the communities are facing to meet the public interest […] [include the loss of] their grazing areas […], their […] livelihoods (F2F-KEN-SAM).

Indeed, access to land was a key issue during consultations [72,73]. Despite assurances that the area would not be fenced off [74], community members reported armed barriers hindering access:

They have [a] northern barrier and [a] southern barrier which [are] manned by security guards with guns […]. These barriers are erected on main access roads and this really limits access to grazing areas (F2F-KEN-TRK).

The change in land dynamics is exemplified by the involuntary resettlement of the Turkana village of Sarima (OL-ILK). Despite compensation and efforts to recreate the original living conditions, inadequate sanitation and social tensions due to population influx persist [15]. In addition, reports vary on the actual compensation received. An El Molo man summarized:

The arrival of new projects poses a risk, as their acceptance could lead to the loss of these vital areas for our people (F2F-KEN-ELM).

Turkana representatives also emphasized the importance of safeguarding vulnerable communities from exploitation:

…we need to safeguard the rights of these vulnerable communities because without us fighting for them, […] investors will continue to violate the rights of these people (F2F-KEN-REN).

These findings illustrate the detachment of the Kenyan government and investors. Meanwhile, the LTWP claims to benefit local communities. Its associated NGO, the Winds of Change foundation, "undertake [s] sustainable community development projects throughout the Project's Area of Influence" [75], focusing on schools, healthcare infrastructure, and access to potable water. Reports commissioned by stakeholders like Finnfund highlight benefits such as poverty reduction and employment [51,76]. Additionally, the LTWP has won several accolades, including "African Renewables Deal of the Year" in 2014 (F2F-EU-BUS). A project investor reflected:

…the project was successfully delivered on time and within budget. From a technical standpoint, it stands as a success story (F2F-EU-INV).

However, our study casts doubt on the universality of these benefits

(F2F-KEN-ELM), with benefits either being time-limited or centered on certain groups. Regarding employment, an El Molo man noted:

> …we [did] see a few individuals from our area getting involved. They were employed, but still, it's not adequate […]. They mostly talked about our people not [being] skilled enough to get skilled employment. […] They promised [scholarships], but […] not a single person […] benefited from any scholarship programs (F2F-KEN-ELM).

The issues of unequal benefit distribution and ongoing marginalization were recurrent in our interviews. Reflecting on the historical and current exploitation of their land, a Turkana community leader observed:

> It feels like history repeating itself. First, it was the colonial government controlling our land, now it's our own government and foreign companies (F2F-KEN-TRK).

In addition, an El Molo elder shared:

> We were told this project is for national development, but we bear the costs while others reap the benefits. It is a form of exploitation that continues to marginalize our communities (F2F-KEN-ELM).

We posit that this contrast between technical success and social unrest stems from the lack of recognition of Lake Turkana's ethnic groups as Indigenous. Project investors appear detached from the very places and peoples affected by it, emphasizing the need to address the nuances of Indigeneity in such projects. The implications for energy research and social science in the context of climate change mitigation efforts are discussed below.

6. Discussion

Our research advocates for governmental recognition of Indigeneity to address Indigenous land rights and energy injustices within large-scale green energy developments. Contested definitions of Indigeneity significantly impact Indigenous peoples' diverse ways of being, knowing, and organizing life, especially where renewable energy projects intersect with traditional lands. This is particularly evident in areas like Lake Turkana, where Western-oriented climate change mitigation strategies often fail to acknowledge the unique relationships between Indigenous communities and their land [3,33]. These challenges intensify when issues of recognition and compensation are coupled with the impacts of green energy initiatives [1,2]. We argue that an energy justice framework, informed by a decolonial and pluriversal approach, is critical to addressing these injustices [26,28,39,41].

We posit that Kenya's broad categorization of "marginalized peoples," as opposed to specifically recognizing Indigenous groups, constitutes a form of injustice. This conflict stems from a clash between different ontologies of land use and the government's failure to fully recognize Indigenous land rights [48]. While the LTWP provides economic benefits such as wind energy production and employment [51], it fails to account for the pluriversal understanding of land [28]. For Lake Turkana's ethnic groups, land is not merely an economic resource but a core part of their cultural and spiritual life. Restrictions on mobility severely impact their pastoralist lifestyles and economic activities. This illustrates how singular, Western-centric development models can disrupt the multiple ontologies through which Indigenous communities engage with their environment [26].

NGOs in Kenya and Europe, alongside self-identified Indigenous peoples from Lake Turkana, have continually challenged the Kenyan government's policies on Indigenous recognition and wind energy investments impacting ancestral lands [2,3]. These challenges underscore a fundamental clash between Western-centric development models and Indigenous knowledge systems [2,26]. The absence of formal recognition exacerbates injustices concerning Indigenous peoples' rights to land, cultural identity, and self-determination [5,63]. The LTWP exemplifies these socio-ecological injustices, revealing how external stakeholders fail to engage with the pluriversal knowledge systems of local Indigenous communities [28,77].

The 2010 Kenyan Constitution and 2016 Community Land Act provide a legal framework that aims to protect the land rights of ethnic communities [47,48]. The Community Land Act marks a critical step toward recognizing and securing land rights by formalizing a structure for the registration, protection, and management of community lands [18]. However, its implementation and effectiveness have been insufficient owing to factors like inadequate resources, bureaucratic delays, and political interference [18]. For pastoralist communities like the Turkana, El Molo, Samburu, and Rendille, these limitations have left them vulnerable to land grabs and displacement, particularly in the face of large-scale green energy projects such as the LTWP.

From a decolonial perspective, we argue that the limitations of the Community Land Act are rooted in enduring colonial power structures that continue to undermine Indigenous land rights. Legislative solutions alone are insufficient without addressing the deeper historical forces and knowledge systems that continue to marginalize Indigenous groups. While the Act attempts to recognize customary land tenure, it fails to fully incorporate Indigenous ways of knowing and being, which are essential for truly decolonizing land rights frameworks. Applying a decolonial and pluriversal approach to energy justice is crucial to counter the persistent marginalization of ethnic groups, not only by the LTWP but by large-scale development projects worldwide [23,43].

This approach requires us to acknowledge the diverse ontological and epistemological perspectives that Indigenous communities bring to land and resource governance [26,28]. As our research suggests, deeper engagement with decoloniality and pluriversalism is necessary to challenge entrenched power structures and ensure that energy development genuinely respects Indigenous sovereignty and ecological wisdom [18]. Rather than adopting a one-size-fits-all approach, we advocate for recognition and respect of the diverse ways different communities understand and engage with energy systems to ensure that energy justice initiatives do not replicate colonial patterns of exploitation under the guise of sustainability [43,46].

Our research suggests that the formal recognition of Indigenous land rights has the potential to address energy injustices and mitigate intercommunity conflicts. By securing legal ownership and recognizing customary tenure systems, pastoralist communities, such as those in Lake Turkana, could gain greater control over their ancestral lands. This would provide a legal foundation for resolving disputes through customary practices. The recognition of land rights can serve as a powerful tool for conflict prevention and peacebuilding, fostering cooperation rather than competition. This insight holds global relevance, offering lessons for other communities facing similar challenges.

6.1. Dynamics of symbolic attachment and detachment

The LTWP consortium simultaneously engages in symbolic attachment to and detachment from the land and its communities [2,3,16]. The consortium engages in symbolic attachment through social initiatives that selectively distribute resources to supportive groups while marginalizing others and restricting their access to crucial resources. At the same time, based on a classification of the Turkana, Rendille, and Samburu as "dominant tribes" and thus not truly Indigenous [61], the consortium has appealed the Civil Court's ruling that the land acquisition for the project was illegal, thereby detaching from Indigenous land rights claims. This dynamic of symbolic attachment and detachment alienates and fragments communities by undermining their nomadic patterns and deep ties to the land.

The dynamic of symbolic attachment and detachment reflects broader colonial structures that persist in Kenya's land governance. Decoloniality demands that we move beyond these superficial engagements to recognize the deeper ontological plurality of Indigenous land use, where land is not merely a resource but an integral part of cultural

and spiritual identity. For the Turkana, Rendille, Samburu, and El Molo, land is inseparable from practices like fishing and pastoralism, which are fundamental not only to their subsistence but to their identity and cosmological understanding.

The LTWP exemplifies how climate change mitigation efforts—-driven by Western models of development—oversimplify the complex realities of Indigenous communities. By neglecting the pluriverse of local communities and failing to integrate their cultural and ecological heritage, the project's outcomes diverge from its intended benefits. This tension highlights the need for a pluriversal approach to energy justice, one that embraces multiple ways of knowing, being, and relating to the land [26,28]. Only through such an approach can we begin to realign development projects with the rights, ontologies, and cultural practices of Indigenous peoples, fostering true justice and sustainability.

6.2. Appreciation of indigeneity

Our study on green energy investments at Lake Turkana has deepened our appreciation for the fundamental principles of human rights, particularly the inherent dignity and equal and inalienable rights of all individuals, as proclaimed by the United Nations in 1948. This reflection has both challenges and opportunities for green energy investors, especially in regions that fail to unambiguously recognize Indigenous populations [63]. This research can help energy and social science scholars to appreciate and navigate the complexities of working with Indigenous communities, thereby preventing the cyclical dynamics of symbolic attachment and detachment.

Academic discourse and advocacy for Indigenous energy justice underscore the need for a nuanced approach [17,49]. To avoid romanticizing Indigenous identities, the primary focus should be on remedying injustices and addressing historical marginalization and material deprivation [78,79]. Grouping diverse Indigenous communities under a single label overlooks their unique challenges, highlighting the need for tailored policy considerations [20]. This is underscored by the ongoing global debate on how to recognize and categorize Indigenous groups accurately and respectfully without simplifying their complex identities [22,79–81].

The situation at Lake Turkana, especially the legal disputes over land acquisition for the LTWP, exemplifies the neglect of Indigenous peoples' rights [1,11]. We emphasize the need for legal reforms that strengthen Indigenous sovereignty, self-determination, and the principle of FPIC in development projects. While we acknowledge the limitations of frameworks like ILO 169—with FPIC processes often serving as negotiation mechanisms to impose Western models of development on Indigenous lands [26]—we argue that they still offer a foundation for capacity building, empowering Indigenous communities to defend their rights.

By integrating international standards and addressing Indigenous needs, these legal instruments could safeguard cultural heritage, livelihoods, and dignity. However, ongoing efforts are required to ensure these protections are implemented effectively to fully realize Indigenous peoples' broader human rights. Energy justice frameworks must respect and integrate the plurality of worldviews and practices to avoid replicating colonial patterns of exploitation under the guise of sustainability. Indigenous-led governance, rooted in self-determination and traditional ecological knowledge, is essential for energy development that truly respects Indigenous sovereignty.

This perspective provides crucial insight into how land rights should be considered within green energy investments and ensuring projects align with the cultural, spiritual, and relational values that Indigenous communities place on their land [3]. Adopting such an approach allows energy justice frameworks to respect and integrate the plurality of Indigenous worldviews and practices, offering a more inclusive and just model of sustainable development [3]. Ensuring green energy projects proceed with genuine community engagement is essential for respecting and supporting the communities they impact.

6.3. Limitations and future research

Our study did not explore the internal dynamics within Indigenous communities in the context of large-scale green energy investments [80]. These investments often occur in regions with a longstanding history of conflict, not only with external actors but also within communities themselves [20,63]. Future studies should explore these internal dynamics, particularly how they shape and are shaped by renewable energy investments. A decolonial perspective could illuminate how [83] colonial legacies continue to influence both internal conflicts and green energy projects [11,30]. A pluriversal framework is also critical to acknowledge the diverse and conflicting ontologies within Indigenous societies [26].

Finally, we acknowledge that our findings represent only a partial reality. We contend that our research design—employing digital ethnography, online and face-to-face interviews, and on-the-ground longitudinal research by Kenyan researchers—enabled meaningful engagement with Indigenous peoples without disrupting their social dynamics [53]. By integrating decolonial and pluriversal approaches into future research, we encourage further exploration of how governments and businesses can implement international regulatory and normative frameworks to protect and respect Indigenous rights, particularly in the context of climate change mitigation efforts.

CRediT authorship contribution statement

Jacobo Ramirez: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Eleonora Costantino:** Writing – original draft, Data curation. **Christiane Durach:** Writing – original draft, Resources, Data curation. **Jury Flickenschild:** Writing – original draft, Investigation, Data curation. **Han Chen Sun:** Writing – original draft, Investigation, Data curation. **Ikal Ang'elei:** Data curation. **Paul Lekapana:** Writing – review & editing, Investigation, Data curation.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jacobo Ramirez reports financial support and administrative support were provided by Copenhagen Business School. Jacobo Ramirez reports financial support was provided by CISU (Civil Society in Development). If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

The data that has been used is confidential.

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