Systematic Review

The Decolonisation of Climate Change and Environmental Education in Africa

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Abstract: This study examines key considerations for the decolonisation of climate change and environmental education (CCEE) in Africa. It draws on insights into epistemic inclusivity to systematically assess journal articles that drew on primary studies and were published between 2015 and 2022. The findings of the review depict that there are persistent epistemic exclusion and alienation of Indigenous and local knowledge (ILK) in CCEE. This lack of recognition of ILK contributes to negatively affecting the quality of what is learnt in educational centres across Africa as learners' lived experiences in their socio-cultural environments are not contextualised to enhance the relatability of the subjects of their learning. Decolonisation efforts must address exclusion and alienation and promote inclusion and epistemic agency. This paper captures various strategies to achieve these in the continent, as well as some opportunities and challenges. It maintains that multidimensional approaches to decolonisation are required to promote African-centred climate change and environment education. This includes the interrogation of existing theories and depictions of subjugation of ILK, as well as seeking ways to halt or mitigate the prevalence of ongoing epistemic exclusion in different educational contexts and locations. It also requires policymakers and education managers to commit to developing epistemically inclusive education policies, curricula, and learning frameworks that highlight the significance of place-based knowledge.

Keywords: decolonisation; climate change; environmental education; Africa

1. Introduction

A United Nations Educational, Scientific and Cultural Organization (UNESCO) study [1] that examined 46 countries' primary and secondary education policies and curricula observed that limited efforts have been made to integrate Indigenous and local knowledge (ILK) into environmental subjects and the existing efforts are insufficient and inadequately linked to sustainable development priorities. ILK, as used in this paper, refers to the combination of skills, masteries, understandings, perceptions and philosophies that are native to Indigenous societies, which were developed through their historical interactions in their social and natural environments and continued to be passed from one generation to another. The UNESCO's findings draw attention to a need to investigate the degree to which ILK has been embedded into formal climate change and environmental education (CCEE) policies and curricula, as well as areas where improvements are required. The findings are particularly relevant to all levels of formal education (primary, secondary, and tertiary) in Africa. They add to the existing demands to decolonise CCEE to reduce vulnerabilities and maximize mitigation and adaptation efforts [2–4]. The continent's need for a decolonised knowledge system is rooted in Africa's colonial and postcolonial histories that displaced the pristine local knowledge systems and solutions with exogenous systems that are divorced from the people's socio-cultural experiences [5,6]. In relation to the dichotomy between formal Western education and pristine knowledge systems, the observations of UNESCO [1] also point to a need for critical investigations into existing efforts to decolonise

CCEE in Africa. This paper contributes to addressing this through a systematic literature review of the academic literature.

Meanwhile, Climate Change Education (CCE) is variously defined but at the heart of the varied definitions is the understanding that learners across all levels and disciplines should be educated about climate change, intellectually empowered to respond to it, understand its risk and impact on the human environment, socio-economic activities, and wellbeing, and contribute to finding potential solutions [7,8]. Both development agencies and scholars acknowledge the important role of CCE in global climate change efforts. The United Nations Framework Convention on Climate Change [9] and UNESCO [10] explain that CCE is a critical agent for raising awareness, producing innovative actors and a climate change-sensitive workforce and promoting sustainable lifestyles and exploration of solutions. Also, CCE has the potential to equip people with relevant information to demand effective climate-related policies and help climate change-educated policymakers understand the implications of policies they make [11]. It has contributed to strengthening interdisciplinary actions, research collaboration, and the discovery of new approaches to tackle problems associated with climate change [8,11,12]. Although scholars have not fully unravelled how to harness education and the extent to which it can be engaged in the fight against the wicked problem, they agree that it has a critical role to play [11,13].

The decolonisation question is part of the ongoing contention over the relevance of the mainstream education systems [14], of which CCE is a part. It is argued that the orthodox Western education system in Africa is Eurocentric and draws on an instrumental model that is aimed at preparing a workforce to support capitalist economic machinery, including industries that contribute to fuelling the climate challenge [15–17]. It is noteworthy that most pristine African states were integrated into the global capitalist enclave through colonialism and subsequent postcolonial subjugation by the Western imperialists, which fuelled the external conditioning of their internal education and broader information and knowledge economy [18–21]. While colonialism officially ended many decades ago across Africa, postcolonial relations have continued to influence and inform African countries' educational, socio-economic, and political systems [18,22–24]. Consequently, there has been consistent demand for genuine decolonisation of the systems in African nations. Bajaj describes decolonisation as an "act of nation states freeing themselves from the repression and brutality of colonialism and to the intentional process of reimagining a future beyond the explicit and implicit vestiges (whether physical, psychological and/or socio-cultural) of colonial domination" [25] (p. 2). Decolonising education refers to the process of withdrawing, rethinking, reframing, and reconstructing educational curriculum and scholarship that preserve and uphold education as ultimate Europe-centred education [26,27]. This differs from mere diversification and tends to challenge the existing hierarchy and monopoly of the Western framework [27]. Decolonisation of education requires deliberate efforts and recognition of the influences of dominant groups, ensuring the epistemic values of marginalised groups, that is, their views and voices, are adequately respected and integrated [28]. In respective contexts of African societies, it means taking conscious steps towards developing and implementing an education curriculum that centres on their original knowledge systems, discourses, contents, experiences, languages, and methodologies [4,26].

We recognise that the theoretical terrain of this paper is a contested one. First, there is a broad debate on the relevance of environmental education and Education for Sustainable Development (ESD) within which CCE is straddled. It has been argued that the orthodox and mainstream ESD is instrumental in sustaining the neoliberal status quo and serving the Eurocentric values that played a dominant role in the 2030 agenda [29,30]. This is opposed to critical environmental education that interrogates power inequities and epistemic injustices and promotes education that originates from local communities and collective actions [31,32]. We moved from the associated debates. Instead, we focus on sustainable development as one that meets "the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs" [33]. Implicit in this definition is an acknowledgement that the aspiration of every generation,

nation, and people, Western or non-Western, present or future, should be guaranteed. Definitions, perspectives, and approaches around decolonisation remain polarised and developing [24,34,35]. Similarly, the paper contends against epistemic domination by adopting an epistemic inclusivity framework that seeks to promote the epistemic values of all people and adherence to equal and uninhibited inclusion of all knowledge systems and their holders. However, being a review, efforts have been made to present a synthesis of findings based on the information from the articles reviewed. In the context of the polarised decolonial scholarship [34,35], our streamlined sustainable development focus and efforts to allow our data to speak squeeze us into a narrow and fast-paced decolonial dispute. This can then lead to possible rejection by Eurocentric critics of Eurocentrism for failing to adhere to a purely postmodern critique model and, at the same time, may not fully satisfy some radical decolonial scholars who may feel uncomfortable with some of our accommodations (see [36]). On the one hand, while recognising that definitions, perspectives, and approaches around decolonisation remain polarised [24,34,35], we seek to address the prevailing ideological hegemony and the politics of education from this standpoint [37–39]. On the other hand, and particularly for a review like this, such a standpoint offers an opportunity to objectively look at both the need to decolonise and associated challenges to the efforts to decolonise CCEE in Africa, which we discuss in a later section of this work. Thus, it contributes to X-raying opportunities, challenges, and limitations of decolonisation and operationalising critical CCEE at primary, secondary, and tertiary levels in Africa. In the following section, we provide a summary of climate change as a wicked problem, followed by Africa's vulnerability and potential role of climate change education as well as a more detailed theoretical underpinning of the paper.

2. Climate Change, a Wicked Problem and Africa's Vulnerability

Climate change refers to a long-term alteration in the patterns of temperatures and weather that results from natural (i.e., changes in the sun's activities) and human activities. The human burning of fossil fuels, such as coal, oil, and gas, generates greenhouse gas emissions, particularly carbon dioxide and methane, which endangers the climate [40–42]. Many observers, e.g., [43–45], have referred to climate change as a wicked problem and a multiplier of other human challenges and threats. The list of climate change impacts includes prolonged heat waves, increasing rates of severe storms, hurricanes, and drought, rising ocean levels, shrinking of arctic ice, changes in the pattern of rainfall, loss of wildlife species, low agricultural productivity, and other associated economic losses [46,47]. These have contributed to worsening hunger and poverty across the globe, increasing health challenges, and spreading of diseases, migration, and climate-induced violent conflicts [48–51].

The challenge of climate change is very problematic because it impacts every aspect of human life and the earth's physical, socio-cultural, and biological systems, and does not appear to have a quick-fix solution [52,53]. It mixes up with and complicates other existential problems. While it demands unprecedented multisectoral, multidisciplinary, and international cooperation to address the complex issues that underpin it, numerous stakeholders that have critical roles to play tend to have divergent perspectives and interests on how to deal with it. Dealing with climate change challenges requires costly measures and there is no succinct assurance of an end in sight [52–55].

Increasing evidence indicates that the African continent is more vulnerable to the impacts of climate change than other continents. Some of the factors that contribute to enhancing Africa's climate vulnerability include the extension of the continent from 35° S to about 37° N latitude (situating it within the tropics), its location on the equator (which creates its symmetrical climatic arrangement on either side), the ocean currents, and the extensive plateau surfaces [56]. Recent climate change impacts, adaptation, and vulnerability report by the Intergovernmental Panel on Climate Change (IPCC) [57] suggests that most parts of the continent are hotspots. In total, 9 out of the 10 of the world's most vulnerable countries are in Africa. These include Chad, Central African Republic, Eritrea, Guinea Bissau, Democratic Republic of Congo, Sudan, Niger, Liberia, and Somalia. Afghanistan

is the only country on the list that is not from Africa [57,58]. The African Development Bank [59], IPCC [57], and Trisos et al. [60] observe that while Africa is one of the lowest contributors of greenhouse gas emissions and thus contributing relatively little to climate change, its key development sectors are experiencing extensive losses and damages as they are linked to human-induced climate variation like water shortages, biodiversity loss, reduction in food production, and overall economic growth. Africa is also experiencing extensive floods, droughts, and tropical cyclones that are compounded by economic challenges and protracted conflicts [61].

African nations' vulnerability to climate change is further exacerbated by poverty, the substantial dependence of its economy on climate-sensitive activities, and the continent's low adaptive capacity [62,63]. The World Meteorological Organization [61,63] reports that Africa's climate has warmed above the global average from pre-industrial times (1850–1900) and that the African coastline's sea-level rise has been faster than the global level. These increase the frequency and severity of flooding in coastal areas and erosion and salinity in low-land areas. Also, some water bodies in the continent are continuously drying up with attendant negative effects on its ecosystems, biodiversity, agricultural, and socio-economic spheres. Increased heat waves and drought on land associated with climate change have been observed around most of Africa [60–63].

Climate change has already reduced many African countries' economic growth, exacerbating global income inequality [60,64]. It is estimated that the gross domestic product (GDP) per capita in Africa for 1991–2010 stood at an average 13.6% lower than what it would have been if climate change had not occurred; the huge impact is largely felt as losses in agriculture, manufacturing, infrastructure, and tourism [60]. At the same time, climate-related research is observed to be facing severe data constraints, funding inequities, and deficiency in research leadership in Africa. Many African countries do not have consistent weather station reports and their data access tends to be limited [57,60]. These necessitate a multi-sectoral action and education is critical to these, as further discussed below.

3. Theoretical Underpinning: Epistemic Inclusivity

The theoretical premise of this paper hinges on epistemic inclusivity. Reference to 'epistemic' relates to the scientific theory and study of knowledge, while inclusivity refers to the value, policy, and practice of ensuring equal access to resources and opportunities for those who might otherwise experience exclusion or marginalisation. The concept of epistemic inclusion has been used to advance discussions around social justice, equity, cross-cultural intellectual innovation, and the promotion of ILK [65–68]. It emphasizes the epistemic values of all people and adherence to equal and uninhibited inclusion of all knowledge systems and their agents, especially local and Indigenous knowledge holders, in the process of knowledge generation, harvesting, processing, documentation, utilisation, and exchange [69]. Acknowledging and ensuring that space is provided for various ways of knowing should be considered as questions of justice [70,71]. In relation to the colonisation and associated exploitation and marginalization, redress is needed to appropriately acknowledge, respect, and provide space for the worldviews of diverse communities, that is, the inclusion of their cultures, languages, and knowledge systems should be respected, valued, and expressed without restriction [69,72].

Epistemic exclusion could manifest in diverse ways or at different levels but the outcomes lead to an infringement of knowers' epistemic agency in ways that reduce their ability to fully participate in relevant epistemic communities [65]. Dotson also construes epistemic agency as the ability of a knower to contribute to knowledge production and revision while persuasively utilising common epistemic resources in an epistemic community and cautions that systemic exclusions may impede epistemic agency [65,66]. Pohlhaus Jr [67] draws insights from Dotson's notion of epistemic agency to argue that epistemic inclusions could also be abused by including epistemic agents in an exploitative manner, which will lead to non-reciprocal or coercive extraction of their epistemic labour. Fricker [70] uses the concept of epistemic injustice to explain the nature of distributive unfairness in the

information space and education sector and identifies two forms of epistemic injustice that are performed on people in their capacities as knowers: testimonial injustice and hermeneutical injustice. The first relates to the deflation of knowers' level of credibility, while the second is associated with an unfair disadvantage of knowers' experience in their efforts to make sense of the social world around them. Testimonial injustice could happen more often in the classroom, while hermeneutical injustice tends to be primarily located in the structure and processes of the education system, underpinning policies and curricula (including the pedagogies and design of assessment) and enabling the testimonial injustice that takes place at the classroom level.

Testimonial injustice, which Fricker also links to identity power, affects knowers' credibility. The concept of epistemic credibility has been traced to feminists' epistemological criticism of the patterns and power relations in knowledge production, which challenges what they perceive as value-free, rational, universal, and male-dominated domains of knowledge production [71]. From an epistemic credibility perspective, knowledge is relational and thus tends to be biased, specifically situated, value-laden, partial, and associated with specific socio-political perspectives or contexts [71,72]. Postcolonial feminist scholars further linked the marginalisation of ILK to colonial heritage. They highlight a need for alternative epistemic views that are both neutral (without prevailing power dynamics and inequity) and socio-cultural inclusive, ensuring the inclusion of previously excluded non-Western epistemologies [71,73–77].

Decolonising CCEE and broader education systems of postcolonial societies are very crucial to addressing embedded identity power that works in tandem with other forms of social control. Typical of testimonial injustice, these inhibit the participation of affected local and Indigenous knowledge agents in knowledge sharing, disqualifying them as active epistemic agents and confining them to passive roles [78]. For example, as long as one is called a teacher, standing in front of learners and armed with approved textbooks and syllabus, they tend to receive more credibility (what Fricker [70] referred to as a credibility excess) in their capacity as teachers, whether they know the topic being discussed (both in theory and real-world experience) more than the learners or not. In comparison, the learners received less credibility (what Fricker referred to as a credibility deficit) irrespective of their level of experiential Indigenous/local knowledge and expertise because the information from Western education texts has been elevated above ILK. Backed up with the authority that comes from the education system (bolstered by the teacher's textbook and syllabi), in face-to-face classroom interactions (testimonial exchanges), the students are expected to attribute and accept the teacher's credibility and authority and such attributions sometimes lack precise scientific support. They could be an erroneous credibility excess to the teacher's advantage. Through regular performances, speeches, acts, and other nonverbal communication that contribute to defining and sustaining accord or deny credibility, the injustice of denying learners' status as knowers becomes normalised, consolidated, and entrenched into the learning structures and process and, over time, they are embedded into the policies and become accepted practices (see also [79,80] performative theory).

Concerns have been raised about the normalisation of the rooting of the prevailing education system deep into a Eurocentric conception of education, science, and development, which rejects attempts to integrate non-Western Indigenous knowledge and sciences [81–84]. The normalisation is a strong case of hermeneutical injustice that foists an asymmetrical social order on persons of different socio-cultural backgrounds. Consequently, many Indigenous scholars question the Western centrism of their local education system [84–86]. Decolonisation of both epistemic perspectives and the broader education system necessitates disembodying the wider Eurocentric thoughts, opening spaces for unbiased and equally reasoned dialogue with and solemn acceptance of critical epistemic perspectives from the Global South (for more discussion on this, see [36]). It also requires dismantling models of education and curricula that perpetuate colonial ideology and create opportunities for the restoration of people's pristine way of knowing and their expression from original frames of reference [84]. In Africa, it means disassembling the colonial education

structures that contribute to perpetuating colonial dominance and imperialism rather than African emancipation through education.
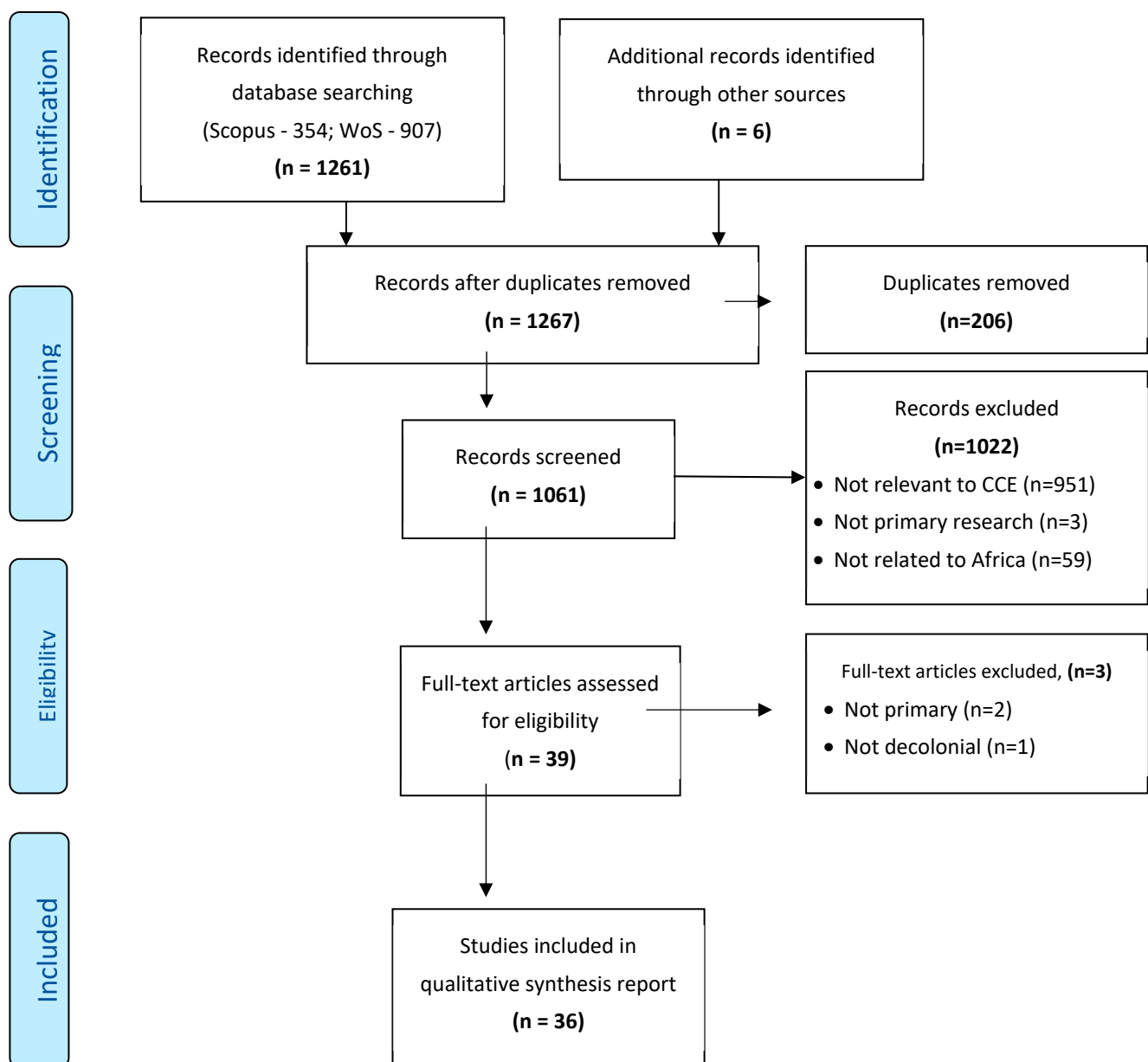
In relation to climate change and the environment, Obermeister [87] (p. 80) describes the ongoing positivist inclinations in 'blackboxing' of the environmental change dimension that advances a universalistic and globalistic framing of climate change and ecological discussions. Decolonisation implies a rejection of positivist-type universalism and globalism and a tilt towards relativists' accounts of social realities. Epistemologically, relativists reject claims about truth's universality and timelessness and often express scepticism about the extent to which science can be objective and devoid of scholars' personal experiences and attachments [87–89]. Relativists emphasise the importance of the sources of knowledge and where it has been produced because knowledge is localised and embedded in contextualised experiences and perceptions of the actual world [6,89]. Similarly, constructivists reject positivists' framing and consider truth a product of dialectical interactions between agency and structure; that is, what we believe as truth is a product of some interplay between people's subjective experience and their immediate physical and socio-cultural environments [6,87,89]. These perspectives construe climate change knowledge production and policies, social constructions that ought not to be unitary but should recognise the heterogeneity and plurality of worldviews, which in practice means recognition of local and Indigenous knowledge systems [87,90,91].

4. Method

4.1. Data Extraction

This paper draws on a systematic review that had one overarching research question: what are key considerations for the decolonisation of CCEE in Africa? Articles for the review were derived from two main databases, Scopus and Web of Science (WoS), which are among the most extensive databases used for searching the literature on various scientific fields [92,93]. Scopus was searched on 3 July 2023, while WoS was searched on 7 July 2023. Considering that decolonisation is seen to not only capture methods or approaches adopted but also spaces created or spaces that are available for increased participation, co-creation and transformation in education and research [94,95], the search used such terms that represent a range of views, which were identified through an initial scoping review of the literature. These included key synonyms of decolonial/decolonisation (see [95–97]). The search string employed was TITLE-ABS-KEY ((decolon* OR indigen* OR "traditional" OR "place-based" OR cultur* OR local*) AND "Africa", AND ("climate change" OR "environmental" OR "biodiversity") AND ("education" OR school* OR curricul*))

A total of 1261 documents were returned by both Scopus and Web of Science, out of which 206 duplicates were removed. Titles and abstracts of the articles were screened to identify those that met the following eligibility: used primary data, focused on Africa, employed a decolonial approach, and related to CCEE. Quality assessment of the articles focused on relevance, addition to knowledge, the design of the study or project reported, method employed, and validity of the results. Articles that studied and analysed existing curricula and policies in multiple African countries were also accommodated. Inclusion criteria particularly gave attention to Africa-related peer-reviewed journal articles that were published in the English language between 2015 and 2022 and were available in full text. In total, 33 articles were selected and reviewed, of which three articles were dropped for missing some criteria, while an additional six articles that met the criteria were identified through snowball searches using Google Scholar and included in the final list. A total of 36 articles were finally retained. The search and screening process is summarised in the Prisma flow diagram below (see Figure 1).
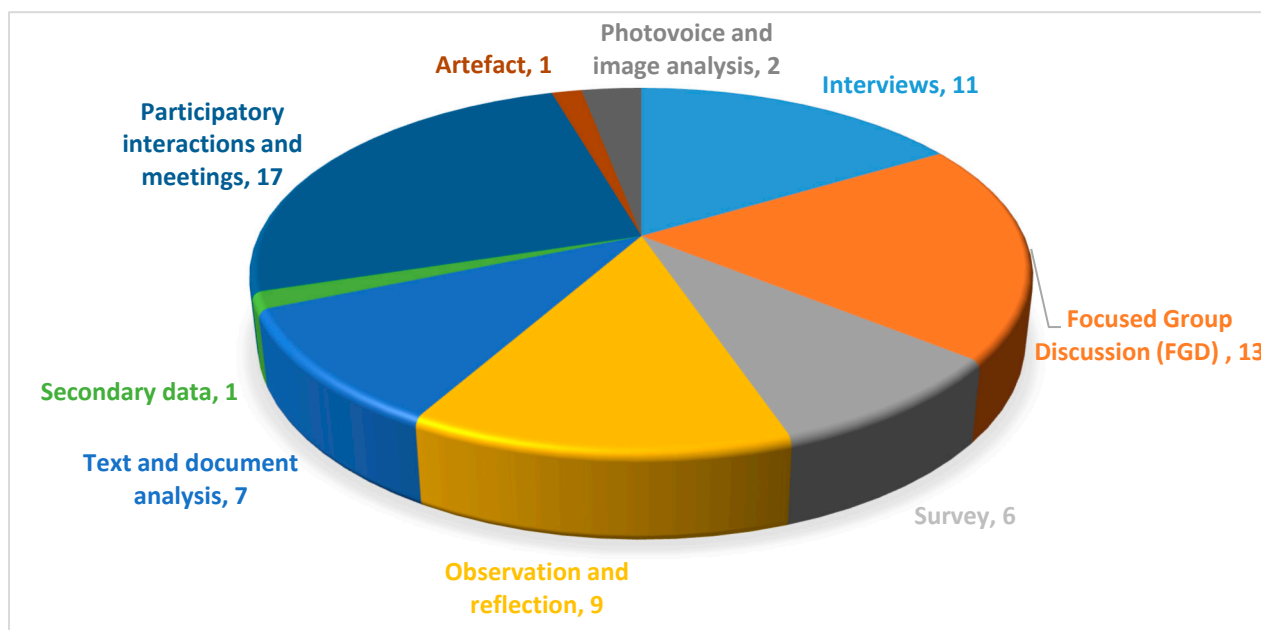
Figure 1. PRISMA flow diagram.

4.2. Analysis

The characteristics of the articles were quantitatively analysed to provide an understanding of how scholars have approached the decolonisation of CCEE in their research projects and where such projects were implemented, which helps to highlight areas where further scholarly attention may be needed. The quantitative characteristics of the studies were compiled in Excel and analysed using the SPSS software to generate descriptive statistics of the publications. The content of the articles was also read; key observations were qualitatively and thematically captured. It is noteworthy that qualitative data extraction is not usually linear or sequential but often entails backwards and forward movements during article review, synthesis, and thematic analysis [98]. During the report writing, some elements required re-visiting of particular articles to contextualise the discussion.

5. Key Descriptive Findings

5.1. Research Methods and Approaches Adopted in the Articles Reviewed

As summarized in Figure 2, the majority of the articles (31) adopted qualitative approaches in their data collection, analysis, and discussion. Three adopted a mixed methods approach, while two were quantitative studies. The quantitative studies largely employed a survey technique, while those that adopted qualitative and mixed methods used participatory interactions and meetings (17 articles), focus group discussion (13), interviews (11), observation and reflection (9), textual and document analysis (7), survey (6), photo voice and image analysis (2), and a study of artefacts (1).

Figure 2. Approaches adopted in the studies reported in the articles.
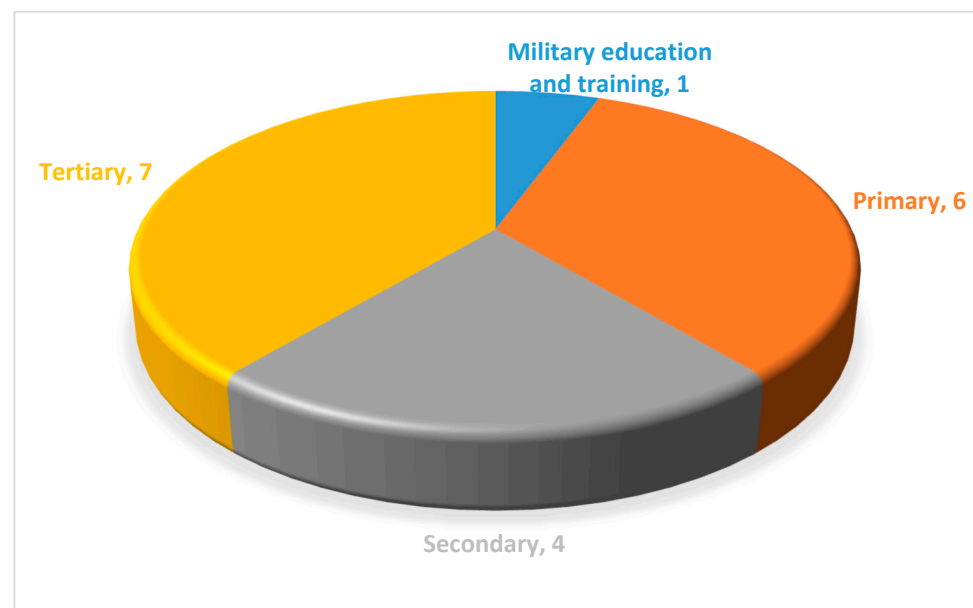
5.2. African Countries Covered

Of the studies reviewed, 75% (27) focused on the Southern Africa sub-region, while Central and West African sub-regions recorded 5.6% (2 articles, respectively); East Africa recorded 2.8% (1), while the remaining four articles (11.1%) included multiple regions. Similarly, further analysis shows that South Africa recorded 63.9% (23), Cameroon had 2 articles, while six other countries (Angola, Botswana, Gambia, Nigeria, Zambia, and Zimbabwe) recorded 1 article each. Five articles covered more than one country, which included Angola, Botswana, Cape Verde, Central African Republic, Ghana, Kenya, Mozambique, Namibia, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. While it is not clear why the South African literature dominated the review, the country's apartheid history and attendant government's interest in the field may have possibly played a role. Opoku and James [99] observe that in October 2015, the Minister of Higher Education and Training (HET) of South Africa requested an African-focused higher education system to help address the country's historical challenges and decolonise the education curriculum.

5.3. Levels of Formal Education Covered in the Articles

In total, 18 articles centred on education and training in formal settings (7 on tertiary, 6 on primary, 4 on secondary, and 1 on military). The rest focused on different forms of intervention and research initiatives, which engaged decolonial approaches that have differential levels of linkage and relevance to education (see Figure 3).
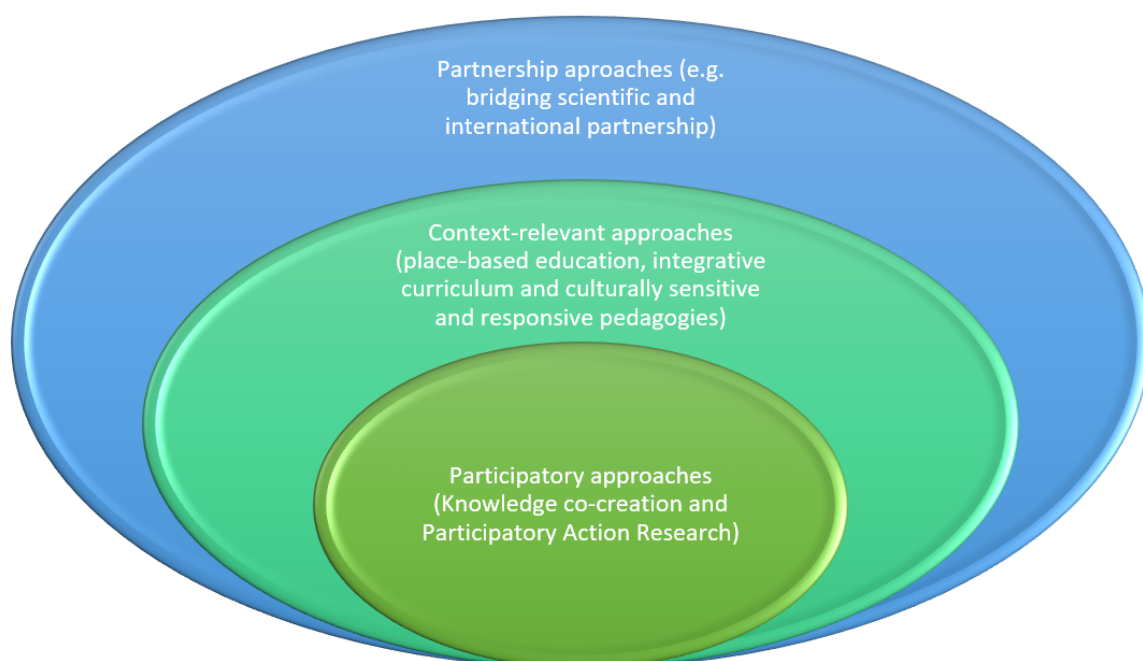
Figure 3. Levels of formal education covered in the articles.

6. Decolonisation of Climate Change and Environmental Education

Several decolonisation initiatives were observed in the studies. We have summarised them to highlight how they engaged ILK. The green core maintains a greater tendency to integrate ILK than the blue outer layer. As highlighted in Figure 4, we consider a participatory category, which includes knowledge co-creation and Participatory Action Research (PAR) as having greater potential to engage ILK, followed by context-relevant approaches (e.g., place-based education, integrative curriculum, and culturally sensitive and responsive pedagogies). The partnership category (e.g., bridging the gap between scientific discourse and local reality and international partnerships) constitutes relevant projects exemplifying studies that revealed epistemic inclusivity gaps more than others. The initiatives and approaches are discussed below.

Figure 4. Levels of engagement with ILK by the projects reported in the studies.

6.1. Knowledge Co-Creation

A concrete form of participation uncovered in the studies includes collaborative engagements to co-create new knowledge. Armitage et al. [100] explain co-creation as "the collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem". Heaton et al. [101] identified five principles of co-creation, which include recognition of users as active agents, ensuring equality among collaborating academics and users, enhanced reciprocity, participants' capacity development, and important roles played by organisations in the collaboration processes. Co-creation initiatives, which also crosscut with other themes, were observed in various studies, e.g., [102–106]. Haffejee [106] employed a photovoice approach to engage public health students, who worked in groups to take photographs of various environmental factors that cause diseases and engaged in a group dialogue, reflecting and discussing how visible environmental characteristics affect people's health. It catalysed and harnessed the students' critical thinking as they idealised relevant solutions to environment-related health problems in the communities. Kerr et al.'s [102] Farming for Change project in Malawi and Tanzania promoted local participation in the co-creation of a curriculum for smallholder farmers, learning and sharing best practices in the fields of agroecology and climate change. It also sought to enhance both social equity and a feeling of interconnectedness, bringing together academics, farmers, and community development experts to pilot a scheme among 520 farming households in the two countries. The transdisciplinary nature of the project created space for drawing from different knowledge systems, including historical, local and Indigenous systems. Co-creation methodology often embodies a recognition, acceptance, and integration of knowledge from various stakeholders to create new context-specific knowledge [107,108].

When appropriate principles are followed they create space for an uninhibited exchange of knowledge from diverse categories of stakeholders taking part in co-creation initiatives. According to Kerr et al. [102], farmers appreciated the learning approach and as soon as they noticed that their own knowledge was recognised and respected as equally important elements of the project, they began to provide more relevant examples on the subject of discussion that deepened the dovetailing of academic ideas with the farmers' experience. The farmers in the study might have felt they were accorded their rightful epistemic credibility, which further enhanced their agency and freedom to deepen their engagement with other knowledge holders. Denying their epistemic values might have closed the door of open conversation and contribution from the farmers, leading to what Pohlhaus Jr. [67] referred to as an abuse of epistemic agency due to the non-reciprocity of such collaboration and eventual exploitation of their epistemic labour. Collaboration to co-create new knowledge and curriculum can open spaces for critical insights, knowledge exchange, and integration.

6.2. Participatory Action Research (PAR)

Studies that focused on issues around community engagement and participation, provide insights into how formal education could be decolonised (e.g., [102,104,107,109–111]). For example, de Sousa et al. [112] used a Participatory Action Research (PAR) approach for a climate change project that brought community members and Grade 7 teachers together to learn about a local community-based climate change problem and particularly facilitated teachers to mobilise students as citizen scientists in the study process. As an approach, Participatory Action Research (PAR) involves engaging people who are related (impacted or affected) or concerned about an issue to play essential roles in the production and use of knowledge about the situation [113]. According to de Sousa et al. [112], PAR provides spaces for the participation and empowerment of learners and community members to contribute to finding solutions to relevant local environmental issues. Like many of the initiatives reviewed, the studies that focused on community engagement and participation are useful for the understanding of how CCEE may be decolonised. However, a major weakness discovered lies in the scope of their implementation, as the projects were rela-

tively limited in scale. Thus, little is known about challenges that may arise in different contexts and locations if solutions or approaches are to be scaled up. Another critical question that remains to be answered relates to how effective they might be and what experiences might be captured when they are deployed in processes that involve learners from diverse backgrounds.

6.3. Place-Based Education

Place-based education conceptualises abstract concepts using local and environmental issues, outdoor learning, and interactions with natural and human communities where learners live [114,115]. It engages community values and local resources in the learning processes in ways that promote partnerships between schools and local communities [115–117]. Ajaps and Mbah [115] explain that place-based pedagogy facilitates the delivery of education based on the learners' community and the environment they engage in—that is, what is Indigenous to them. It is a pedagogy that influences social and ecological wellbeing and provides an opportunity for learners to bond with the natural world. It is known for the following attributes: it is multidisciplinary and experiential, connecting the learners with their local place and environment or community and reflecting particular features of a place [117]. Velempini et al. [114] share lessons from a case study in the Okavango Delta, Botswana, which explored the extent to which teachers are integrating environmental education into the delivery of school curriculum and the degree to which the curriculum incorporates local ecological knowledge. The study engaged educational authorities, teachers, students, and community members to understand how place-based education promotes traditional ways of knowing and being. A major challenge to rolling out a place-based approach to decolonisation is that it is confined to a bounded system. Africa is not a single country and there are several ethnic groups whose distinct contexts, cultures, and ways of knowing will need to be considered.

6.4. Integrative Curriculum

Closely related to the place-based education approach is an integrative curriculum approach, which was captured by Kerr et al. [102], Zimu-Biyela [4], Duggan et al. [118], Magagula [119], and Nielsen et al. [104]. Curriculum integration emphasises the need to combine or synthesise academic and seemingly non-academic content and deliver learning in ways that are reinforcing [120]. It contributes to helping learners develop a real-world application of the subject as well as the capacity to transfer their learning to other spheres of social life [119]. Duggan et al. [118], for example, discussed their modules for middle school (Gr 7–9) learners in South Africa that employed integrated curriculum design with social and situated learning framework. It drew practical exercises from local and community environments while incorporating data from their regional marine science study. Also, Zimu-Biyela [4] documents lessons from the School Environmental Education Programme (SEEP). The SEEP was implemented in one primary school in the KwaZulu-Natal province of South Africa in 2013. It integrated various school subjects and small projects that focused on the environment, which were sometimes delivered through songs and folklore that directly involved the learners, giving space to Indigenous insights. The project helped to promote the use of ILK as well as innovative and creative thinking among learners and educators [4]. There was limited information on the extent to which integrative projects created adequate space for Indigenous knowledge. However, it is worth noting that those who facilitate knowledge integration, their level of sincerity, genuine commitment to engage with other knowledge holders, and degree of their acceptability of local and Indigenous knowledge all have important roles to play in determining the extent to which real integration can happen. Further investigation may be required to understand this and to explore key elements and principles of integration and the extent these can create inhibited engagement of local and community knowledge in CCEE.

6.5. Culturally Sensitive and Responsive Pedagogies

Culturally responsive pedagogies are another decolonial approach noted in some of the studies that were mainly employed by Rodenbough and Manyilizu [121], Nielsen et al. [104], and Wilson [105]. Nielsen et al. [104] (p. 20) described their culturally sensitive pedagogy as one that "situates learning in both the lived and embodied here-and-now experiences and frames of reference of the children". They argue that a teacher must learn and become sensitive to children's experiences and the complex elements that constitute their socio-cultural learning environment. Rodenbough and Manyilizu [121] opine that the decolonisation of education (e.g., science education) in African contexts ought to start with teaching and learning approaches that appreciate the local environments of the learners and schools. In practice, this requires recognition of local contexts in lesson plans and the inclusion of local materials. For example, traditional forest medicine plants in Kenya and local gemstones and the mineral tanzanite that are available in Tanzania were used in teaching and learning [121]. Both Nielsen et al. [104] and Wilson's [105] articles promoted the use of dance and artistic education initiatives to help learners (aged 10–11 years old) construct their knowledge and understanding of their natural environment in multicultural schools in Cape Town (in South Africa) and Copenhagen (in Denmark). Nielsen et al. [104] (pp. 6–7) explain that group reflections, drawings, and experiences were used to help learners and artist-educators understand and discover nature and its value. Although the project involved a multi-country team (from South Africa and Denmark), some of its elements sought to nurture intercultural education and multicultural classrooms, which are particularly relevant to the decolonisation of CCEE. These elements include the recognition and promotion of different languages that reflect the cultural background of learners and collaboration, which emphasises working together in facilitation and curricular learning. These can facilitate mutual openness and recognition of different knowledge holders' epistemic values. Without a doubt, cultural sensitivity is an important step towards epistemic inclusivity. However, this is just a starting point and does not address the question of power imbalance and epistemic domination, which is an abuse. A good example of such abuse is when it serves only as a decoration to obfuscate the actual manipulation and control of 'the other'. Decoration can make ILK and its agents appear relevant without real engagement in the knowledge creation, transfer, and exchange.

6.6. Experiential Learning

Agency development through experiential and expansive learning was noted in some initiatives [102,122]. Project-based learning is closely aligned with experiential learning. It engages learners through carefully designed projects that enhance their essential knowledge through project experiences. It boosts learners' life-enhancing skills development by creating reflective spaces that empower them to interrogate and re-examine their conscious and unconscious beliefs, values, and judgements [123]. Singh-Pillay's [123] study explored the experiences of Pre-Service Technology Teachers (PSTTs) that involved Education for Sustainable Development (ESD) project-based learning pedagogy in a South African university, which helped to break down stereotypes that were associated with some South African historical legacies. Also, Bonnel et al. [107] reported a competitive game-based learning that required co-creation initiatives. The project used competition among learners to enrich the discussion around local climate change issues and provided a platform for youths to engage and dialogue with various stakeholders, including decision makers and non-governmental organisations. SEEP project also underscored the importance of experiential learning in the decolonisation of the curriculum. According to Kerr et al. [102] (p. 34), "While there had been considerable exchange and preparation before the face-to-face meeting, there was little forward progress or common understanding between the diverse perspectives until everyone was 'in the field' and able to discuss and reflect together in Malawi". The experience highlights the importance of experiential learning, mutual respect, and trust-building in decolonial curriculum development. For both academics and farmers who participated in the project, the co-created curriculum processes gave space

for mutual learning, open discussion, and cooperative problem solving. Again, power issues may affect the degree to which participants are engaged and allowed to contribute to the knowledge co-creation process to gain deeper learning experiences. Experiential and project-based learning methods are closely aligned with ways of teaching and learning in many African countries, taking the forms of apprenticeship that blended the oral literature with role plays, instructions, observations, and direct participation, emphasising practical knowledge [6,124,125].

6.7. Bridging the Gap between Scientific Discourse and Local Reality

The Farming for Change project in Malawi and Tanzania also exemplified how to bridge gaps between scientific discourse and local realities and defuse the argument that ILK are incompatible with science. Kerr et al. [102] linked Western science with their local correlates and ILK and provided an example of how transdisciplinary and participatory approaches could be employed to bridge this gap by ensuring that straightforward languages are used in ways that encourage active participation, reflection, and discussion. According to Kerr et al. [102], during curriculum development, field trips were made to enhance connectivity and engagements, which contributed to facilitating dialogue across educational, disciplinary, and cultural divides and provided spaces for participating farmers to deploy their stock of Indigenous knowledge, which served as a point of departure for further education and exploration. Zimu-Biyela [4] describes how Western science has been construed as the only appropriate pathway for pursuing and acquiring scientific knowledge and such assumptions create dichotomous thinking about Western knowledge systems (often seen as scientific) and Indigenous African knowledge systems (often seen as primitive systems). The dichotomous thinking further creates epistemic violence and credibility challenges as it tends to elevate the Western over non-Western knowledge, according to excess credibility to the former and credibility deficit to the latter.

6.8. International Partnership Programmes

Some initiatives that involved international actors were observed. These partnerships were largely formal engagements that sought to deliver a particular educational project or combine their resources to advance knowledge co-creation. The two dance and visual arts studies [104,105] discussed earlier that resulted from a partnership between Cape Town (in South Africa) and Copenhagen (in Denmark) teams fall into this category. Another example is the Global Connections and Exchange Youth TechCamps initiative, which centred on student and peer-engaged project-based learning exchange. The initiative trained a selected number of high school students in Bolivia, Panama, South Africa, and the USA on climate change-relevant technologies and how they could adapt and apply them in their communities [103]. The training helped participants learn about the impact of climate change on local environments, develop some technological skills for mapping, communication, collaboration and problem-solving, and enhance their understanding and appreciation of differences across cultures. Also, Dino et al. [126] shared lessons from SUGERE, which is an ERASMUS+ project that explores cooperation for innovation, the exchange of good practices, and the promotion of higher education capacity building. The project was led by a consortium of four partners from three European countries and six partners from three African countries and designed to implement five Geology and Mining Engineering courses at BSC, MSc, and PhD levels to share a common perspective on local economic development. The decolonial element reflected in its core component required Africans to 'suggest' to the European partners. Asymmetric power relations remain a critical challenge in such international decolonial partnership projects. For example, while 'suggestion' to European partners may sound like actual participation, it remains a weak approach to decolonisation because the recipient might decide not to take the suggestion due to potential denial of epistemic value that could lead to a credibility deficit while giving credibility access to the European actors. Also, while the report explained that the project endeavoured to collaborate rather than impose any preconceived model, the depth
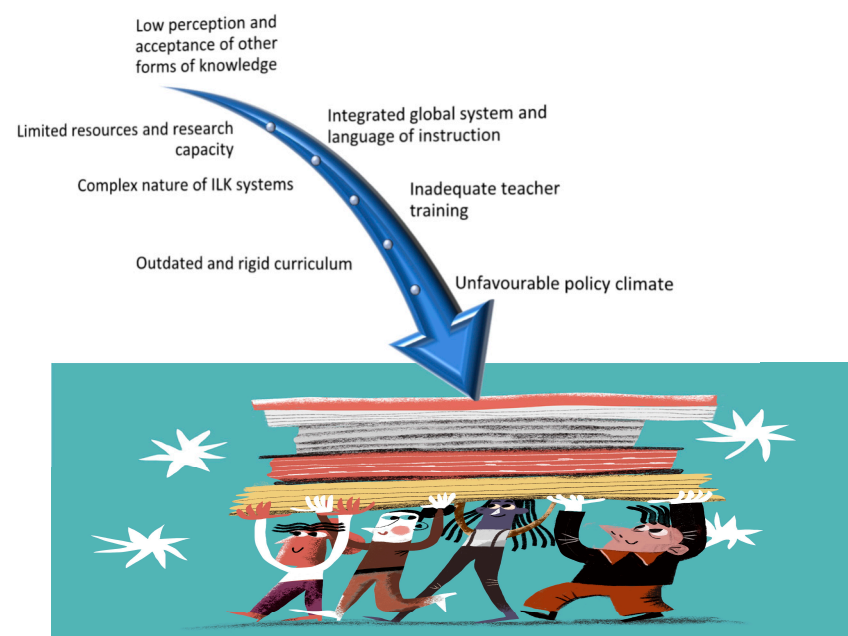
of local participation was minimal. Dino et al. [126] acknowledged that mining companies ought to have been included in the discussion, with their representatives participating in collaboration with the local education institutions in Angola, Cabo Verde, and Mozambique. Local actors (such as local miners) with a good understanding of cultural and traditional mining practices, values, and perspectives needed to be part of such an interesting initiative and were given equal space particularly to make constructive contributions to the SUGERE project. Their ideas ought to have been taken into the whole design as traditional knowers.

In the following section, we discuss various limitations identified in the studies alongside challenges we observed that may work in different contexts to limit meaningful efforts to decolonise CCEE in Africa.

7. Challenges Underlining the Decolonisation of Climate Change and Environmental Education in Africa

Diverse challenges were uncovered that can hamper decolonisation efforts in CCEE in Africa. Figure 5 and the following subsections summarise these challenges, which include unfavourable policy climate, outdated and rigid curriculum, inadequate teacher training, complex nature of ILKs, limited research and resources, the language of education, integrated global system, and low perception and acceptance of other forms of knowledge.

Figure 5. Challenges underlying decolonisation of CCEE challenges in Africa.

7.1. Unfavourable Policy Climate

Colonialism and postcolonialism played an essential role in creating and sustaining a policy climate that discriminated against ILK. In Tanzania, Scholz et al. [127] (p. 4) note what they referred to as "a 'copy-and-paste' design of the planning legislation and the planning education" that is similar to what was found in 1940s England and constitutes an obstacle to the introduction of new approaches and subjects, such as decolonised climate change education. In this context, the integration of ILK is inhibited by the lack of recognition and apparent alienation in national and sub-national education policies [99,111]. It can be argued that African policymakers and education managers contribute to epistemic injustice by attributing epistemic attention deficit to ILK [128]. This helps to perpetuate the initial testimonial injustice committed by colonial regimes and colonial-era education managers. By continuing with this tradition, many existing national education policies and systems do not promote Indigenous knowledge and local perspectives on climate change and the environment, including traditional strategies that have historically been

employed by Indigenous people [71,129]. Loya [71] explains that educators often claim or seek to maintain neutrality and fairness in teaching and learning processes but they miss existing power dynamics and how their approach contributes to sustaining the inequity systems. Also, their neutrality causes them to fail to recognise differences and diversity of knowledge systems, which also prevents incorporating learners' voices and those of other marginalised groups.

7.2. Outdated and Rigid Curricula

Like unfavourable policies, rigid Western-oriented curricula are noted to constitute a serious barrier to the decolonisation of education in Africa. Many authors agreed that African curricula tend to follow the European model and are rooted in colonial planning models that are flawed, alienating African stakeholders, Indigenous cultural values and practices, and are therefore inconsistent with the African environment, development needs, and sustainability [127,130]. In Zambia, for example, education planning processes were observed to follow Western systems and the inclination towards the West has not adequately represented the cultural traditions, norms, and perspectives of Zambians [127]. The rigid curriculum structure and content constitute a significant barrier to place-based learning because it weakens teachers' freedom to make modifications by creating spaces for ILK in their teaching processes. For example, in textbooks, the presentation of environmental pollution tends to omit local scenarios, which are critical proximate environmental issues that students need to be aware of. Instead, many textbooks use examples, scenarios, and concepts related to Western weather, which do not directly concern the learners and are unknown to their local experiences [115].

7.3. Inadequate Teacher Training

Meaningful decolonisation and adjustment in African education systems need critical attention on teacher education to prepare the workforce for the implementation of any planned change. Limited information exists in the studies reviewed on how teachers are being prepared to facilitate African-centred CCEE. Kruger [131] contends that environmental education is not adequately integrated into teacher training in South Africa. Although science educators who participated in Opoku and James' [99] study acknowledged the value of ILK, they hardly accommodated it in their teaching. The teachers were limited by some inherent challenges that included less exposure and training on issues around ILK during their pre-service education. They also noted teachers' limited understanding of ILK and the science of nature and concerns about teaching what may be regarded as false science. Singh-Pillay's [123] paper gave attention to decolonial approaches in pre-service teachers' training but does not sufficiently address environmental and climate change-related issues from local people's perspectives and Indigenous knowledge systems.

7.4. Language of Instruction

The languages of instruction at different levels of education in many African nations are not Indigenous or able to appropriately convey Indigenous perspectives. English and other foreign languages that are used as mediums of instruction in Africa contribute to reinforcing colonial and Western processes and knowledge hegemonies [4]. In the study by Kerr et al. [102], clashes of language, cultural norms, and terminology were among the significant challenges experienced during the implementation of the Farming for Change project that sought to promote the co-creation of curriculum and collaborative engagements. Critical obstacles were experienced in harmonizing and conveying embedded technical information in local languages to the farmers. Zimu-Biyela [4] pointed to a need for a transformative process that opens spaces for local languages.

7.5. Complex Nature of the Indigenous and Traditional Knowledge Systems

Complexity within and among various local and Indigenous knowledge systems also presents varying challenges. Their histories, conceptions, expressions, and outcomes

differ. Though these could be strengths and represent diverse encounters and engagements that illuminate people's relationships with their environment and knowledge systems, harmonising these posts some challenges that range from difficulties in building consensus among diverse stakeholders to coordinating resources [132]. Tanyanyiwa [133] explained that teachers in the schools they studied found it challenging to know what should be included or excluded in their teachings. Across Africa and within each African country, there are diverse African communities, traditions, languages, and ways of knowing, making the concept of indigeneity difficult to harmonise.

7.6. Low Perception and Acceptance of Other Forms of Knowledge

Many studies pointed out that ILK have low perception and acceptance among different categories of stakeholders. They are often seen as fetish, primitive, and unrefined local practices and, thus, are discriminated against in education [4,122,133,134]. The treatment of African ILK as a fetish and non-science leads to higher-order rejection locally and abroad. While academics may be culpable in alienating ILK, they are generally neglected because they are considered not commercially viable [110,111]. A respondent in Mbah et al.'s [111] (p. 5) study argued that "…you are looked down upon, and you are not taken seriously, and that's another challenge if you are into African Indigenous knowledge systems and even if you are publishing that. I don't think people will take you seriously". The marginalisation of ILK is boosted by Western influences on African academics and historical marginalisation that began with colonial administrations and has been sustained by post-colonial African governments [111].

7.7. Integrated Global System

Another major challenge observed in the literature is that the decolonisation of CCEE is caught in the web of thorny African integration into the global system, with its teaching, language, policy, economy, and governance embedded into the global structures that overemphasise international relationships and adherence to the global rules [117]. The international power play between the dominant Western powers and African states within the overemphasised global policies and post-colonial inter-country relations contribute to sustaining and exacerbating the epistemic exclusion of the African knowledge systems. Hermeneutical injustice manifests through overwhelming influences and power that constrain people's ability to recognise, understand, and communicate their own experiences because those who occupy the advantageous positions to validate what should be collective social understandings and knowledge systems do not consider them worthwhile [78].

7.8. Limited Resources

Much of the studies reviewed note resource constraints as a challenge to the promotion of alternatives to the Western education system, including Indigenous and traditional education systems (e.g., [4,114,115]). The advancement in the multiplicity of Indigenous and traditional methods entails substantial financial commitments for research, documentation, and manpower development [134]. For example, limited time, material, and financial resources were among the major limitations to the implementation of SEEP curricula that integrated community interaction and local knowledge [4]. Velempini et al. [114] also report that while teachers showed interest and attempted to integrate environmental education into their lessons related to local places, names, and situations, their efforts were limited by a lack of relevant educational resources to support them. They also needed more teacher training to promote the integration of traditional and Indigenous knowledge into the curriculum. These are just a few instances and the respective local knowledge systems would require a bespoke approach to incorporate decolonisation efforts with attendant financial implications.

7.9. Limited Research Capacity

The number of studies that were returned by the search suggests that there is a narrow range of research and publications that have examined or focused on decolonial approaches to CCEE. It suggests that policymakers and education managers may have limited evidence to support any need for meaningful change. Furthermore, whereas the epistemic credibility perspective contends that knowledge is always biased, partial, value-laden, and associated with specific socio-political views [71], limited evidence and information to guide discussions and interventions around epistemic inclusivity can contribute to exacerbating the existing alienation, exclusion, epistemic injustice, and violence. On the one hand, this also contributes to limiting local actors' efforts to use evidence to demand justice while, on the other hand, it bolsters any claim about the ILK lacking evidence, which could become a reason to further alienate them. Loya [71] discusses epistemic credibility as the authority an individual has to obtain to create knowledge. This authority is often preceded by an assessment of an individual's knowledge and authority by others based on what they have known about the individual. The absence of initial knowledge about an individual or information that may be used to assess them leads to their judgments based on what they appear to the assessors [71]. Thus, African scholars may be said to be complicit and implicated in the continued epistemic injustice because they failed to produce ample evidence-based information that can be accessed to accord relevant credibility in the information marketplace.

8. Implications for a Decolonised Climate Change and Environmental Education

The preceding insights have numerous implications for the decolonisation of CCEE in Africa. In this section, we summarise some of these implications along with important recommendations.

8.1. Emancipation of Scholarship

Three exclusion levels relevant to our current discussion have been theorised (see [65,67]). The first level relates to the exclusion of a person from participating in an epistemic system because of an inherent inconsistency in the system's running, as observed in the colonial system era. The second level of exclusion builds on the first to consistently obscure the epistemic interests of specific knowers. This is inherent in the way postcolonial machines function, underpinned and sustained by asymmetric power relations within the global capitalism and neoliberal systems. These work together to undermine epistemic justice in Africa. The last level builds on the first and second to weaken the entire system and work against the epistemic interests of specific knowledge holders. Dotson [65] queries why such systems that inhibit epistemic agency should be further developed. This lies at the heart of the demand for the dismantling of inhibiting structures in Africa through decolonisation because, as Pohlhaus Jr [67] contends, the problem may not be addressed by further development of such a system. A major challenge is that there appears to be an absence of willpower, commitment, and ample resources to undertake such dismantling efforts in most African states.

A critical and problematic situation created by these levels of exclusion is that those who are denied epistemic attention and epistemic inclusivity and suffer epistemic violence find themselves in a condition of reduced ability to influence others in the epistemic community. They become incapacitated in their effort to set an acceptable agenda for or within the epistemic community and contribute to the establishment of the shared common ground in the epistemic community [128]. The observed gaps in the availability and depth of evidence on integrating ILK in CCEE in Africa suggest possible obliviousness to the situation, limited interests of African scholars, and possible assumptions that other actors may know what to do and can do the right thing. The concern over the marketability of alternative perspectives and knowledge may be affecting interests. With regards to the assumptions, de Sousa et al. [112] confessed that they assumed that teachers were involved in the community transformation, addressing CCEE as part of their work in the community,

but this was not the reality because the teachers were not doing so. Their experience is an example of a consequential error in such assumptions, which needs to be addressed by the sensitisation and emancipation of African climate education scholars. Following their positivist past, the experiences of de Sousa et al. [112] led to their realisation and further confession that "we also need to learn how to share this [farmers' information] without dominating the interaction. To do this, we need to enable the participants to recognise the value of their contributions to the process" [112] (p. 79). This kind of self-awareness is also required among scholars, policymakers, and civil society advocates to effectively push for the dismantling of obstacles to agency and empowerment of Indigenous knowers.

8.2. Decolonising Policies and Curricula

One of the legacies of colonialism on education in Africa is its influence on education policies and curricula in ways that historically separated African learners from their Indigenous histories, experiences, and environmental realities [4,115,127]. As such, many postcolonial education systems continue to privilege and romanticise Western knowledge and cultures to the detriment of Indigenous ones. As a result, policies and curricula require critical reforms along with teacher (pre-service and in-service) training, teaching content, and educational materials to enable teachers to decolonise their classroom practices and teaching processes. Ajaps and Mbah [115] observe that contents and examples in the Nigerian secondary school final year Geography curriculum do not mention or emphasise major environmental issues in Nigeria and queried whether the learners are being trained to mitigate and adapt to alien environments. To make real progress, such policies and curricula need to be decolonised to make education relatable to learners.

8.3. Local Knowledge to Address Local Climate Change and Environmental Issues

Further to the need for policy and curriculum reform, some of the literature reviewed agrees that what Africa needs is a knowledge system that supports its development needs and addresses its challenges, including climate change [4,115,134]. This implies that the education system should be rooted in and reflect African conditions, values, perspectives, experiences, and discourses at all levels of education. UNESCO [129] harps on the need for local education curricula to integrate ILK but such integration ought to align with relevant national curricula, reflecting national development interests, and promoting context-relevant CCEE for the younger generation. Blending ILK with what is considered conventional education curricula has a promise of enhancing learning and reducing language and cognitive barriers and makes the work of teaching easier because both the teacher and learner would be able to make the connection between theory and practice. A respondent in Velempini et al. [114] (p. 1007) voiced their frustration about non-contextualised teaching and learning processes, as follows:

> *Planning for lessons took a lot of work. The examples given in textbooks could have been easier to understand by the students. There are rumours that students in rural villages fail examinations more than students in towns. The reason is that this textbook has a lot of examples that are found in cities. There is little from rural villages. How can a student from a town in Okavango region be asked questions that include the experience of a passenger train?*

People's knowledge structures and processes are among their cultural artefacts; hence, it is an injustice to exclude their key cultural artefacts and introduce foreign artefacts for their use in combating their localised (as well as globalised) challenges such as climate change and environmental challenges [135]. Lessons from studies that reported place-based education, project-based education, and other decolonial forms of education (e.g., [114,118,136]), which tilted towards a learner-centred approach, essentially point to a need to promote an approach that provides an opportunity to contextualise learners' experiences and make learning sensitive to their socio-cultural backgrounds.

9. Conclusions

This review examined key considerations for the decolonisation of CCEE in Africa by reviewing journal articles that draw on primary studies and were published between 2015 and 2022. The findings of the review show that there are both challenges and opportunities for effective decolonisation of CCEE in Africa. Colonialism contributed to exacerbating inequalities among countries and groups within countries and produced an underdeveloped mindset in colonised people. In relation to education in general (which CCEE are part of), it created conditions for excess epistemic attention and credibility excess for the Western knowledge system while the according epistemic attention deficit to ILK exacerbated the observed hermeneutic injustice. The persisting epistemic exclusion and alienation of ILK affect the quality of what is learnt in local schools in Africa because learners cannot always connect many subjects and issues learnt in formal schools to their daily experiences in socio-cultural contexts.

Decolonisation generally targets unequal power relations, exclusion, and inequity and seeks to correct the colonial-induced imbalance. In the context of climate change education, decolonisation means addressing the extant exclusion and alienation and promoting inclusion and epistemic agency. The review uncovered various projects that have been implemented as part of the search for decolonial approaches to CCEE. These include projects that adopted Participatory Action Research (PAR), knowledge co-creation, integrative curriculum, culturally sensitive and responsive pedagogy, experiential learning, and place-based education. However, these have been quite limited due to unfavourable policy environments, outdated and rigid curricula, inadequate teacher training, the complexity and nature of the ILK systems, and limited resources and research capacity. It is also unclear how these may work for different learners when scaled up and integrated into the broader education systems.

Nonetheless, this systematic review has some limitations. For instance, restricting the years of publication to 2015–2022 meant that some vital articles published after 2022 or before 2015 may have been excluded. Secondly, restricting the inclusion of articles that were only published in English can be problematic in that, in the presence of translated versions of articles published in other languages, the number included would have increased, rendering the process more inclusive. Lastly, as with most systematic reviews, the process of article screening can be subjective and it is possible that the authors would have missed out on including or interpreting an article and its content appropriately. In spite of these limitations, the findings of this review have strong merits in terms of originality, rigour, and broader implications.

In summary, we maintain that multidimensional approaches to decolonisation are required to promote African-centred CCEE. Firstly, effective decolonisation of CCEE demands African scholars to interrogate the existing theories, interventions, and evidence that underpin subsisting practices. Considering that research can be used to promote or question prevailing beliefs and practices, African scholars have a responsibility to produce more requisite evidence of the impact of the ongoing epistemic exclusion in different locations, contexts, and education components. As the nature of the studies points out, there is a need to increase the quality and quantity of research across different levels and types of education, as well as African countries and localities, and key topical issues relating to the decolonisation of CCEE in Africa. African scholars also need to lead in the generation of reliable evidence of the benefits of decolonised education frameworks and how such frameworks may be scaled up. At the policy and programme level, policymakers and education managers need to wake up to their responsibility of developing epistemically inclusive education policies, curricula, and learning frameworks. To do this efficiently, they need to draw on relevant research to develop evidence-based policies and curricula. The local knowledge holders also need to open their doors to welcome both academics and policy actors to document ILK and make them an integral part of national education systems.

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