European Journal of Sustainable Development Research
2025, 9(4), em0327
e-ISSN: 2542-4742
https://www.ejosdr.com/

MODESTUM

Review Article

OPEN ACCESS

Impact of regional inequalities on sustainable development strategies in Africa: A systematic literature review analysis of economic, social, and environmental challenges

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Citation: Tavares, W. S., Correia, L. T., Rego, M. C. P., & Loiola, T. (2025). Impact of regional inequalities on sustainable development strategies in Africa: A systematic literature review analysis of economic, social, and environmental challenges. *European Journal of Sustainable Development Research, 9*(4), em0327. https://doi.org/10.29333/ejosdr/16772

ARTICLE INFO

Received: 11 Feb. 2025

Accepted: 25 Jul. 2025

ABSTRACT

Regional development remains a pressing political priority for valuing marginalized spaces and communities that sustain productive ecosystems. However, integrated analyses of Africa's economic, social, and environmental disparities are critically lacking. This study bridges this gap by systematically reviewing 49 Web of Science-indexed works, combining bibliometric mapping with critical content analysis to decode structural inequalities. Methodologically, brings an innovative sense by intersecting sustainable development goals (SDG), driven thematic clusters such as climate adaptation and transformational poverty, with spatial-economic diagnostics, revealing how unemployment, low productivity, and weak specialization in African countries, exacerbate migration and ecological degradation, spreading inequalities. Theoretically, we demonstrate how emergent research prioritizes cross-disciplinary SDG frameworks yet often overlooks the role of grassroots agency in co-designing poverty-alleviation strategies. Key findings highlight the urgency of centering community-led environmental adaptation and scientific-policy synergies to address Africa's development paradoxes. Our analysis advances contributions for aligning regional inequality studies with SDG implementation in low-resource contexts.

Keywords: regional inequalities, sustainable development, environmental disparities, social inequalities, poverty

INTRODUCTION

Africa's developmental trajectory has long been shaped by the interplay of inequality and sustainability challenges. Despite economic growth in many regions, disparities in income, education, healthcare, and access to resources remain pervasive, exacerbating social fragmentation and hindering long-term resilience. Simultaneously, the global push for sustainable development particularly through the United Nations' agenda 2030 and the African Union's agenda 2063 has reframed policy debates, emphasizing the need for inclusive, environmentally conscious strategies. Academic research has mirrored these shifts, evolving from early macroeconomic inequality analyses toward integrated frameworks that link poverty reduction, climate adaptation, governance reforms, and technological innovation.

This study employs a bibliometric analysis of Web of Science (WoS)-indexed articles and international institutional publications to investigate the persistent nexus between regional inequalities and sustainable development in Africa. Far from being a natural outcome of market forces, spatial inequality on the continent is a direct legacy of colonial planning and neocolonial economic policies. Inequalities status are not static constructs but products of historically embedded processes of accumulation and exclusion. They emerge through mechanisms that reinforce disparities, consolidate under stable power structures, and ultimately fracture when confronted with epochal disruptions, wars, epidemics, revolutionary movements, or decolonization. These ruptures create openings for new regimes of inequality

to take shape, often replicating or reconfiguring earlier hierarchies (Alvaredo & Atkinson, 2022; Capitango et al., 2022; Chancel et al., 2023; Frankema et al., 2024).

Different schools of thought propose divergent paths for the emergence of spatial and economic inequalities. Thus, the debate between the convergence school and the divergence school offers different perspectives on how regional inequality evolves over time. The convergence school suggests that as economies develop and mature, regional inequalities decrease. This occurs because, at an advanced stage of development, the free mobility of capital and labor tends to mitigate regional disparities, allowing less developed areas to benefit from overall economic growth (Nijman & Wei, 2020). However, this assumption neglects how colonial infrastructure designed for resource extraction rather than equitable development, continues to distort Africa's economic landscape (Frankema et al., 2023; Tanui, 2021)

On the other hand, the divergence school challenges this optimistic view of the convergence perspective, arguing that regional inequality not only persists but may even increase over time. This happens because the concentration of capital, resources, and infrastructure in more developed areas creates an accumulation cycle that reinforces spatial inequality. Instead of reducing disparities, the agglomeration of investments and economic growth tend to further benefit the more advanced regions, intensifying inequalities between them and the more peripheral regions.

This more skeptical approach to convergence suggests that globalization and technologically modern development do not necessarily promote equal growth but rather uneven development, where some regions become increasingly prosperous while others remain or become more marginalized. This contrast between the two schools offers a critical reflection on regional development policies, highlighting the need for more targeted and balanced interventions to ensure that economic growth benefits all regions equitably (Capitango et al., 2022; Nijman & Wei, 2020; Odusola, 2019).

Equitable growth is usually explored through an approach focused on an inclusive economy, which aims to combat inequality by integrating more people into productive processes and improving the management of natural resources. This model not only seeks to ensure that more individuals, especially marginalized ones, have access to economic opportunities, but also that development is sustainable, benefiting future generations and reducing regional and social disparities. By integrating sustainability priorities with the sustainable development goals (SDGs), this approach can contribute to reducing inequalities by providing a framework for public policies that ensure economic growth equally benefits the most vulnerable and marginalized populations (Juma & Khademi-Vidra, 2019; Molefe & Inglesi-Lotz, 2023; van Niekerk, 2020; Zreik et al., 2024).

METHODS

Bibliometric analysis is a powerful tool for exploring and quantifying information in scientific publications. It allows the identification of emerging trends, knowledge gaps, and the measurement of the impact of journals, authors, and

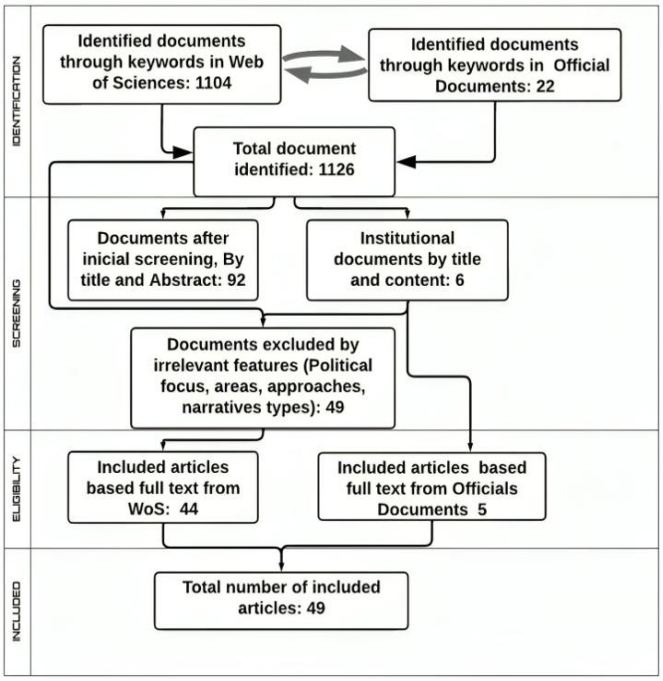

Figure 1. PRISMA flow diagram (Adapted from Arsova et al., 2022)

institutions, aiding in the understanding of the structure and evolution of a given research field. For the analysis and visualization of the volume of available bibliographic data, the VOSviewer tool was used, enabling the identification of widely discussed topics and knowledge gaps through co-occurrence, citation, and co-citation maps. It also allowed for the highlighting of key authors and articles, enriching the analysis.

The review study was developed in five stages: planning, systematic search, screening, organization in the Zotero database, and description of results. The research was primarily based on journals from the WoS database, complemented by a selection of official documents from international organizations. Terms such as "regional inequality AND Africa AND sustainable development" were used to assess concepts, development trends, and literature in the scientific field. Approximately 1,104 documents were found in WoS and 22 documents in relevant institutional publications from the period 2019-2024. Additionally, 92 studies were identified through abstract and title review, with 6 additional relevant articles from institutional communications. Following an in-depth reading and analysis, about 49 articles were excluded due to low relevance, distant disciplinary areas, political focus, or narratives outside the three economic, social, and environmental dimensions, making them less influential for the research. In total, 49 articles were included based on topics, objectives, and results, allowing for the establishment of networked trends for future research. The structure in **Figure 1** reflects the entire process of identification, selection, exclusion and inclusion.

A total of 49 co-authoring researchers were selected, with 44 from the WoS database and 5 from institutional literature, aiming to conduct visual mapping and classification. This technique allows for the identification of thematic connections, visualization of trends and patterns, and

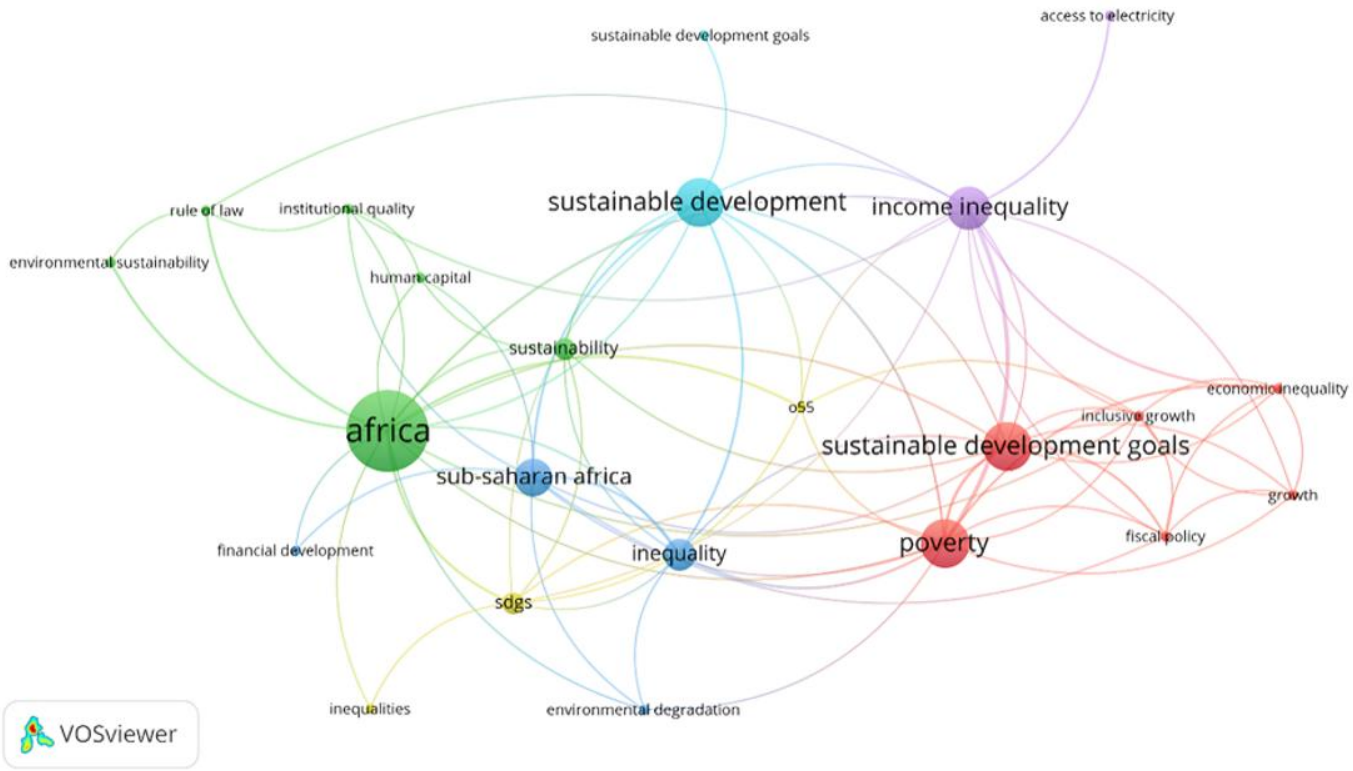

Figure 2. Keywords co-occurrence network (Source: Authors' own elaboration, using VOSviewer)

revelation of related concepts within a discipline. The network visualization of keywords can be interpreted as follows: Thicker connection lines indicate a stronger link between keyword groups. The size of the "nodes" represents the frequency with which a keyword appears. As shown in **Figure 2**, the most frequently discussed keywords by researchers include Africa, sustainable development, poverty, income inequality, and sub-Saharan Africa (SSA). Moreover, smaller nodes or keywords with fewer links have the potential to become new research topics in the future, as noted by Arsova et al. (2022).

Figure 2 also reveals how African development challenges coalesce into three interconnected dimensions. The green cluster represents Africa, highlighting elements such as environmental sustainability, institutional quality, human capital, the rule of law, and sustainability, which are strongly interrelated in the authors' works. The blue cluster establishes a significant relationship between sustainable development and its paradoxes: how progress in SSA remains entangled with persistent inequality and environmental costs. The red cluster, dominated by the keywords "poverty" and "sustainable development goals", forms connections with indicators such as economic inequality, inclusive growth, and fiscal policy, leading to a multidimensional (economic-political and environmental) trap, as called by Odusola (2019) and Ssekibaala and Kasule (2023).

RESULTS

This section explores the intellectual landscape of regional development research in Africa through two interconnected lenses. First, it analyzes co-authorship networks to uncover collaborative patterns among key scholars, revealing how knowledge production is shaped by partnerships and influential contributors. Moving beyond collaboration structures, the discussion then traces the evolution of scholarly thought, tracking how theories, methods, and policy prescriptions have adapted to Africa's unique developmental context. By examining citation trends and thematic shifts, the analysis reveals a critical transition: the gradual convergence of sustainability frameworks with inequality discourse. This synthesis not only charts academic progress but also underscores unresolved tensions in the pursuit of equitable and resilient development across the continent.

Co-Authorship Analysis

In studies on regional development in Africa, several prominent authors stand out: Simplice A. Asongu, economist and director of the African Governance and Development Institute (research department), is responsible for approximately 435 articles and 2,328 citations (35%), with an annual average of 305 citations. His research areas include knowledge economy, inclusive development, development models, and financial development. Ogundipe Adeyemi, professor at Covenant University (Nigeria), has 2,342 citations and specializes in macroeconomics, environmental dynamics, and economic resources. Felix Kwabena Donkor, sustainability scientist at the University of South Africa, has 1,085 citations since 2019. His research covers natural resource management, livelihood resilience, sustainable agriculture, disaster risk reduction, and education for sustainable development.

Six co-occurrence clusters in authorship were identified in **Figure 3**, with Simplice A. Asongu having the largest co-occurrence network among authors, appearing in three studies within the organized database.

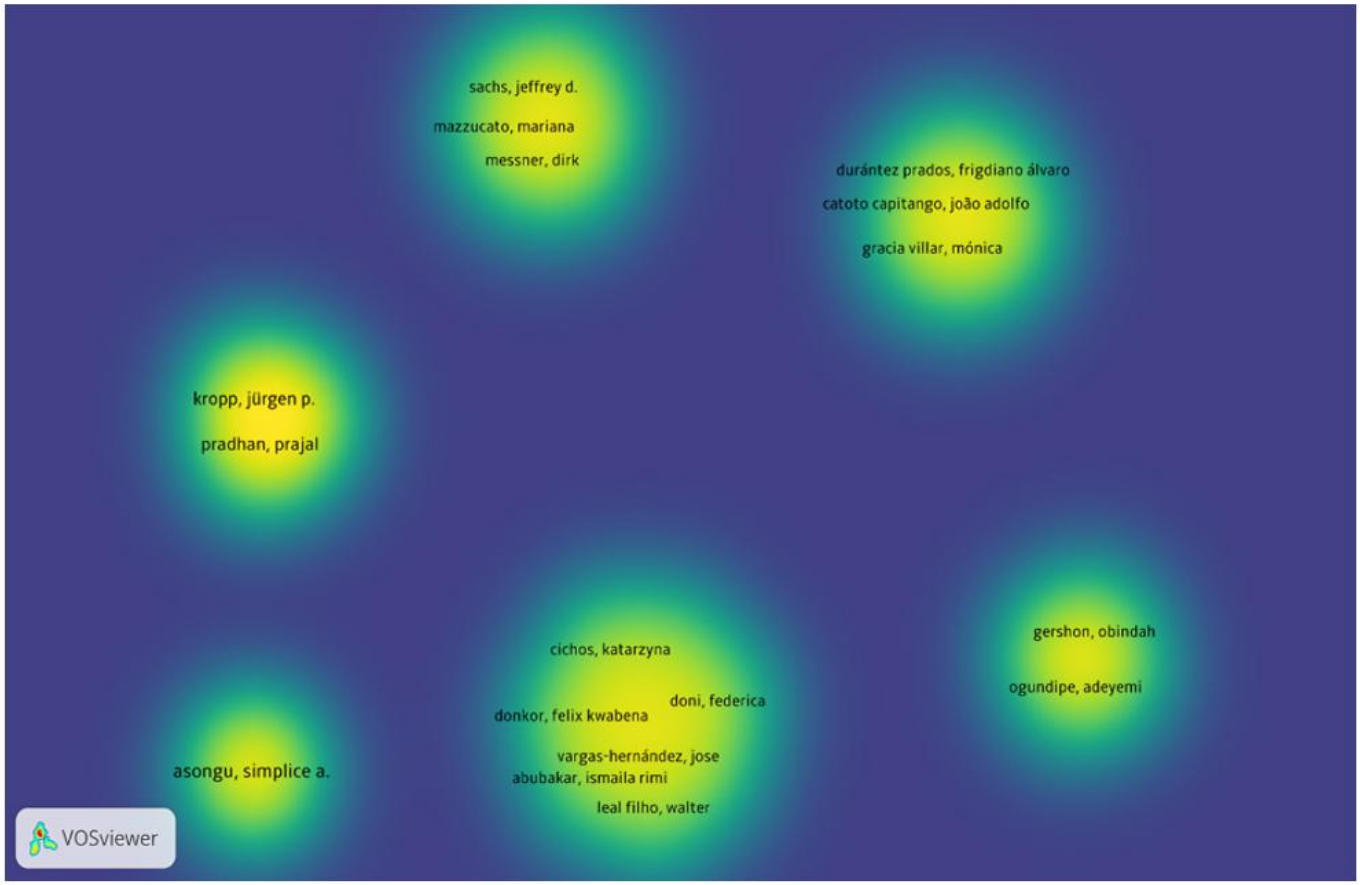

Figure 3. Map of author´s co-occurrence (Source: Authors' own elaboration, using VOSviewer)

Table 1. South African key studies on inequality/sustainability research

Authors & title	ToA	Discipline	Explored indicators	Results
Gamette et al. (2024). Access to electricity and income inequality in sub-Saharan Africa: An exploratory review	1990-2022	Economy	Percentage of access to electricity, groups in cities with access, social groups in rural areas with access	Urban electrification has driven economic growth, but rural areas still face challenges due to uneven improvements. To address these issues, it is necessary to implement inclusive growth policies, ensuring that the benefits of electrification reach all income groups and reduce inequalities.
Sarkodie and Adams (2020). Electricity access and income inequality in South Africa: Evidence from Bayesian and NARDL analyses	1990-2017	Economy	Percentage of access to electricity, Gini index, GDP per capita, corruption	The study shows that income growth is related to better access to electricity, but the affordability of energy services remains a significant barrier. Renewable sources and decentralized systems, such as off-grid and mini-grids, are cost-effective alternatives for expanding electricity access.
Ramaano (2024). Sustainable tourism development activities and planning systems in Vhembe District, Limpopo Province, South Africa: A comprehensive eco-touristic perspective	1913-2013	Economy	Community tourism, tourism infrastructure, communities resources	The study highlights rural areas as ideal tourist destinations, including adventure, cultural, ethnic, and ecotourism. It proposes tourism as a strategy for the sustainable development of local communities, providing a foundation and recommendations for implementing this approach.

Note. ToA: Time of analysis

Geographical Distribution of the Most Targeted African Countries in Research on Inequalities and Sustainability

To map the geographical distribution of African countries most frequently examined in inequality and sustainability research, this study identifies the primary nations represented in our bibliographic review (**Table 1**, **Table 2**, and **Table 3**).

Most Searched Journals

Among the most explored journals, the one highlighted in **Table 4** are African Development Review and Sustainable Development.

Evolution of Inequality Analysis and Sustainable Development Strategies in Africa Over the Years

The results indicate a growing trend in studies on inequality and sustainable development, with a particular focus on regional inequalities and sustainable development strategies in the WoS database, peaking in 2020. This increase occurred in the context of the COVID-19 pandemic, which exacerbated social inequalities, disproportionately affecting the most vulnerable groups. During this period, numerous studies emerged to understand the extent of the problem and to identify strategies to mitigate its impacts, which continue

Table 2. Angola and Nigeria key studies on inequality/sustainability research

Authors & title	ToA	Discipline	Explored indicators	Results
Capitango et al. (2022). Inequalities and asymmetries in the development of Angola's provinces: The impact of colonialism and civil war	1975-2020	Social sciences	Social indicators (infrastructure, health, education), productivity; employment and public investments	Angola faces regional inequalities, which drive migration to major urban centers. During the colonial period, regional characteristics were not considered, resulting in deep inequalities.
Molefe and Inglesi-Lotz (2023). Examining the water-energy-food (WEF) nexus through an SDG lens for the big 5 African countries	2000-2015	Economy and econometrics	GDP, gross capital formation, industrial value added, labor force participation rate	The study highlights the increasing demand for food, water, and energy in the five major African countries (Angola, Ethiopia, Kenya, Nigeria, and South Africa), with distinct interconnections between resources. It emphasizes the need for sustainable and green development strategies to address limited resources and ensure food security.
Deinne and Ajayi (2021). Dynamics of inequality, poverty and sustainable development of Delta State, Nigeria	2003-2020	Social sciences	Spatial variation of poverty and household inequality (sanitation, accessibility, water source)	Chronic poverty in the Delta is concentrated and linked to inequality and household conditions. Improvements in infrastructure and sanitation are crucial.

Note. ToA: Time of analysis

Table 3. Kenya key studies on inequality/sustainability research

Authors & title	ToA	Discipline	Explored indicators	Results
Juma and Khademi-Vidra (2019). Community-based tourism and sustainable development of rural regions in Kenya; Perceptions of the citizenry	2019	Regional development	Potential economic activities in Kenya, community-based tourism and economic sustainability, community-based tourism and the rural environment	Community-based tourism promotes inclusion and responsibility. Local networks should be expanded to enhance community benefits and sustainability.
Zreik et al. (2024). Infrastructure development, inequality, and employment in sub-Saharan Africa from the professional perspectives of Kenya, Ghana, and Tanzania	2001-2021	Social sciences	Infrastructure challenges, inequalities, employment trends, impact policies	The need for alignment between educational curricula and market demands. Public-private partnerships can enhance efficiency in infrastructure projects.

Note. ToA: Time of analysis

Table 4. Most explored journals (SCImago)

Most searched Journal WoS indexed	NA	IF	DV	Institutional publications	ND	NC	Country
African Development Review	7	3.1	87,961	UNRISD	3	22	Cote D´Ivoire
Sustainable Development	5	9.9	731,424	PNUD (2021)	1	562	UK
Journal of Cleaner Production	4	9.7	13,500	World Bank	3	10,630	UK
Sustainability	2	3.3	37,500	World inequality report	1	9,580	Switzerland
Science of Total Environment	2	8.2	10,279	FMI	1	5,651	Netherlands
Environmental Development	2	4.7	823				Netherlands
Journal of Asian and African Studies	2	1.1	s/d				UK
Journal of Social and Economic Development	2	1.1	1,610				Germany
African Geographical Review	2	0.9	319				UK

Note. NA: Number of articles; IF: Impact factor (2023); DV: Documents viewed in WoS; ND: Number of official documents; & NC: Number of citations in WoS publications (2023)

to be felt today, alongside wars, food shortages in African countries, the deterioration of states duties and rights, and the significant influence of climate change on African societies (**Figure 4**).

Bibliometric Results and Content Analysis on Regional Inequalities

This research presents a content analysis aimed at deepening the understanding of regional inequalities, highlighting the conceptual approach used in the analyzed studies. This effort provides an integrated view of thematic trends and academic discussions on the topic, contributing to the consolidation of new perspectives and research pathways.

Conceptual perspectives on regional inequalities

According to Eva et al. (2022), regional economic inequalities refer to high disparities and structural differences, resulting in extreme variations in regional reactions to external shocks. According to these authors, spatial disparity contributes to the rise of "places that do not matter," fostering populist beliefs and nationalist territorial positions over the past decade. Inequality is measured at the regional level within countries, generally focusing on underdeveloped regions in comparison to others (Chancel et al. 2023; Deinne & Ajayi, 2021; Eva et al., 2022).

Adeleye et al. (2020), conduct a study on growth, poverty, and inequality, describing how the prevailing poverty in Africa appears to be worsening with the rise of inequality worldwide.

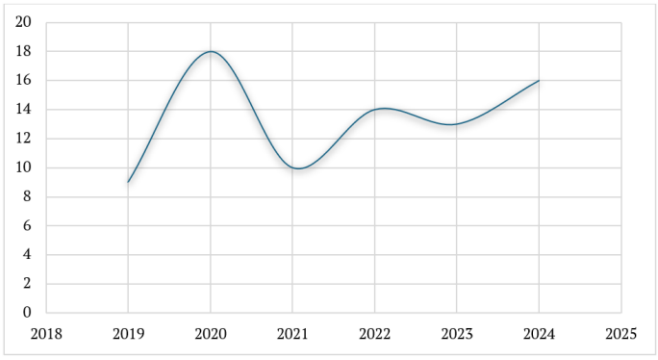

Figure 4. Number of articles researched trough the years (Source: Authors' own elaboration)

This inequality manifests as income disparity, gender inequality, inequality of opportunities, differences in living standards, healthcare inequality, and energy inequality. When analyzing the growth-poverty-inequality trilemma, the authors observe that despite the economic growth recorded in developing countries, poverty and inequality persist within cities and across regions in these nations.

The authors establish a profound reasoning regarding income inequality and its behavior at different levels of economic development. They argue that inequality tends to increase in emerging economies during periods of economic growth, while it decreases in developed countries. However, in the context of GDP growth, issues such as poverty and inequality can be exacerbated by external factors such as climate change, global pandemics (COVID-19), and economic shocks (Wudil et al., 2022). The study examines the tripartite connection between growth, poverty, and inequalities in various ways, using different poverty measures to analyze similar scenarios. However, due to the lack of poverty data in some countries, the study employs consumption and expenditure as proxies for measuring poverty. The research utilizes a panel dataset covering 58 countries from Latin America and the Caribbean and SSA over a 16-year period (2000-2015). The following variables are analyzed: per capita consumption expenditure, GDP growth rate, Gini index, education level, unemployment rate, as well as household per capita consumption as an indicator of poverty (Adeleye et al., 2020; Dorofeev, 2022; Wudil et al., 2022).

Inequality is multifaceted and complex, involving disparities between individuals and groups in both opportunities and outcomes. It can be classified into two types: vertical inequality, which refers to the distribution of income or wealth among individuals, highlighting the differences between the richest and the poorest, and horizontal inequality, which involves disparities based on identity factors such as gender, race, ethnicity, disability, among others. Additionally, the concept of intersectional inequalities addresses how multiple forms of disadvantage or privilege intersect and influence life opportunities, social mobility, and access to resources. Disadvantaged groups tend to be not only at the bottom of the wealth distribution but also deprived in multiple dimensions, such as education and health. (Chancel et al., 2022; Wudil et al., 2022).

For authors like Deinne and Ajayi (2021), the concept of inequality is associated with injustice, often manifested in the unequal and distorted distribution of income. Inequality implies the dispersion of income, consumption, or other welfare attributes and is frequently studied as part of a broader analysis of poverty and well-being. Income inequality can be considered in relation to several interrelated factors such as education, occupation, spending patterns, public health, regional, ethnic, and political differences. The Gini coefficient is the most commonly used measure to assess it. Inequality is a historical construct that has shaped the current global order, as the vast majority of humanity remains potentially deprived of realizing their full capabilities.

Capitango et al. (2022) report that inequality is an intrinsic characteristic of the Angolan economy, with disparities or asymmetries between provinces dating back to the colonial period. In each business cycle, Angola has experienced and continues to witness pronounced and unprecedented inequalities among its regions. The concentration of specific productive activities, as well as urban activities, has been centered in the megaprovince of Luanda (the capital). From a financial and technological standpoint, there is a significant disparity between provinces, with Luanda serving as the country's largest financial and business hub. Provinces with lower population density experience these differences more acutely, and these asymmetries tend to worsen since dominant extractive activities and artisanal fishing fail to drive sustainable development.

Determinants of the expansion of poverty and social inequalities

The relationship between institutions and income inequality in Africa has been widely studied, yet critical gaps remain. Kunawotor et al. (2020) emphasize that while corruption's impact on inequality is well-documented, other institutional factors are often overlooked. This narrow focus is challenged by Afolabi and Raifu (2024) and Anderson et al. (2022) who explore the bidirectional link between corruption and inequality, asking whether corruption fuels inequality or vice versa.

Empirical evidence suggests that corruption exacerbates inequality by undermining economic growth, distorting public spending (e.g., on education, health, and infrastructure), and enabling tax evasion (Sarkodie & Adams, 2020; Wudil et al., 2022). At the same time, high inequality can perpetuate corruption by concentrating power among elites which manipulate institutions to protect their privileges. To fully grasp this dynamic, studies must account for additional factors such as institutional quality, education, trade openness, government expenditure, and GDP per capita.

When examining inequality across Africa, striking regional differences emerge. Research by Chancel et al. (2023), Alvaredo and Atkinson (2022), Eva et al. (2022), Francis et al. (2020), Adeleye et al. (2020), Gamette et al. (2024), Kunawotor et al. (2020), Sarkodie and Adams (2020), and Xu et al. (2021) reveal that Southern Africa, particularly South Africa and Botswana, has some of the highest inequality levels globally, with Gini coefficients reaching 65%. In contrast, East African nations like Kenya exhibit moderate inequality (~40%), while North Africa (Algeria, Egypt, and Morocco) boasts the most equitable income distributions on the continent.

These disparities cannot be understood without considering historical legacies. In settler-colonial states such as South Africa and Namibia, European descendants still dominate economic power structures, with the top 10% controlling over 60% of national income. Colonial land dispossession, restricted access to education, and racially skewed labor markets entrenched systemic disparities that persist today. Meanwhile, former French colonies like Côte d'Ivoire and Madagascar show lower intergenerational mobility compared to former British territories, a divergence linked to differing colonial administrative policies (Alvaredo & Atkinson, 2022; Chancel et al., 2023). North Africa's relatively lower inequality may reflect the unifying role of Islam, pre-colonial social structures, or distinct post-independence development paths, though debates still continue on causes of lower inequality in these countries (Chancel et al., 2023).

Studies by Aust et al. (2020) and Xu et al. (2021) reveal that modern economic structures reinforce historical divides, by highlighting how trade liberalization and foreign direct investment (FDI) have perpetuated a persistent dual economy across the continent. These structures are characterized by extreme concentration of physical capital, human capital, and land ownership, normally compounded by labour market distortions and entrenched social stratification, creating what the authors describe as an "inequality ecosystem" where multiple reinforcing factors resist policy interventions.

The interplay of institutional weaknesses, corruption cycles, and historical path dependencies creates a complex network of causes behind Africa's inequality. While some scholars stress the need for stronger institutions (Kunawotor et al., 2020), others highlight how deeply rooted structural factors, from colonial era policies to geographic constraints shape modern economic outcomes. Bridging these perspectives is essential for policies aiming to reduce inequality across the continent.

The environmental inequality determinants: The relationship between economic disparity and environmental degradation in Africa reveals a self-reinforcing crisis. Baloch et al. (2020) demonstrate how income inequality directly drives environmental harm through dual mechanisms: affluent groups maintain high-pollution lifestyles to preserve status, while impoverished populations inadvertently degrade ecosystems through survival necessities and population pressures. This dynamic creates what Gamette et al. (2024) and Sarkodie and Adams (2020) term the "inequality-pollution trap", where weak environmental governance fails to regulate extreme.

Africa faces disproportionate climate vulnerability. Nyiwul (2021), highlights the continent's particular exposure through its rain-dependent agricultural systems, where climate shocks translate directly into food insecurity and economic instability (Mbajiorgu, 2020; Wudil et al., 2022). The cruel irony lies in the adaptation gap: those least responsible for emissions bear the heaviest costs, further widening social inequalities and worsening Gini coefficients. They emphasize the lack of involvement of affected populations in climate change mitigation and adaptation, which can deepen inequalities. Climate policies that do not consider these inequalities are insufficient to address the issue fairly and with institutional responsibility as illustrated in **Figure 5**. Furthermore, the

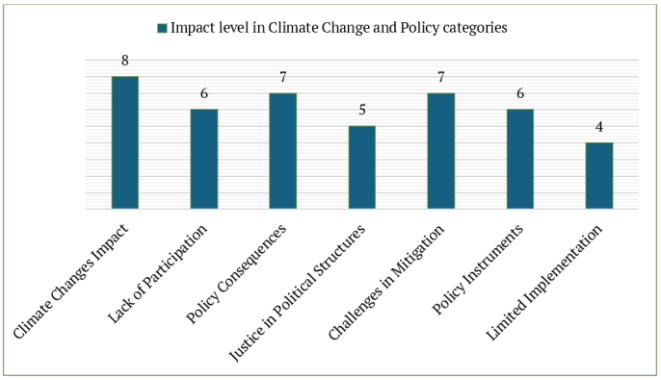

Figure 5. Challenge of climate change policy and inequality (Source: Authors' own elaboration)

implementation of market-based instruments, such as the carbon tax and Cap and Trade, has proven to be limited in climate agreements (Baloch et al, 2020) .

A dangerous synergy exists between environmental degradation and economic inequality in SSA, as revealed by (Baloch et al. 2020; Ssekibaala & Kasule, 2023). Their research uncovers a self-perpetuating cycle where rising poverty drives environmental harm through deforestation and particulate emissions, which in turn exacerbates existing inequalities in resource access and political power. This dynamic is amplified by systemic failures, weak environmental regulations and implementation, as demonstrated in **Figure 5**, with impact level 4 in terms of environmental politics, which enable industries and elites to extract natural resources unsustainably, while impoverished communities bear the ecological consequences without means of recourse.

Africa's inequality crisis cannot be separated from its environmental challenges, the two are deeply intertwined in a self-perpetuating cycle. At its core, this complex network stems from how natural wealth is distributed and managed across the continent. The same geographical disparities that create unequal access to resources also determine vulnerability to climate shocks. Regions rich in minerals often see wealth concentrated in few hands (lack of participation in natural resources management), while agricultural zones face worsening droughts. Political systems that favor elite interests (in) justice in political structures) allow unsustainable extraction to continue unchecked, degrading the very ecosystems that support vulnerable populations.

DISCUSSION AND CONCLUSIONS

Our review revealed that regional development in Africa faces multifaceted challenges, including spatial disparities, income inequality, and unequal access to essential social and economic opportunities. These inequalities are deeply rooted and often most evident among disadvantaged groups, who continue to lack access to education, resources, infrastructure, and stable employment. Structural disparities inherited from colonial legacies and exacerbated by contemporary policy gaps, persist across sub-regions and socioeconomic groups. Indicators such as the Gini index remain critical in measuring these imbalances (Adeleye et al., 2020; Eva et al., 2022; Nzabirinda, 2025; Wudil et al., 2022).

The historical legacy of colonialism remains a key driver of inequality. The colonial economic model created a dualistic structure where wealth and opportunity were concentrated in sectors controlled by a small elite primarily European settler. This structure largely persisted post-independence, evolving into an "oligarchic bourgeoisie" that continues to dominate the formal economy. Spatial inequalities today can be traced to selective colonial investments focused on cash crop-exporting regions, leaving other provinces in systemic underdevelopment. For example, provinces in Angola that were excluded from the agro-export economy continue to suffer from weak infrastructure, economic isolation, and limited access to public services.

The inequality dynamics described above stem from a historically entrenched configuration, one that deliberately concentrated economic power and influence among select groups. This elite-controlled system systematically excluded the majority of the population from accessing land, education, credit, and political participation, perpetuating a colonial-era legacy that underpins modern inequality. The resulting economic structures incentivize rent-seeking behavior and reinforce power imbalances, enabling elites to maintain disproportionate control over resources. Meanwhile, marginalized groups, including women, rural populations, and ethnic communities remain economically disenfranchised (Alvaredo & Atkinson, 2022; Chancel et al., 2023; Frankema et al., 2023; Lanfranchi, 2019; Savage, 2021; Tanui, 2021).

Foreign investment has also emerged as a sustainable driver of economic growth in Africa and inequality reduction. Nevertheless, authors like, Aust et al. (2020), Woyo and Tafirenyika (2024), and Xu et al. (2021) observe that trade liberalization and FDI have been promoted as pathways to economic growth, but they often reinforce existing inequalities. However, Aust et al. (2020) and Nkalu et al. (2019) emphasize that the public sector should drive capital mobilization toward investments aligned with the SDGs. Meanwhile, FDI ought to serve as the primary engine of economic growth for the private sector, but is mainly aimed at extractive sectors, generating limited employment and reinforcing regional disparities.

Our study finds that experiences in countries from Southern African Customs Union, the tariffs liberalization has benefited consumers but hurt local producers, particularly in vulnerable economies like Namibia and Lesotho. As argued by Xu et al. (2021), as the level of trade liberalization increases, the level of inequality also increases. The removal of tariffs and the influx of foreign capital often benefit urban elites and multinational corporations, leaving rural populations and informal workers marginalized. Regional economic integration, particularly through initiatives like the African continental free trade area, offers a more equitable alternative. By harmonizing regulations, building cross-border infrastructure, and promoting intra-African trade, regional integration can reduce dependency on external markets and better support inclusive growth (Akinyemi et al., 2019; Deinne & Ajayi, 2021; Odusola, 2019).

The identified factors like corruption and weak institutional frameworks also contribute to inequality in Africa (Tanui, 2021; Wudil et al., 2022; Zreik et al., 2024). Studies indicate a bi-directional relationship between corruption and inequality, each reinforcing the other in a vicious cycle. As Ssekibaala and Kasule (2023) mention, high corruption normally leads to an increased poverty rate in the regions. Corruption diverts public spending away from essential services like education and healthcare, distorts tax systems to favor elites, and enables tax evasion, reducing redistributive capacity. Improving institutional quality, particularly by strengthening rule of law, anti-corruption measures, and financial oversight, is essential to break the corruption cycle (Sarkodie & Adams, 2020; Ssekibaala & Kasule, 2023; Wudil et al., 2022) . Research by Adeleye et al. (2017) in SSA finds that only when institutional quality is paired with financial development does it significantly reduce inequality. Transparent governance can also ensure that the benefits of FDI and trade are distributed more equitably.

This study also reflects inequalities in the environmental dimension and the climate adaptation in Africa. Environmental degradation, deforestation, pollution, and CO_2 emissions are both a driver and consequence of inequality (Baloch et al., 2020; Ssekibaala & Kasule, 2023; World Bank, 2020). Impoverished communities often rely on unsustainable practices due to lack of alternatives, while wealthier groups contribute more significantly to emissions and environmental harm. According to Diallo and Wouterse (2023), climate change has affected food security in many ways. The consequences of extreme weather events for crop production are highly visible and well known. Since the 1980s, climate change has already reduced crop yields by about 5%–10%. Climate change further compounds inequality in Africa, despite the continent's minimal contribution to global emissions (Wudil et al., 2022). More sensitive sectors like agriculture, water, and energy are especially vulnerable. Over 96% of agriculture in SSA is rain-fed, and only 22% of rural populations have electricity access. Climate adaptation policies must be inclusive, development-oriented, and community-driven (Nyiwul, 2021).

By promoting sustainable and decentralized renewable energy solutions, climate-smart agriculture, and water conservation systems can address both climate risks and social disparities. Evidence from Nyiwul (2020), supports this dual benefit: reducing inequality can, in turn, boost renewable energy adoption, creating a reinforcing cycle of resilience and inclusion. By addressing inequalities in energy, water, and agriculture through targeted interventions, African nations can create a resilient pathway to sustainable development, turning a climate crisis into an opportunity for social transformation and poverty alleviation as noted by (Juma & Khademi-Vidra, 2019; Moyo, 2020; Phiri et al., 2016) .

Innovative environmental solutions must be driven. Emerging technologies such as nitrifier-enriched activated sludge (NAS) and microalgae (e.g., chlorella vulgaris) offer promising contributions to sustainable development in Africa. These systems enable cost-effective wastewater treatment, carbon capture, and biomass generation, creating synergies with climate action, clean water access, and circular economic initiatives. The proposed NAS technology by Sepehri et al. (2020) improves wastewater management efficiency, reduces operational costs, and provides a sustainable water source in regions facing scarcity. These innovations could be locally implemented, offering education, training, and employment,

especially for youth and women, while directly supporting SDGs 6 (clean water), 12 (sustainable consumption), and 13 (climate action).

The creation of value chains from natural resources can effectively reduce socioeconomic inequalities, as demonstrated by the EU-funded NTFP-PFM project (Non-timber forest products–Participatory forest management). Implemented from 2003-2013 in Ethiopia's highland forests of Bench-Maji, Sheka, and Kefa, this initiative strengthened the honey value chain while promoting sustainable forest management. The project enabled beekeepers to establish better organization and access to broader markets, reducing their dependence on local buyers who traditionally captured most of the value. Its participatory approach fostered greater inclusion in decision-making processes, particularly empowering women who play key roles in NTFP collection (Ali & Bachano, 2020; Meaton et al., 2021; Wood et al., 2019). By linking forest conservation with income generation, the project created a sustainable model that particularly benefits disadvantaged communities who rely most heavily on natural resources. This integrated approach simultaneously addressed poverty reduction, social exclusion, and environmental preservation, demonstrating how well-designed value chain interventions can create multiple socioeconomic benefits while protecting ecosystem services (Wood et al., 2019).

Our results show that transformational leadership and integrated approaches also must be addressed. Africa's regional development challenges require transformational leadership and holistic strategies that integrate economic growth, environmental sustainability, and social inclusion. Current research reveals a gap in integrated approaches that examine how financial development, fiscal policy, and institutional quality intersect with inclusive growth and environmental resilience. Bridging this gap could unlock new pathways to equity and sustainability. Policies should prioritize progressive taxation, land reform, affirmative action, and targeted social investments. These must be accompanied by structural reforms aimed at improving governance, fostering regional cooperation, and mobilizing green technology.

Author contributions: WST: conceptualization, supervision, writing – original draft; **WST, LTC, MdCPR, TL:** methodology, data curation, formal analysis, writing – review & editing. All authors have agreed with the results and conclusions.

Funding: This work is supported by national funds, through the FCT – Portuguese Foundation for Science and Technology under the project UID/04011 (CETRAD – Centre for Transdisciplinary Development Studies - Leonida Tomas Correia) and UIDB/04007 (Center for Advanced Studies in Management and Economics - Conceição Rego).

Ethical statement: The authors stated that the study does not require approval from an ethics committee. It is a review of existing literature.

AI statement: The authors stated that the use of artificial intelligence tools was exclusively for the purposes of grammatical review, language translation, and methodological organization suggestions for the text. All supervision, validation, and intellectual authorship of the manuscript are the responsibility of the declared authors, taking into account: Compliance with Research Ethical Principles - The use of AI tools followed ethical practices and did not include activities such as data fabrication, plagiarism, figure manipulation, or any practice that compromises scientific integrity.

Declaration of interest: No conflict of interest is declared by the authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

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