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ARTICLE

The EU Green Deal and Renewable Energy Transitions in Europe–Africa Relations: A Synthesis of Complexities and Geopolitics

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Abstract

The EU Green Deal (EGD) and renewable energy transitions in Europe–Africa relations represent a transformative shift from historical patterns of colonialism and an unequal trade partnership. Historically, these continents have been divided by exploitative economic arrangements, but the EGD aims to bridge these divides by fostering co-ownership and co-creation of renewable energy technologies. This approach aligns the EGD with Africa's developmental goals, emphasizing solidarity and mutual benefits in renewable energy sectors, unlike other mineral resource exploitations, which have often been marked by extractivism and market volatility. Renewable energy, compared to traditional mineral resources, offers both continents an opportunity to engage in efficient, reliable, and low-carbon energy initiatives that are less susceptible to global market shocks, thereby providing a stable basis for collaboration. However, the evolving dynamics of this cooperation are increasingly challenged by the rise of far-right political groups within the EU, which perceive green policies as contrary to economic progress. The influence of these groups could undermine the stability and focus necessary to maintain and expand green initiatives. This article, drawing on a multi-stage qualitative analysis, including reviews and Delphi surveys with policy-makers and experts, explores these issues deeply. The findings advocate for the EGD alignment with Africa's needs for industrialization and energy security, proposing that only through such integrated and equitable approaches can a true partnership of equals be realized, mitigating the historical imbalances and setting a precedent for future intercontinental collaborations.

Keywords: co-creation, Green Deal, renewables, Africa, Europe

Subject: International Co-operation, Environmental Politics, Political Geography, Social Sciences, Arts and Humanities

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Introduction

Climate change and environmental degradation are endangering Africa, Europe, and the rest of the world (Subair & Ogherohwo, 2025). Overcoming the challenges of climate change and environmental degradation has necessitated increased international cooperation, advances in climate policy, and regional and national-level cooperation (Abdulsalam et al., 2025; Kalantzakos et al., 2023). The European Union (EU) has been a driving force behind global environmental policy, innovation, and green transitions (Asmundo, 2025). The European Commission proposed the European Green Deal (EGD), an ambitious agenda aimed at transforming the EU into a carbon-neutral continent by 2050 and decoupling economic growth from resource usage (Islam, 2025). The EGD is one of the world's first public pledges to reduce greenhouse gas (GHG) emissions by at least 55% by 2030 relative to 1990 levels and to achieve climate neutrality by 2050 (European Commission, 2019). As a strategic policy framework, the EGD pledged to decarbonize, dematerialize, and reduce carbon emissions and negative environmental impacts (Pisani-Ferry et al., 2023). The EGD thus includes a wide range of policy initiatives and subsidies, such as the Farm to Fork Strategy, Biodiversity Strategy, Renovation Wave, and Just Transition Fund (Domorenok & Graziano, 2023).

As the EU prepares to phase out fossil fuels and coal, the EGD emphasizes the need for cleaner energy sources (Marelli et al., 2025). The Green Deal lays the groundwork for renewable energy investment, expansion, and transition in many sectors of European economies (Katcharava, 2024). In the early 2020s, renewable energy transitions gained traction in African policy debates (Saleh & Hassan, 2024), following the need to achieve the African Union (AU) Agenda 2063, 'The Africa we want'. The AU Agenda 2063 significantly emphasizes eradicating poverty and fostering wealth through social and economic development (Gebrihet et al., 2025). The African social and economic development under the Agenda 2063 is tied to green technologies, reducing energy poverty with renewables and protecting vulnerable populations from climate hazards (African Union, 2020).

Consequently, Europe and Africa are developing a new wave of stronger relations on renewable energy transitions, taking into consideration the needs of each continent (McNair et al., 2024). This enhanced renewable energy partnership is also motivated by Russia's invasion of Ukraine, which affected energy availability for Europe (Van de Graaf, 2023). Before Russia invaded Ukraine in 2022, the EU imported 39.2% of its natural gas from Russia, a supply that is largely interrupted owing to war (European Commission, 2023).

As a result, the EU has looked to Africa to enhance its partnerships in renewable energy production and deployment through the Green Deal (Di Ciommo et al., 2024). It is therefore imperative to address critical issues of unequal partnerships, resource exploitation and green colonialism in this enhanced energy partnership. This study addresses a critical gap in understanding the intersection of the EGD with Africa's renewable energy ambitions by analysing the complexities, asymmetries, and geopolitical undercurrents shaping Europe–Africa energy relations. The study synthesizes the complexities and geopolitics of EU–Africa relations, examining the barriers and opportunities for a mutually beneficial renewable energy transition that addresses climate change, energy poverty, and sustainable development by addressing the following questions: How does the EGD influence renewable energy transitions in Europe and Africa, particularly during a period of rising geopolitical tensions? How can Africa move beyond being merely a resource provider or a 'battery continent' and towards co-creation and co-ownership of renewable energy technologies? How are renewable energy transitions decreasing energy poverty, boosting energy security, and strengthening national resilience in Europe and Africa? What are the existential threats to the EGD cooperation with Africa?

Literature Review

Africa and the EU have a long-standing relationship (Hansohm & Koblianska, 2025). The interaction between the two continents has progressed through several phases, marked by ambitious alliances and a degree of caution (Fioramonti & Kotsopoulos, 2015). Kwame Nkrumah's declaration of independence for the Gold Coast (Ghana) on 6 March 1957 accelerated the decolonization process in sub-Saharan Africa (Nugent, 2021). A few weeks later, on 25 March, the Treaty of Rome, the foundational framework of what is now the European Union (EU) was signed (Martinez, 2024). These events of African political independence and European integration were critical in establishing an entangled relationship between the two continents (Kotsopoulos & Mattheis, 2020). The Treaty of Rome, for example, united France and Belgium's colonies to the then-European Economic Community (EEC) by extending favourable trade conditions to all EEC member states. This trade and aid approach, placed under a developmental umbrella, provided the basis for EU–Africa ties throughout the 21st century (Fioramonti & Kotsopoulos, 2015).

However, despite some forward-thinking measures to enhance trade terms, most notably through the Lomé Convention's 'non-reciprocal' trade provision and export earning guarantees, the EU–Africa relationship failed to break the long-standing power disparity between the two 'partners' (Price & Langan, 2025). The relationship between the two continents remains one of a neo-colonial and exploitative nature. This unequal partnership is due in part to poor African governance and Africa's inability to capitalize on the opportunities that Europe provides (Daniels et al., 2023). On the other side, Europe's exploitative and neo-colonial perspective, wrapped under various interventions and policies that serve European interests, ensures that power asymmetry will persist for many decades. As international dynamics shift and Africa becomes a more important actor in global politics, strategic policies like Agenda 2030, AU Agenda 2063, and the EGD, as well as energy geopolitics, are reshaping the EU–Africa cooperation.

For example, the primary purpose of implementing the Agenda 2030 is to serve as a roadmap to a more sustainable and enhanced livelihood for people (Sachs et al., 2022). The provision of affordable and clean, dependable, modern, and economically viable energy for all people is prominent in the Agenda 2030 (Akpan & Olanrewaju, 2023). Specifically, the Agenda 2030 vision on energy is to achieve widespread energy availability, significant improvements in energy efficiency, and a higher proportion of renewable energy in the global energy composition (Kumar & Rathore, 2023; Marco-Lajara et al., 2023). The global energy production environment is changing as countries wrestle with the imperatives of sustainable growth and climate change mitigation (Erdogdu et al., 2025). There has been an extraordinary paradigm shift in the global energy landscape, driven by the need to combat climate change, improve energy security, and promote sustainable development (Atstaja, 2025). The broad use of renewable energy sources is important to this revolutionary journey, signalling a shift away from traditional reliance on fossil fuels (Akpan & Olanrewaju, 2023).

The transition to renewable energy is predicted to improve energy security and autonomy for many countries, reducing reliance on volatile fossil fuel markets and promoting macroeconomic stability (Feng, 2024; Laimon & Yusaf, 2024). Furthermore, the inherent localization of the renewable energy industry may result in a more equitable distribution of economic advantages, boosting regional development and poverty alleviation (Monyei et al., 2022). Studies (Gawusu, 2024; Kumar & Rathore, 2023) expand on the complicated dynamics, emphasizing the critical importance of energy transition in achieving the Sustainable Development Goals. The urgency to counteract the negative effects of climate change and achieve energy resilience has pushed renewable energy to the forefront of national and international policy agendas (La et al., 2025). As countries face the simultaneous problem of fulfilling rising energy demand while reducing greenhouse gas emissions, the adoption of cleaner and more sustainable options becomes critical (Marco-Lajara et al., 2023). Consequently, energy transition aims to produce sustainable energy with three overarching goals: reducing negative environmental effects, increasing energy independence, and expanding the industrial and service sectors to support long-term economic development (Aldieri et al., 2019; Lantz et al., 2021).

Energy transition faces challenges, including social, economic, and technical concerns (Oduro et al., 2024; Okoh & Onuoha, 2024). The transition occurs at diverse rates across economies, involving significant capital investment, technological improvements, enabling legislative frameworks, and widespread acceptance (Chukwukaelo, 2025). The interplay of these factors has the potential to significantly influence the pace, magnitude, and economic ramifications of renewable energy transition (Reusswig et al., 2018).

Materials and Methods

The study was conducted using a multistage qualitative research methodology. The multistage research methodology allowed for thorough data collection and provided relevant insights to the research topic (Kanaki & Kalogiannakis, 2023). The researchers performed confirmatory tests at each stage by comparing the findings with existing literature. The first stage entailed gathering review data using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, as outlined by Moher et al. (2009) and Liberati et al. (2009). The database developed through the PRISMA approach was fairly comprehensive, indicating interest in the EGD and renewable energy transitions and the spillover effects for other continents. The data was gathered from credible sources such as the Web of Science, Google Scholar, Grey Literature, and the institutional websites of European and African partners. The search approach was the same across all databases, except for Google Scholar, where the first 400 relevant items were filtered. The search terms and phrases ‘geopolitics’, ‘renewable energy’, ‘co-creation and co-ownership’, ‘carbon border mechanisms’, ‘energy poverty’, and ‘energy dependence’ were combined with ‘Africa’, ‘Europe’, or ‘Africa–Europe’, as shown in Table 1.

Table 1

Details of the Search Terms for the Systematic Literature Review

Literature	Source	Search phrases
Peer reviewed	Google Scholar https://scholar.google.com	'Africa', 'Europe', 'Green Deal', 'Renewable Energy', 'Green Transitions', 'Co-creation', 'Co-ownership', 'economic growth', 'job creation', 'geopolitics', 'war invasion', 'green growth', 'Agenda 2063', 'Partnership', 'Relations', 'Energy Policy', 'Energy Infrastructure'
	Web of Science https://access.clarivate.com	'Energy Infrastructure', 'Partnership', 'Energy Policy', 'Renewable Energy', 'Green Transitions', 'Co-creation', 'Co-ownership', 'economic growth', 'job creation', 'geopolitics', 'war invasion', 'green growth', 'Agenda 2063', 'Green Deal', combined with 'Africa' or 'Europe'.
Grey literature	EU Commission African Union European Council African Development Bank Group (https://commission.europa.eu) (https://www.consilium.europa) (https://au.int/en/agenda2063)	'Africa' or 'Europe', 'EU Green Deal', 'Partnership', 'Green Transitions', 'Co-creation', 'Co-ownership', 'economic growth', 'job creation', 'geopolitics', 'war invasion', 'green growth', 'Agenda 2063'.

Source: Authors' construct (2024).

Inclusion and Exclusion Criteria

We evaluated articles from 2010 to 2024. The time frame of 2010–2024 helps to provide a chronological foundation for EU–Africa partnerships. Articles collected focused mostly on the EGD and renewable energy transitions; geopolitics, complexities, resource dependence, energy policies, and energy interdependence. Articles that discussed EGD and renewable energy without focusing on Africa–Europe were omitted. Articles that discussed broad energy policies but did not specifically mention renewable energy or the EGD were also removed. There was more grey material on the topic than peer-reviewed literature. Several grey literature articles lacked a rigorous methodological underpinning and hence were removed. Only studies conducted in English were included. A total of 1,334 articles were discovered, with 21 meeting the inclusion requirements (as shown in Figure 1).

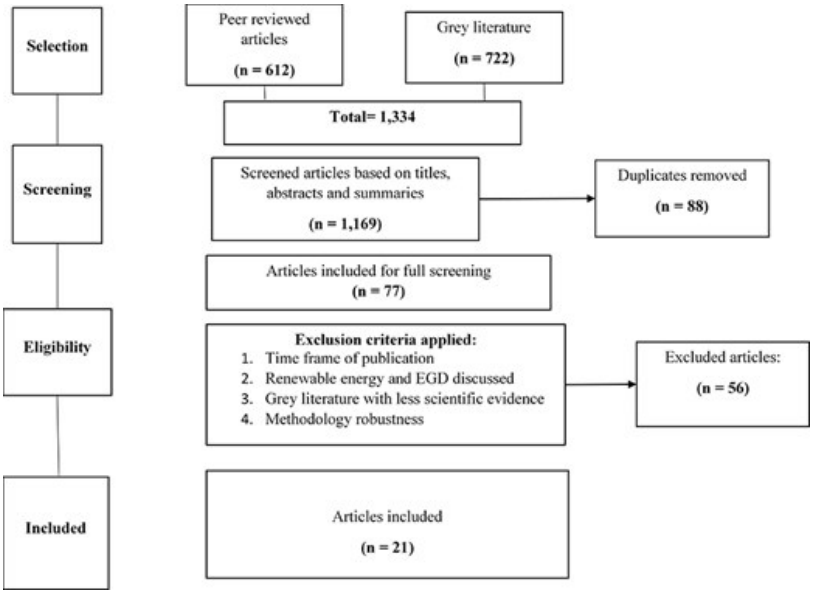

Figure 1 Articles Searches Flow Chart

Source: Authors' construct (2024).

The second stage of the methodology entailed an in-depth content analysis of press releases, policies, remarks, webinars, EGD and Agenda 2063 communications, and a Delphi survey. The content analysis was conducted between January 2019 and December 2021, as well as January 2022 and January 2024. The period January 2019–December 2021 gave an insight into Europe–Africa relations on the Green Deal before Russia and Ukraine geopolitical tensions, while January 2022–2024 supplied a dimension on how new geopolitical tensions are defining EU–Africa ties on renewable energy transitions. The content analysis helped identify research gaps, useful narratives, and research positioning. The methodology also involved a Delphi survey of policy-makers and experts on the EGD, renewable energy transitions, resource dependence, energy reliance, and energy policies. The Delphi survey enabled panel experts to communicate in a controlled manner while also engaging in systematic interaction and prediction. The Delphi survey approach was used to conduct a total of 20 interviews (10 European experts and 10 African experts) on major themes such as 'new geopolitical tensions on renewable energy transitions in Europe–Africa', 'co-creation and co-ownership of green energy technologies', 'existential threats to the EGD, EU trade, and renewable energy transitions', 'renewable energy transitions, energy poverty, and energy dependence'.

Analytical Approach and Results Presentation

We first analysed the articles from the systematic review discussing the key results raised. A thematic approach was employed in discussing the key issues of the articles. Seven (7) themes were developed: 1. Energy democracy, 2. Opportunities and challenges, 3. Energy infrastructure, 4. Partnership and negotiation, 5. Power, politics and sustainable energy, 6. Green transitions and EGD, and 7. Energy policy and decarbonization. Within the themes, we indicate whether the theme was important and well elaborated, discussed, mentioned or not mentioned or discussed in the article (shown in Table 2). Additionally, a thematic analysis was adopted for the Delphi surveys, with major themes and sub-themes developed based on the research questions. Major themes and sub-themes include: EGD influence on renewable energy transitions in Europe–Africa relations (EGD influence), co-creation and co-ownership of renewable energy technologies (co-creation, co-ownership), renewable energy transitions, energy security and national resilience in Europe and Africa (energy poverty), and existential threats to the EGD cooperation with Africa (existential threats) as shown in Table 3. The subsequent paragraphs present the results and discussion of the study in line with the themes.

Table 2

Thematic Content Analyses of Selected Articles

Articles	Key themes						
	Energy democracy.	**Opportunities and barriers.**	**Energy infrastructure.**	**Partnership and negotiation.**	**Power, politics, and sustainable energy.**	**Green transitions and EGD.**	**Energy policy and decarbonizatio goals.**
A1	*	M	NMD	M	NMD	M	D
A2	M	*	M	*	D	M	D
A3	M	D	*	M	*	*	*
A4	D	*	NMD	*	M	*	M
A5	D	*	*	*	*	M	*
A6	M	*	*	*	*	M	D
A7	*	M	*	*	*	M	*
A8	*	*	M	*	*	M	*
A9	M	M	*	*	M	M	*
A10	*	*	M	M	NMD	M	M
A11	M	M	M	M	M	*	M
A12	*	*	*	*	*	*	*
A13	M	M	M	*	*	*	*
A14	*	M	D	M	*	D	M
A15	*	D	D	*	M	*	M
A16	M	*	*	*	M	*	M
A17	D	D	*	*	D	*	*
A18	M	M	M	*	M	D	*
A19	*	*	*	*	M	M	M
A20	D	D	D	*	*	*	D
A21	M	*	*	*	*	D	M

* (asterisk): The theme is identified as central and/or important in the article; D (Discussed): The theme is discussed in the article. M (Mentioned): The article addresses or briefly touches on the theme. NMD (Not mentioned—discussed) indicates that the theme is not addressed or discussed in the article.

Source: Authors' construct (2024).

Table 3

Selected Verbatim Data from the Delphi Survey

Selected verbatim quotes (raw data)	Sub-theme	Main theme
'The continent (Africa) lacks a sufficient balance of energy resources and energy availability. Primary, undeveloped energy resources cannot meet energy needs until they are converted into electricity.' **Expert 1 (EU)**	Energy poverty	Renewable energy transitions; energy security and national resilience in Europe and Africa.
'Conditions have significantly changed since the commencement of the EGD in 2019, and the implementation of activities related to the EGD faces a very different contextual landscape, imparting a feeling of urgency to both Africa and Europe.' **Expert 2 (EU)**	EGD influence	EGD influence on renewable energy transitions in Europe–Africa relations
'African participation in co-creating and co-owning green transition resources is the future of the EU Green Deal.' **Expert 3 (AU)**	Co-creation & co-ownership	co-creation and co-ownership of renewable energy technologies.
'The CBAM limits Africa's development, thus straining existing and future EU–Africa relations. CBAM means no African commodities and products in Europe.' **Expert 6 (AU)**	Existential threats	Existential threats to the EGD cooperation with Africa.
'The far-right may repeal EU green policy because they believe green policies hurt domestic workers and farmers.' **Expert 7 (EU)**	Existential threats	Existential threats to the EGD cooperation with Africa.
'More European youth have lost interest in green initiatives as a result of their strong support for far-right populist movements. Some European teenagers frequently use terms such as "no climate change", "climate change is a scam", and "greenwashing".' **Expert 8 (EU)'**	Existential threats	Existential threats to the EGD cooperation with Africa.
'The EU plays a role in assessing its relationships with external partners. Africa must recognize its goals and build a stable climate conducive to green transitions.' **Expert 9 (AU)**	Existential threats	Existential threats to the EGD cooperation with Africa.

Source: Authors' construct (2024).

Results and Discussion

The results show that under the EGD, the articles included in the study focused on energy democracy, opportunities and challenges, energy infrastructure, partnership and negotiation, power, politics and sustainable energy, green transitions and EGD, and energy policy and decarbonization.

(i) Energy democracy: Energy democracy is critical for providing clean, accessible, and affordable electricity to the most vulnerable by democratizing the production and management of renewable energy resources, encouraging social ownership of energy infrastructure, decentralizing energy systems, and increasing public participation in energy-related policy-making (Luengo, 2025). Some of the selected studies indicate the necessity to leverage renewable energy transitions to transfer political

and economic power to achieve energy democracy. For example, Studies 1, 7, 8, 10, 12, 14, 15, and 19 identified energy democracy as a means of avoiding energy monopolization and decentralizing energy infrastructure, such as wind turbines and solar panels, in communities (as shown in Table 4). In EU–AU partnerships on renewable energy, energy democracy advocates 'evidence-based decision-making and inclusive innovation to bring about positive change and prevent foreign exploitation' (Study 19; shown in Table 4).

(ii) Opportunities and challenges: Opportunities and challenges are key in establishing a positive energy partnership between Africa and Europe (Falcone, 2023). According to the conclusions of some of the studies shown in Table 2, both continents will need to capitalize on opportunities while also addressing shortcomings in order to achieve a renewable energy transition. According to Study 2 (Shown in Table 4), impediments to renewable energy transitions include corruption, political instability, and insecurity in some African countries. In addition, Study 5 indicates that the legacy of renewable energy advancement is challenged by unfair global commerce and European dominance in the partnership (Table 4). Studies 4, 6, 8, 10, 12, 16, A19, and 21 show that partnerships based on renewable energy can foster social and technological innovation and result in a sustained commitment to support development, lessen energy poverty, and advance the attainment of energy goals for both continents. However, both continents need to address their limitations, strengthen institutional arrangements and develop the human capacity necessary for reducing barriers to the success of renewable energy projects.

(iii) Energy infrastructure: Energy infrastructure facilitates the efficient transmission of electricity and storage facilities, thereby ensuring a stable and cost-effective exchange of supply and demand across all sectors (Liu et al., 2022). This, in turn, drives sustainable and safe economic growth, as supported by Studies 3, 5, 6, 7, 9, and 12. The EU can provide customized incentives in the form of infrastructure investment, technology transfer, education, and training, according to Study 16, to hasten the development of an African–European vision for cooperative transition.

(iv) Partnership and negotiation: Partnerships and negotiations should maintain an equal balance of interests, allowing African communities to select their energy futures without becoming 'living sustainability labs' for the EU (Study 18). The EU, on the other hand, should be considered by African countries as a collaborator and not a 'cash machine' (Study 19). Effective cooperation with the EU, which defines Africa as an equal player in renewable energy partnerships, might be a positive step towards energy transformation (Studies 5–6). Cooperation on green transitions, thus, allows European and African players to engage in joint learning and knowledge development, thus reducing some of the underlying structural inequities (Studies 2, 4, 7, 8, 9, and 12).

(v) Power, politics, and sustainable energy: Study 6 highlights the interconnectedness of power, politics, and sustainable energy in shaping development and sustainability. Understanding the social and political aspects of renewable energy transitions from the perspectives of African decision-makers, European policy-makers and major transnational energy companies contributes to community sustainability and energy utilization (Studies 12, 13, and 14).

(vi) Green transition and EGD: Green transition under the EGD aims to eliminate fossil fuels, generate socio-economic opportunities, and reduce pollution for clean economies (Study 15). Green transition is indicated as an immediate opportunity to create safer jobs, diversify economies, reduce water consumption, and produce cheaper energy (Studies 11, 12, and 13). Nonetheless, some African countries rely significantly on fossil fuels for both domestic and export purposes. For example, oil and gas provide almost 80% of Nigeria and Angola's total export revenue (Hackenesch et al., 2021).

(vii) Energy policy and decarbonization: Energy policy and decarbonization goals aim for net-zero carbon

emissions in the future (Dafnomilis et al., 2023). Governments in Africa and Europe have committed to reducing global energy-related carbon dioxide emissions to zero by 2050 (Studies 8, 9, 12, 13). A significant setback in the decarbonization process is the long-standing practice of designing energy policies in silos, without appropriate consideration of how they all interrelate and fit together (Shahzad et al., 2024). As a result, low-carbon projects face delays and are unable to reach global climate targets (Nguyen et al., 2025).

Table 4

Key Results From the Selected Articles

Article	Categorization	Key theme	Relevant findings
1 Cantarero (2020)	Peer reviewed	Energy democracy and transition.	Energy transformation can be achieved in the Global South by reframing and reclaiming citizens' involvement in energy planning and policy-making.
2 Agyekum (2024)	Peer reviewed	Opportunities and barriers.	The unchanging status quo, corruption in the energy industry, political instability, and insecurity in specific parts of Africa all have an impact on renewable energy transition partnerships.
3 Cardinale (2023)	Peer reviewed	Transnational energy infrastructure	Egypt and Algeria have competitive energy resource costs, but renewable energy production remains insufficient to build export infrastructure to Europe.
4 Müller et al. (2023)	Peer reviewed	Green energy transition and mineral value chains.	The need for mutual dependency of countries importing and exporting raw commodities in terms of national development interests.
5 Adebajo (2023)	Peer reviewed	Unequal partnership and negotiation.	African leaders and communities continue to express concern about the damaging legacy and persistent domination of inherited European institutions, as well as unfair global trade frameworks.
6 Moore (2018)	Peer reviewed	Power, politics, and sustainable energy.	How local actors, especially villagers, perceive a transition to future sustainable electricity is critical in defining future electrical power systems through social and technological innovation.
7 Maalim and Abebe (2020)	Peer reviewed	Africa and Europe relationship priorities.	African negotiations with the EU should focus on the continent's goals, such as poverty reduction, remittances, health, digital access, small and medium-sized businesses, and transportation infrastructure.
8 Treyer (2023)	Peer reviewed	Tipping points and environmental diplomacy.	Zero-carbon energy systems should not expose the global south to extractive economies, but rather rebalance the structure of global value chains and power distribution in the new era of globalization.
9 Pistelli (2020)	Peer reviewed	Strategic alliance in new deals	A development model based on multi-stakeholder public–private partnerships in energy transitions can be critical to Africa's growth, with the private sector providing financial and technical tools and the public providing investment guarantees, assessing the impact of initiatives, and strengthening and supporting local community capacities.
10 Hancock (2015)	Peer reviewed	Energy regionalization and diffusion	Self-identity, political entrepreneurship, and a long-term interest in renewable energy leadership encourage long-term commitments to provide development assistance to West Africa.
11 Langan and Price (2018)	Peer reviewed	EU trade and development policy	The EU has a long history of global engagement, particularly in combating climate change and implementing the SDGs.
12 Bilal et al. (2021)	Peer reviewed	EU–Africa Trade and investment.	The conceptual underpinning for EU collaboration with African nations has typically been laid outside the continent. In the post-2020 era, the policy agenda should be entirely African-owned and driven.

13 Di Foggia and Beccarello (2022)	Peer reviewed	Energy policy and decarbonization goals.	The new European decarbonization goals, which aim to accelerate the green transition, open up new possibilities for geostrategic collaboration.
14 Barra and Martin (2018)	Peer reviewed	Energy governance and EU energy diplomacy.	The EU emphasizes the significance of strengthening energy governance to provide an appropriate and transparent regulatory framework for the energy sector, allowing private sector participation while removing market distortions, financial difficulties, and regulatory impediments.
15 Hackenesch et al. (2021).	Grey literature	Green transitions and EGD	Neither Europe nor Africa has a vision of what carbon-neutral societies and economies would look like. Cooperation on green transitions thus enables European and African actors to engage in collaborative learning and knowledge generation and alleviate some of the underlying structural inequalities.
16 Högl and Iacobuta (2020)	Grey literature	AU–EU green energy transitions.	The EU could offer tailored incentives through infrastructure financing, technological transfer, and education and training. Importantly, diplomatic sensitivity is essential, and parties should act quickly to develop an African–European vision for a collaborative transition to sustainability.
17 Karkare and Medinilla (2023)	Grey literature	Shared benefits and green transitions.	The Russian invasion of Ukraine, among other global events, has resulted in policy revisions by the EU to preserve European interests. While some of these policy adjustments are purposeful and proactive in driving the EU's green transition forward, the EU risks compromising broader alliances, especially those with the Global South.
18 Cucić (2022)	Grey literature	AU–EU energy partnership	The EU is becoming resentful of being considered a 'cash machine,' particularly because it believes it does not receive adequate recognition. It expects the AU to pay its 'fair share'. To achieve renewable energy transitions, both parties must demonstrate political commitment and change their mindsets.
19 Rennkamp (2020)	Grey literature	Energy futures and opportunities	African communities must determine their energy destinies without becoming 'living sustainability labs' or falling into debt traps established by foreign entities. African agency, open debate, transparency, evidence-based decision-making, and inclusive innovation can all help to bring about positive change and prevent foreign exploitation.
20 Sarr and Fall (2022).	Grey literature	Energy transitions and partnerships	Europe's proclivity to prioritize its energy security over producer country interests. Insufficient communication and awareness-raising in production countries limits renewable energy development.
21 Vanheukelom (2023).	Grey literature	Energy transitions and partnerships	In South Africa, addressing a chronic electricity problem while upgrading a coal-dependent energy infrastructure and fairly greening the economy is difficult, messy, and politically challenging.

Source: Authors' construct (2024).

The next sections expand the discussion with narratives from the Delphi survey. The discussion is in line with the thematic analysis of the Delphi survey, thus EGD influence on renewable energy transition in Europe–Africa relations, co-creation and co-ownership of renewable energy technologies, renewable energy transition, energy security and national resilience in Europe and Africa, and existential threats to the EGD cooperation with Africa.

EDG Influence on Renewable Energy Transition in Europe–Africa Relations

Africa has enormous untapped renewable energy potential (Ebhota & Tabakov, 2024). Estimates show that the continent has the potential to generate up to 350 gigawatts (GW) of power from hydro, 110 GW from wind, and 15 GW from geothermal. By 2030, the International Energy Agency (IEA) expects renewable energy generation to reach 242 GW, up from 25 GW in 2011 (IEA, 2022). Also, Africa boasts 60% of the world's best solar resources but accounts for only 1% of global solar power (World Economic Forum, 2022). Consequently, there is a significant energy gap, with around 600 million Africans missing out on access to power (Batinge et al., 2019). 'The continent (Africa) lacks a sufficient balance of energy resources and energy availability. Primary, undeveloped energy resources cannot meet energy needs until they are converted into electricity' (Expert 1 assessment).

A historical examination of EU–Africa collaboration during the last two decades reveals that Africa and Europe have formed partnerships based on solidarity, security, peace, and long-term development (Sebe et al., 2022). For example, in 2017, the EU and Africa reached an agreement on the Joint Africa–EU Plan, which is a comprehensive strategy focused on green transitions for Africa, digital transformation, sustainable growth, and jobs (Cardoso & Madeira, 2025). The historical policy landscape of EU–Africa cooperation also includes the Horn of Africa strategic framework (2011), which addresses repeated droughts and humanitarian crises, and the Sahel Regional Action Plan 2015–2020, which focuses on preventing and countering radicalization and creating appropriate conditions for youth (Figure 2). As the EGD becomes more visible in EU–Africa relations, the Samoa Agreement (2023) strengthens the connection to defend human rights, democracy, and social inclusion (Figure 2).

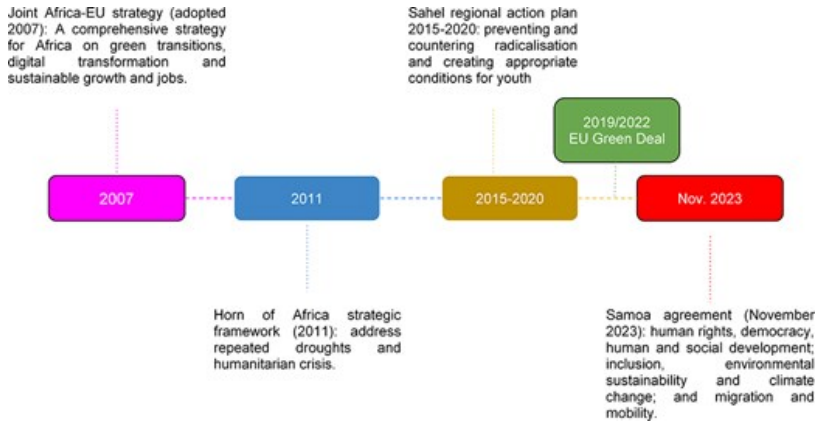

Figure 2 EU–Africa Policy Relations Landscape

Source: Authors' construct (2024).

At the 2022 EU–Africa summit, the EU suggested a renewed partnership with Africa in the context of a 'true partnership of equals' (Africa Europe Foundation, 2022). For African countries, increasing European interest in both fossil and renewable energies, as well as increased investment opportunities in the framework of the green transition, provide tremendous potential, a desired road to industrialization and the development of green jobs (Andreoni & Roberts, 2024). The EU announced a $150 billion investment package for Africa–Europe, 450 million vaccine doses by mid-2022, and a commitment to multilateralism (European Commission, 2023). 'Conditions have significantly changed since the commencement of the EGD in 2019, and the implementation of activities related to the EGD faces a very different contextual landscape, imparting a feeling of urgency to both Africa and Europe' (Expert 2 assessment). The EGD provides new opportunities,

commitments, and strengthens existing policy frameworks for renewable energy transitions, such as the €3.4 billion Africa–EU Green Energy Initiative, the €32 million Europe–Africa Partnership on Renewable Energy (LEAP-RE), and the European Union's REPowerEU Plan (shown in Table 5).

Table 5

EU-driven Renewable Energy Policies in Africa

Renewable energy policy strategy	Commitment	Source
The Africa–EU Green Energy Initiative	EU funds for renewable energy development will total €3.4 billion by 2030.	A New Phase in Africa–EU Energy Collaboration: The Africa–EU Green Energy Initiative—Africa–EU Energy Partnership (africa-eu-energy-partnership.org)
Just Energy Transitions Partnership (JETP)	€3 billion and €2.5 billion have been allocated for renewable energy implementation in South Africa and Senegal, respectively.	Listrik untuk Kehidupan yang Lebih Baik—PT PLN (Persero)
The Africa–Europe High-Level SEI platform	Decision-makers from both continents address the barriers and goals of renewable energy investment.	Recommendations of the Africa–Europe High-level Platform for Sustainable Energy Investments—Africa–EU Energy Partnership (africa-eu-energy-partnership.org)
The Africa–EU Energy Partnership (AEEP)	Ensure that all Africans have access to affordable and sustainable energy.	Africa–EU Energy Partnership (AEEP)|MMEIPA (africa-eu-energy-partnership.org)
European Union's REPowerEU Plan	Import up to 10 million metric tonnes of green hydrogen per year, primarily from Africa.	REPowerEU (europa.eu)
Europe–Africa Partnership on Renewable Energy (LEAP-RE) Projects	€32 million will be allocated to increase the use of renewable energy through a well-balanced mix of research, demonstration, and technology transfer projects on both continents.	LEAP-RE Call for AU–EU Collaborative Research and Innovation projects on Renewable Energy —LEAP-RE

Source: Authors' construct (2024).

Co-creation and Co-ownership of Renewable Energy Technologies

The EU is expected to import the majority of its ten million metric tonnes of green hydrogen each year from Africa (Asaad & Karaki, 2023). Existing renewable energy technologies, such as the Noor solar project in Morocco and the Benban Solar Park in Egypt, are already catering for the energy needs of the EU (Hamed, 2025). The vast majority of solar power produced in Africa is not used in Africa. Green hydrogen is predicted to be created in Africa to power European countries, even if the majority of Africa's population continues to suffer from energy poverty (Snousy et al., 2025). Already, the 15 GW Aman green hydrogen project in Mauritania, the 3 GW Tsau Khaeb project in Namibia, and the 4 GW SCZONE project in Egypt are set to manufacture and deploy green hydrogen to power EU countries (African Energy Chamber, 2023). As a result, one major source of anxiety is whether Africa would serve as the EU's battery continent.

Co-creation and co-ownership of green energy technologies might be key notions in promoting a win–win scenario in renewable energy development between the EU and Africa (Boretti, 2025). Energy sector experts during an interview indicated that 'African participation in co-creating and co-owning green transition resources is the future of the EU Green Deal' (Expert 3 assessment). Co-creation and co-ownership of renewable energy technology can be achieved in EU–Africa relations through 'understanding the realities of a changeable transition in African countries, which must be handled and supported' (Expert 4 assessment). However, it is vital to recognize that prior to this new intense energy relation between the two continents, previous partnerships have not produced the desired results (Kotsopoulos & Mattheis, 2020). For example, the construction of the Benban Solar Park in Egypt employed up to 20,000 people, with the Park's operators adding another 6,000 permanent jobs (Nabil Abdel Sadek El Sebai, 2023). However, these jobs cannot compensate for the resource depletion associated with Solar Park. The project has failed to meet expectations, and the local population has grown weary of the resources being depleted without guaranteeing the necessary development (Hamed, 2025).

Renewable Energy Transitions, Energy Security, and National Resilience in Europe and Africa

Energy is critical to Africa's development and serves as the foundation for industrialization (Cardoso & Madeira, 2025). Like Europe and other parts of the world, the rise of renewables goes beyond providing reliable energy and climate protection (Emenekwe et al., 2024). This analysis discovered that earlier renewable energy projects had different results. According to the case studies shown in Table 6, the Noor solar project in Morocco created jobs for roughly 1,000 construction employees and 60 staff maintenance engineers. Additionally, it is indicated that the project delivered solar electricity to 650,000 locals. The Benban Solar Park in Egypt is expected to reduce greenhouse gas emissions by much to 8.4 million metric tonnes, down from 11.4 million metric tonnes in 2019 (Shown in Table 6). The majority of this reduction in emissions is accounted for in policy because of EU carbon offsetting mechanisms (Jäger-Waldau, 2019). In Ghana and Rwanda, Smart Energy Solutions for Africa (SESA) recycled 20 tonnes of electronic waste and plastics into renewable energy solutions while increasing cookstove production efficiency to 1,500 per year. The SESA project has established a platform for European partners to enable and promote scalable and reproducible energy access solutions (Shown in Table 6).

Despite the EU renewable energy initiatives in Africa, critics argue that these projects prioritize European interests over African needs (Di Ciommo et al., 2024). For instance, the Noor solar project and the Benban Solar Park, while promoting renewable energy, are largely designed to export electricity to European countries, rather than addressing Africa's own energy access and development priorities (Hamed, 2025). This raises concerns that the EU energy transition agenda may be perpetuating energy colonialism (Proedrou, 2025), where African resources are exploited to meet European energy demands (Boretti, 2025) rather than supporting Africa's own sustainable development and energy security. Further, arguments suggest that the EU employs renewable energy to exploit mineral resources from Africa (Christmann, 2021). The exploitation of lithium and cobalt from Central African countries is a stark example of the negative externalities of renewable energy transitions (Boafo et al., 2024). The majority of the uranium used to electrify France comes from Niger, even though 90% of the Nigerien people lack access to power (Ereh, 2025). In 2010, Niger exported uranium worth €3.5 billion to France but only received €459 million in exchange (Ilori, 2024). As a result, the African continent believes that its previous renewable energy partnerships with the EU were unequal, which could be reproduced in new green transition projects (Monyei et al., 2022).

Table 6

Case Studies of Renewable Energy Projects in Africa

Case study Project	Europe benefits	Africa benefits
Noor solar project in Morocco	Noor I, Noor II, and Noor III combined to offset 773,000 metric tonnes of CO_2 emissions annually, including those from the EU.	Approximately 1,000 construction jobs were created, followed by the hiring of 60 maintenance engineers. Initially, it powered 650,000 locals with solar energy.
Benban Solar Park in Egypt	Reduced greenhouse gas emissions from 11.4 million tonnes of CO_2 to 8.4 million tonnes by 2019.	Approximately 20,000 jobs were created during the building period, with an additional 6,000 permanent roles employed by the park's operators. Adds 200 megawatts of energy capacity, expanding Egypt's renewable energy mix.
Smart Energy Solutions for Africa (SESA)	Supported the creation of scalable and replicable energy access initiatives.	200 tonnes of electronic garbage and plastics were recycled into renewable energy solutions for Ghana's communities and companies. Improving cook stove production efficiency to 1,500 per year in Rwanda.
ENGIE Energy Access Africa	The European Investment Bank helped European partners get jobs and contracts.	Supported the installation of 107,000 high-quality solar household systems in Benin. Approximately 643,000 people in Benin now have access to renewable energy.

Source: Authors' construct (2024).

Existential Threats to the EGD Cooperation With Africa

The EGD is prominent in promoting carbon neutrality and energy security for Europe and Africa. However, limitations associated with the Carbon Border Adjustment Mechanism (CBAM), growth of far-right populism in Europe, and unpredictable political and investment environment in Africa need to be managed for the success of the EGD partnership on renewable energy. The EU CBAM has been extensively criticized since it disadvantages Africa (Erdogdu, 2025) and several activities that generate income for the African people. For instance, African goods and services with high carbon intensity are being adjusted, and customer preferences are evolving away from carbon-intensive items (Beaufils et al., 2023; Figure 3). Several developed countries, which are key African markets, including the United States, Canada, and Japan, are exploring carbon border adjustment policies (Merven et al., 2023). The limited availability of African goods and products in these key markets exacerbates the continent's economic, food, and energy crisis (Hagedorn, 2025). Further, the CBAM substitutes the free allocation of allowances under the current emission trading system (ETS) for most trade-exposed emitting sectors: iron and steel, cement, fertilizer, aluminium, hydrogen, and electricity, which are critical to Africa's growth. 'The CBAM limits Africa's development, thus straining existing and future EU–Africa relations. CBAM means no African commodities and products in Europe' (Expert 6 assessment).

Additionally, the growth of serious far-right political fanatics and organizations in Europe will impact migration and EU green policy (shown in Figure 3). Far-right political extremists highlight green programmes, specifically the EGD, as a threat to economic progress and wealth. 'The far-right may repeal EU green policy because they believe green policies hurt domestic workers and farmers' (Expert 7 assessment). The extreme right aims to acquire more seats in the EU parliament and become a significant decision-maker within the EU (McGowan, 2025). Consequently, the EU may become less attractive to pursue green policies for human

development and carbon neutrality. In addition, the growing concern of European youth interested in far-right political decisions and policies predisposes the EGD to an early extinction: 'More European youth have lost interest in green initiatives as a result of their strong support for far-right populist movements. Some European teenagers frequently use terms such as "no climate change", "climate change is a scam", and "greenwashing"' (Expert 8 assessment).

Within Africa, the continent's unpredictable political and investment environment challenges the EGD implementation (Maimele, 2023). For example, the Sahel Region of Africa has been overwhelmed with military insurgencies, providing less protection for European investments. This uncertainty and political instability might spread like a virus throughout Africa, harming renewable energy investment. The Just Energy Transitions Partnership (JETP), which has committed €2.5 billion to renewable energy deployment in Senegal, is under threat (Jacob et al., 2023) because of political uncertainties in the Sahel Region. Africa's geopolitical move towards Russia and China as significant partners of choice has also prompted doubts inside the EU about forging strong links with Africa. 'The EU plays a role in assessing its relationships with external partners. Africa must recognize its goals and build a stable climate conducive to green transitions' (Expert 9 assessment). 'No country in the Global North would dump their money in an unstable South because investment follows stability, which leads to interest' (Expert 10 assessment).

At the core of current EU–Africa relations is a great interest in developing and deploying renewable energy resources for both continents (Cardoso & Madeira, 2025). Experts believe that 'the increasing EU interest in Africa reflects a growing interest in African fossil fuels' (Expert 11 assessment). African partners perceive EU hypocrisy and double standards as a source of conflict. Simply put, the EU is using renewables as a gimmick and a hook to expand African fossil fuel imports into the EU. 'Africa is being pursued as a partner in the EU's search for additional sources of fossil fuels to enhance its energy security, reinforcing the appearance of unequal treatment of EU interests against Africa' (Expert 12 assessment).

As a result, a carbon-free transition focused just on Europe would do little to mitigate global warming, and the green deal would simply shift Europe's GHG emissions to its trading partners, with no climate change mitigation goals accomplished (Isachenko & Medvedkova, 2023). Furthermore, the €150 billion investment package EU–Africa Global Gateway (GG) has received widespread criticism from both European and African stakeholders for its lack of openness and inclusion as well as its failure to offer clarification regarding projects that have been or are being funded (Foretia et al., 2024).

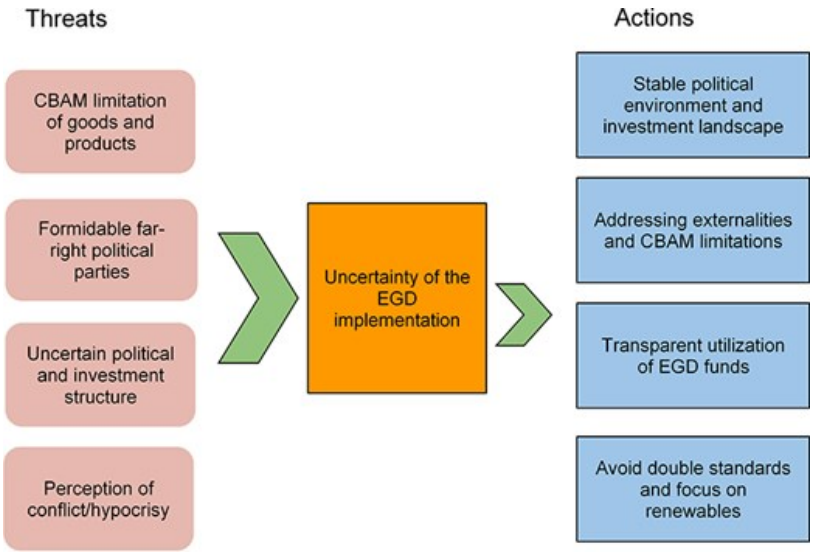

Figure 3 Existential Threats to the EGD Cooperation With Africa

Source: Authors' construct (2024).

Conclusion

This article has critically examined the evolving dynamics of the EGD and its implications for renewable energy transitions within the broader context of Europe–Africa relations. Reflecting on the fundamental questions raised here, we demonstrate that Africa lacks a proper balance of natural resources and the capacity to alleviate energy poverty across the continent. Due to a lack of funds and expertise to convert primary energy resources into usable electricity, the EGD will aid in the fight against energy poverty in Africa through new renewable energy partnerships. Geopolitical tensions have imparted a feeling of urgency to both Africa and Europe, underscoring the relevance of Africa as a key player in global energy geopolitics, necessitating the EGD to strengthen opportunities, commitments, and policy frameworks for renewable energy transitions such as the Africa–EU Green Energy Initiative, Europe–Africa Partnership on Renewable Energy (LEAP-RE), and the European Union's REPowerEU Plan.

Additionally, Africa can move beyond being just a resource provider or a 'battery continent' by increasing the value chain of its renewable energy resources and ensuring ownership. Africa must look beyond primary extraction and mining to discover opportunities in renewable energy resource beneficiation, material production, and manufacturing to ensure socio-economic value is generated across energy supply chains. Africa must also raise finance from within the continent for renewable energy research, development, and deployment. More crucially, the continent must prioritize standards and regulations that limit external influence on its energy resources, while focusing on energy investments and agreements that meet African requirements.

Furthermore, we show that renewable energy transitions can improve energy security and national resilience in Europe and Africa by providing access to affordable energy. Renewable energy can be less expensive than developing new fossil fuel power facilities. Africa, with its wealth of renewable energy resources such as solar, wind, and green hydrogen, may leverage low-cost renewable energy technology to give affordable energy to the many Africans who do not have access to electricity. Renewable energy has the potential to lessen the EU and Africa's reliance on the unpredictable fossil fuel market, boosting resilience to energy shocks while also bringing long-term financial and social benefits. The findings underscore that while the EGD holds transformative potential for Africa's development through renewable energy collaboration, its success hinges on the extent to which African priorities such as industrialization, energy access, and technology transfer are meaningfully integrated into the partnership.

Nonetheless, several geopolitical and structural challenges threaten the realization of an equitable green transition. These include the design and impact of the EU CBAM, the rise of far-right political movements in Europe, Africa's internal political instability, and perceptions of neo-colonialism in renewable energy initiatives. Unless these challenges are addressed through inclusive policy design, transparent funding mechanisms, and respect for African agencies, the promise of the EGD may reproduce the same inequalities it seeks to correct. The study concludes that aligning the EGD with Africa's Agenda 2063, fostering energy democracy, decentralizing energy systems, and building institutional and infrastructural resilience are critical for advancing a just, inclusive, and sustainable energy future. Furthermore, by establishing joint governance frameworks such as an EU–AU Green Diplomacy Taskforce and promoting diversification in Africa's global partnerships, both regions can navigate the complexities of geopolitics and climate policy more effectively. Ultimately, a reimagined and equitable EU–Africa partnership on renewable energy can serve as a global model for climate cooperation rooted in fairness, solidarity, and shared prosperity.

Policy Recommendations

Based on the findings of this study, EU and African policy-makers must enhance their cooperation under the EGD by more closely aligning it with the African Union Agenda 2063. The EGD should explicitly support the continent's aspirations for industrialization, universal energy access, and economic transformation. This alignment should foster the creation of green jobs, local manufacturing capacity, and renewable energy innovation hubs across Africa, ultimately contributing to sustainable development and long-term economic resilience.

The potential influence of political dynamics within the EU, notably the rise of far-right extremism, necessitates proactive strategies to safeguard environmental policies. EU policy-makers need to implement robust education and outreach programmes to build a broader consensus for green initiatives across the political spectrum. Additionally, African nations should leverage their strategic relationships and develop partnerships with other global powers to negotiate terms that favour their developmental goals. By promoting co-creation and co-ownership of energy resources, both regions can achieve a more sustainable and equitable energy future. This requires a consistent commitment to understanding and respecting each other's priorities and constraints, ensuring that the collaboration leads to shared benefits and contributes positively to global efforts against climate change.

Africa's role must evolve from that of a resource supplier to an equal partner in the design, deployment, and commercialization of green technologies. This can be achieved by establishing joint research and development centres, innovation laboratories, and mechanisms for shared intellectual property. Such partnerships will help ensure mutual benefit and sustainability in the renewable energy transition.

Furthermore, CBAM, as currently designed, poses a risk of unfairly penalizing African economies. EU and AU policy-makers should work towards establishing a framework that supports transparent and fair-trade practices, particularly in the context of the CBAM, ensuring that it does not disadvantage African economies. The EU should consider recalibrating the CBAM to reflect the developmental disparities between the two regions. Specific exemptions or transitional support mechanisms should be explored for low-income and low-emission countries, accompanied by capacity-building programs to support their sustainable production transitions.

Decentralization of energy systems is another critical area of focus. To achieve inclusive energy access, both continents should invest in community-owned and operated renewable energy infrastructure, particularly in rural and underserved areas. This approach, grounded in the principle of energy democracy, would empower local governments and communities, increase public participation in energy policy-making, and promote social equity in the green transition. To attract and sustain green investments, African governments must also prioritize institutional reforms that promote political stability, legal certainty, and investment protection. At the same time, the EU should provide tailored financing models that help mitigate investment risks in volatile regions. Stable governance environments are essential for large-scale renewable energy projects and cross-border infrastructure to thrive.

In terms of infrastructure, investments must go beyond export-oriented megaprojects and prioritize inclusive energy systems that address Africa's domestic needs. Support for regional electricity pools, modernization of transmission networks, and development of energy storage solutions are crucial to enabling a reliable and locally beneficial renewable energy architecture. Finally, the establishment of an EU–AU Green Diplomacy Taskforce would provide a formal platform for monitoring, evaluating, and guiding the implementation of renewable energy initiatives under the EGD. This joint body should include stakeholders from both public and private sectors, civil society, and academia to ensure transparency, accountability, and inclusive governance throughout the cooperation process.

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