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Post-COVID-19 and African Agenda for a Green Recovery: Lessons from the European Union and the United States of America

Ayodele Asekomeh, Smith I. Azubuike and Obindah Gershon

Abstract

The concept of a 'green new deal' for Africa will provide a joined-up approach to managing the impact of extreme climatic events. In this regard, the United States (US) and the European Union (EU) green deal arrangements offer Africa lessons to consider in a green agenda. By recourse to green theory, which is a critique of existing power structures and nationalistic and political positions concerning climate change, we explore mechanisms for fostering collective action and collaboration through an African green deal. Building on the African Union's existing agencies and arms, this chapter argues that an African Union Green Deal post–COVID-19 is crucial to achieving sustainable economic growth and development within the continent's Agenda 2063. The African continent should take advantage of collaboration opportunities within the continent and the European Union, thereby strengthening its financing and governance structures.

Keywords: Green theory; green deal; post-COVID-19; supranational collaboration; governance; sustainable development

Introduction

The concept of a 'green new deal' for Africa has been suggested in the context of a joined-up approach to managing the impact of extreme climatic events by resorting to low carbon energy sources, following the environmental damage caused by tropical cyclone Ida (Lopes, 2019). This was against the backdrop of

the Green New Deal (HRES 109, 2019) being supported in the United States (US) by the Democratic Party as a means for fostering sustainable growth through decarbonisation. The European Union (EU) had similarly launched the European

Green Deal (EU, 2019) as a roadmap to promote efficient use of resources through a just transition to a decarbonised economy that restores biodiversity and reduces pollution. The US Green New Deal (USGND) and the EU Green Deal (EUGD) were deemed urgent at their launch in 2019.

Subsequent developments, particularly the coronavirus (COVID-19) pandemic, have heightened the urgency of the situation. The pandemic has revealed the enormity and complexity of the global challenge to address climate change and safeguard the health and social cohesion of communities, cities and nations. Accordingly, various intervention mechanisms and packages have been proposed, including ambitious stimulus packages in the US and the EU recovery plan (EU, 2020). For instance, the latter offers a multiannual financial framework (MFF) and a recovery effort, Next Generation EU (NGEU), which aim to help the EU rebuild after the COVID-19 pandemic in a just and equitable way for people and the environment.

In contrast, the African response to the COVID-19 pandemic has been fragmented, often involving individual states offering limited palliative measures that are not sustainable in the long term (Lal, Erondu, Heymann, Gitahi, & Yates, 2021). The infrastructural deficits, particularly in healthcare provisioning during the pandemic, continue to highlight the continent's lagging status in preparation for and response to extreme environmental, health and climatic changes and events. While the EU (and the US, to some extent, considering its large number of states and their varying laws) have demonstrated a willingness to act as a single bloc, Africa's approach appears individualistic. For instance, nationally determined contributions (NDCs) are reported separately for each African country. This is despite African countries having similar social-economic, geographical and ecological attributes. They also already have an established international organisation, the African Union (AU), with eight (8) sub-regional bodies or Regional Economic Communities (RECs). While notions of and arrangements for environmentalism have traditionally been based on existing political structures and mechanisms of liberalism, environmental and climate change issues transcend such boundaries.

We argue that a regional collaborative approach to addressing climate change and fighting COVID-19 is crucial. An African Union (AU) Green Deal (AUGD) can help position Agenda 2063 in the post-COVID-19 recovery period. The African agenda must start from a base position where these infrastructures are grossly inadequate or non-existent (Erondu et al., 2018; Lal et al., 2021). It must include measures to attract global investment in energy to Africa and to ensure that such investments are channelled away from fossil fuels into new technologies and infrastructure based on renewables (Akinyemi, Efobi, Asongu, & Osabuohien, 2019; 2019b). We outline the attributes or features of a green recovery deal that may position Africa as a bloc for interfacing with other regional/supranational blocs to promote global developmental initiatives.

Literature Review, Theoretical Framework and Methodological Approach

Perceptions of and Responses to Unprecedented Climatic and Health Events

Many have argued that the global environmental crisis has arisen because humans acting as self-interested individuals have overused shared resources such as land, fresh water and fish, a situation first described as the 'tragedy of the commons' (Hardin, 1968). Historically, anthropocentric economic activities and practices have involved short-term, individual (or, by extension, state-focused), rational choices, which exploit environmental resources on a competitive basis. Thus, anthropocentrism prioritises the choice and consumption of the individual or state actor without considering the environmental impact (Hayward, 1997). Unfortunately, because of this competition for resources and prioritisation of individual or state consumption and self-interests, mechanisms aimed at achieving cooperation to address climate change and environmental impacts have been challenging and have often been abortive.

Green Theory Framework

The increasing recognition of the green idea informs our choice of this theoretical framework, which advances that individual states' existing arrangements and interventions may not be adequate for what is an existential threat not limited to political borders. The green theory represents a critical theory construct that helps to reflectively assess and critique environmental issues and question existing societal structures and power dialectics. This, according to Goodin (1992), is to establish a notion of a moral ideal - a 'green theory of value' - that does not prioritise human advancement (anthropocentrism) over the conservation or preservation of the non-human environment (ecocentrism). Because it questions anthropocentric tendencies by focussing attention on ecological concerns, the green theory is 'eco-centric' – it recognises that human populations exist in a common ecological community. This requires nations to sacrifice their national interest to resolve transboundary environmental issues and adopt global climate actions. The vertical axis of Fig. 1 depicts the continuum between anthropocentrism and ecocentrism, which are characterised by political and ecological boundaries, respectively. The green theory argument focuses on setting aside the dichotomous pursuit of domestic and international political interests and favouring the collective action needed to address ecological problems, given that such problems do not manifest solely within and are not restricted to individual politically defined boundaries.

Green theory supports the notion of 'bioregionalism', which promotes adopting a holistic ecological perspective, rather than political boundaries, in dealing with environmental and climatic issues (McGinnis, 1999). On the horizontal axis in Fig. 1, cooperation on environmental issues is contracted at the national, regional/international, and bioregional levels; the latter offers an ideal scope for defining ecological and climatic problems.



Fig. 1. Green Theory View of Cooperation on Climate and Environmental Actions. *Source:* Authors' review of green theory.

Climate action and environmentalism at the country level from a Westphalian model perspective (bottom left of Fig. 1) i.e., that sovereign or self-determining nation-states have sovereignty or ultimate authority over their affairs, are less likely to result in significant progress in the fight against climate change. Amusan and Olutola (2016) reckon that while the Paris Agreement did not come as a surprise, it had nonetheless involved unduly prolonged negotiations during the previous 20 years of Conference of the Parties (COP) meetings because of states negotiating what they consider to be best for them politically. For example, developing countries contended that anthropogenic activities by developed countries were a significant catalyst for climate change, and the cost of remediation should be borne by developed countries. Green theory (top right-hand corner of Fig. 1) promotes a values-based approach to climate change instead of a technology-based system. It prioritises ecological values rather than short-term political interests of individual countries, with boundaries defined along ecological lines (ecocentrism).

Dyer (2017) reckons that an ideal climate action scenario will be a green theory perspective to cooperation defined along bioregional lines and managed outside of political or state actors' control. However, in the interim (middle section of Fig. 1), influential states like the US and China, or groups of states (like the European Union), can change the environmental dialectics by elevating the focus on the environment (e.g., US, middle of the left-hand side of Fig. 1) or by seeking regional cooperation on increasingly eco-centric matters (e.g., EU, middle of Fig. 1). This perspective contextualises our review of the EU Green Deal and the US Green New Deal. We explore the scope for regional cooperation in such deals, in an African context, as the first step towards the green theory ideal scenario.

Methodological Approach

We theorise about the nature of the challenge and expectations of an African or Afrocentric response to the COVID-19 pandemic. We employ the green theory as the theoretical framework for undertaking a systematic review of the EU and US post-COVID-19 recovery plans (in Section 'Green Deal Arrangements') to explore the relevance and applicability of a similar approach by Africa. We will project these against and critically appraise existing African developmental goals and initiatives, especially the AU's Agenda 2063 and the African Renewable Energy Initiative (AREI) within the African Continental Free Trade Area (AfCFTA). We explore the multidisciplinary dimensions for drawing up a green deal for Africa. Such a deal could encompass legal, regulatory, technological, economic, financing and governance issues as a basis for scoping sustainable development initiatives for Africa in the post-COVID-19 era (Section 'Building Blocks for an African Green Deal towards Post-COVID-19 Recovery (A Model Green Deal for Post-COVID-19 Recovery in Africa)'). Based on these, we will evaluate the policy implications for various parties, particularly African stakeholders, in the global response to the COVID-19 pandemic (Section 'Conclusion').

Green Deal Arrangements

Green deal discourses represent both a political consideration and a genuine concern for the state of the environment due to climate change. The arrangements are perceived as a catalyst for action with the proposals, including ambitious plans for change and an indication of funding mechanisms (existing or expected), that will be needed to actualise the agreements. The central tenets of the USGND and the EUGD as initially presented are reviewed in Subsection 'The US Green New Deal and the EU Green Deal'. In Section 'Green Deal Funding Plan and the COVID-19 Rethink?', we summarise the main adjustments to the deals arising from the impact of COVID-19.

The US Green New Deal and the EU Green Deal

The US Green New Deal (USGND) (HRES 109, 2019) is a nonbinding congressional resolution that lays out a grand plan for tackling climate change (Friedman, 2019). In this regard, the resolution represents the synthesising of previous efforts of think tanks, activists, the Green Party and campaigners into an aspirational or a normative set of policies for addressing the climate change

challenge. In summary, the USGND outlines five main goals (HRES 109, 2019). First, it seeks to achieve net-zero greenhouse gas emissions through a fair and just transition for all communities and workers. Second, the deal is expected to create millions of good, high-wage jobs and ensure prosperity and economic security for all people of the US. Third, as a blueprint, it aims to stimulate investment in the infrastructure and industry of the United States to meet the challenges of the twenty-first century sustainably. Fourth, the deal seeks to secure for all people of the US for generations to come, clean air and water, climate and community resiliency, healthy food, access to nature and a sustainable environment. Fifth, the deal seeks to promote justice and equity by stopping current, preventing future, and repairing indigenous peoples' historical oppression. It also aims to help communities of colour, migrant communities, de-industrialised communities, less-populated rural communities, the poor, low-income workers, women, the elderly, the unhoused, people with disabilities, and youth.

With an identical set of aspirational goals, the European Union Green Deal (EUGD) is an integral part of the European Commission's strategy to implement the United Nation's 2030 Agenda (UN, 2015) and the sustainable development goals (SDGs). The EUGD, launched in 2019, is positioned as an initial roadmap of the key policies and measures for the European Union (EU) and its citizens to transform the EU into a fair and prosperous society with a modern, resource-efficient, and competitive economy. The EUGD has established a target of no net emissions of greenhouse gases (GHGs) in 2050 and of positioning the economies of member states to attain economic growth devoid of resource use, particularly fossil fuels. This ambition is predicated on the EU as a bloc having the collective ability to transform its economy and society on a more sustainable path of inclusive growth. Essentially, the EUGD intends to protect, conserve and enhance the EU's natural capital and protect citizens' health and well-being from environment-related risks and impacts in a just and inclusive way.

The EUGD is underpinned by transformative policies or new measures grouped into eight (8) categories (numbered 2.1.1–2.1.8 in the deal). The USGND focuses on 14 mobilisation measures (numbered A–N) against which several goals and projects are set over a proposed 10-year period. Our value judgement mapping of the meaning or implications of the 8 EUGD measures/transformative policies reveals that they are directly equivalent to the 14 USGND mobilisation measures. However, whereas the USGND is often viewed as an aspirational advocacy – or by some, an outrightly political – position, the EUGD represents a much clearer roadmap with specific action timelines.

Green Deal Funding Plan and the COVID-19 Rethink?

The EUGD Investment Plan (or Sustainable Europe Investment Plan (SEIP)) represents a strategic pillar for funding the deal by embedding sustainability in public and private sector investment and expenditure. Like the EUGD itself, the

Investment Plan is underpinned by legislative and non-legislative tools, including a regulation establishing the Just Transition Fund with the EUGD. The Investment Plan has three vital elements (D'Alfonso, 2020): the basis for funding the deal through mobilising at least $\in 1$ trillion investment relating to climate action and for promoting sustainability over the next decade; an enabling framework using various regulation and incentives to ensure that sustainability is factored into investment decisions across all sectors; and advisory and technical support to public administrations and project promoters to implement the deal through sustainable projects.

The €1 trillion investment will be made up of a combination of funds through the EU budget, including €503 billion from 2021 to 2030 through devoting up to 25% of the 2021–2027 multiannual financial framework (MFF) budget to climate-related measures. Funding over this timeframe will also be through national co-financing of \in 114 billion on climate and environment. The InvestEU Fund will provide an EU budget guarantee (provided through the European Investment Bank (EIB) Group and National Promotional Banks and International Financial Institutions) for reducing risk in financing and investment operations. This will raise around €279 billion of private and public climate and environment-related investments. The funding structure also includes, over 2021–2027, a €100 billion (or €143 billion when extrapolated over 10 years) Just Transition Mechanism sourced through the EU budget, co-financing from the Member States and contributions from InvestEU and the EIB to ensure a just transition where no one is left behind. The auctioning of carbon allowances under the Emissions Trading Scheme (ETS) is expected to provide at least some €25 billion of Innovation and Modernisation funds outside the EU budget for EU transition to climate neutrality. Part of the above funds will be dedicated to supporting regions most exposed to the challenges of the transition.

Unlike the EUGD as outlined above, the USGND did not articulate a funding mechanism. Hence, it is often perceived as an aspirational advocacy or political position (Friedman, 2019). However, the emergence of the COVID-19 pandemic and its seismic impact on the world economy has meant that the EU and US have had to draw up recovery plans and emergency funding.

The COVID-19 pandemic had caused initial doubts about any green deal's continued relevance, with some stakeholders arguing, for instance, that the EUGD be put on hold (D'Alfonso, 2020). However, there is a consensus that decarbonisation strategies and green investments from public and private sources would be crucial to the economic recovery plan. Thus, the EU has adopted a regulation establishing the €672.5 billion Recovery and Resilience Facility (RRF) as part of the NGEU €750 billion COVID-19 pandemic economic and social recovery instrument. The RRF comes with a commitment to supporting the green transition; digital transformation; smart, sustainable and inclusive growth and jobs; social and territorial cohesion; health and resilience; and policies for the next generation, including education and skills, for sustainable and resilient EU economies.

Building Blocks for an African Green Deal towards Post-COVID-19 Recovery (A Model Green Deal for Post-COVID-19 Recovery in Africa)

The transformative policies and mobilisation measures for the EUGD and the USGND cover the same issues. However, the supranational arrangement of the EUGD building on the existing EU frameworks for shared vision and collaboration means that an African Green Deal can be drawn up along these lines under the auspices of the AU (i.e., an AUGD). Thus, our green theory model of Fig. 1 will situate the AUGD closer to the EUGD than the USGND. The EUGD has been supported by a common economic block and specific (existing or adaptable) legal frameworks and funding arrangements compared to the USGND. However, to adopt the transformative policies in building an AUGD, the contextual differences need to be carefully evaluated. For instance, while the EUGD has specific funding arrangements, it cannot be used as a template for the AUGD because of the different public and private sector participation and risk appetite for green investments in Africa. In addition, the transformative policies and mobilisation measures for the EUGD and the USGND in cover issues that are relevant to economies with some measure of development or industrialisation in contrast to African economies that may be approaching the subject of decarbonisation from a lower industrialisation base.

To adequately review and contextualise an agenda for an AUGD that encapsulates post-COVID-19 recovery plans, we will look to the building blocks provided by existing African arrangements and frameworks. These include the African Nationally Determined Contribution (NDC) Hub, the AU/New Partnership for Africa's Development (NEPAD), the AREI and the RECs, and their alignment with the 20 goals of Africa's Agenda 2063. In using such blocks to build a model green deal for Africa's post-COVID-19 recovery and sustainable growth, we make some propositions that could underpin such a deal in the following subsections. While we recognise that this approach may not resolve the inconsistencies between the African and European settings, we highlight the contextual factors for Africa that should be the thrust of an AUGD design. We structure the discussion in the context of legal/regulatory, economic, financing, technological and governance issues.

LegallRegulatory Issues

One of the main underpinnings for the EUGD is a climate law/climate pact. We argue that the agreement underlying the AfCFTA could be a legal basis for developing a climate deal for Africa, as well as for managing any regional or continental response to the COVID-19 pandemic or the economic recovery from it. The preamble of the AfCFTA agreement highlights the basis for trade cooperation among African countries. It also encourages parties to use their 'flexibilities' to achieve legitimate policy objectives in public health, energy and the environment (like the NDCs or intended NDCs (INDCs)). Thus, AfCFTA

provides a foundation for member states to cooperate, for instance, by incorporating energy-efficient standards and labelling of products that they trade among themselves or that comes through them to the African market.

Standards and labels for energy-efficient products are valuable in fast-tracking market transformation towards more energy-efficient technologies. This practice can assist in enhancing the sale and use of energy-efficient products among member countries. Standards and labelling arrangements at the regional level provide critical mass for creating regional markets for energy efficiency and, therefore, incentives to equipment manufacturers, resulting in climate change mitigation (Akinyemi, Efobi, Asongu, & Osabuohien, 2019). Furthermore, the AfCFTA pact will help to eliminate doubts about the sincerity of national governments/policies. In terms of coordination, perhaps, the Africa NDC Hub could facilitate cooperative actions to support the implementation of NDCs across the continent (AfDB, n.d.). Such a role is essential for ensuring long-term capacity development in African countries where needs exist.

Meanwhile, any collaboration between the EU and individual African countries without regional integration will not be sustainable. For instance, existing regional Power Pools and energy infrastructure or trading arrangements (like West African Power Pool, Africa Gas Pipeline, and Desert-to-Power project) offer unique platforms for transitions from fossil fuel power systems (Akinyemi, Efobi, Osabuohien, & Alege, 2019). The AfCFTA focuses on Agenda 2063, and the EUGD appears a good benchmark. But the challenges and contexts are slightly different and will always be. Legal/regulatory instruments will be required to address these contextual considerations.

Economic Issues

An African Green Deal offers enormous opportunities for the continent to contribute towards the global endeavour towards climate change reduction. However, there are real concerns that requisite funding requirements could worsen the poverty and spiralling debt burden in the continent (Adeleye et al., 2020). This line of thinking has been further strengthened by the economic contractions and recessions created by the COVID-19 pandemic (Nicola, Alsafi, Sohrabi, Kerwan, & Al-jabir, 2020; Nuwagira & Muzoora, 2020). Some have argued for a just energy transition (Sovacool, 2021), highlighting the distributional effects of African countries importing renewable energy technologies from developed countries. A key consideration is how the continent will handle the income distributional effects of an African Green Deal across countries and within countries. Arguably, this critical issue, which has neither been considered nor addressed in the AfCFTA, ought to be a defining principle for any African Union Green Deal – especially in the post-COVID-19 era.

Similarly, given the uniqueness of each African country's NDC, national income and macroeconomic structure, it is pertinent that AUGD inspires overall prioritisation of ecology without any loss in welfare (especially for poor house-holds). In this regard, linked to macroeconomic uncertainties facing many African

countries, currency risks or foreign exchange volatility are vital considerations in developing an AUGD – unlike the EUGD with a single currency, the Euro.

Financing the AUGD

It is apparent from the COVID-19 pandemic that Africa cannot rely on increasing GDP to finance a transition to renewable energy due to the prevailing economic situation and the effect of increased energy demand (Burton & Somerville, 2019).

This constraint is amplified by the low motivation and capacity to pay tax (Areo, Gershon, & Osabuohien, 2020). Also, there are weak capital markets in Africa. There would likely be a dearth of foreign direct investment (FDI) in the wake of nationalistic COVID-19 recovery programmes by developed countries.

Therefore, to finance an AUGD, one vital consideration will be to reconcile African countries' national strategic objectives with the interests of the few potential foreign direct investors. This approach includes tax instruments and direct incentives like exemption from corporate taxes and import duties for green infrastructure. Another alternative to direct financing could be for African countries to remove barriers to green energy investment such as power market risks, permits/regulatory risk, transmission risk and counterparty risk, that discourage investors from investing in Africa's renewable energy. African countries can collectively remove these barriers at the country and/or regional level to motivate African investors to implement the green deal. Policy instruments (premium price and renewable energy subsidies, carbon taxes and emissions premium) and financial de-risking instruments (sovereign guarantees and partial guarantees) can play a critical role in driving a green deal. While the EU recognises Africa's potential in renewable energy and promotes an Africa-Europe Alliance through the African Union (AU) for sustainable investment and jobs, the AU must carefully consider the implications of such an alliance in relation to its existing and planned arrangements under the AfCFTA.

Technological Issues

In addition to the funding needed for climate-smart investments, an AUGD requires technological capacity and energy infrastructure. Regarding energy, it is essential to note that while a USGND is focussing on a transition from petroleum-based fuels using existing infrastructure, an AUGD needs new infrastructure to deliver electricity to African residents without access. Perhaps, herein lies a significant role for the African Renewable Energy Initiative (AREI), which aims to mobilise the African potential to deliver 300 GW of new and additional energy generation capacity by 2030. Though such aspirations appear unrealisable due to COVID-19, according to its guiding principles, the AREI is committed to 'boosting intra-regional and international cooperation and promoting and supporting only those activities and projects that are agreed by the countries concerned and impacted'. (AREI, 2016, p. 6).

A major consideration for an AUGD is whether climate change intervention should be viewed principally from a technology perspective. This view puts the burden of climate remediation on developed countries for their industrialisation-related GHG emissions (Amusan & Olutola, 2016). It implies that a technical approach is needed, which would inevitably rely on science and technology sourced from developed countries. However, an AUGD would need to be conceptualised on a values-based approach that focuses on intrinsically desirable principles or qualities from an African perspective concerning responses to climate change. O'Brien and Wolf (2010) observe that responses to climate change impacts should consider climate change effects on those affected. The effectiveness and legitimacy of adaptation depend on what people perceive to be worth preserving and achieving. For African economies dependent on fossil fuel extraction and hydrocarbon assets for development, climate change adaptation and delivering affordable and clean energy in line with the UN sustainable development goal 7 (SDG 7) may result in stranded assets. The broader values discussion must include managing the risk of stranded assets while leveraging renewable energy opportunities (AfDB, 2019).

Governance Issues

Governance issues also need to be addressed besides technical and financial capacity needs. Our theoretical framework suggests de-emphasising political and state involvement, which underpins the need for a thriving organised private sector to drive an African Green Deal. Effective governance is possible with the buy-in of local private companies. We note that the private sector in African countries consists of mostly small- and medium-scale enterprises (SMEs), some start-up firms and unregistered businesses operating in the informal sector. This is due to the scepticisms about the adequacy and consistency of government policies. This situation is in sharp contrast with the EU where many big private firms are connected to the realisation of the EUGD vision.

Perhaps, the African minuscule or inadequate private sector capacity or involvement underscores the need for an international regulatory framework – within the agreed multilateral AfCFTA – to aid the transition from traditional/ political environmentalism to a green theory approach (Fig. 1). However, the AfCFTA agreement is fundamentally multilateral with strong state participation. Additionally, the African NDC Hub is an arm of the AfDB that has different underlying national interests. Thus, finding a balance between state participation and private sector engagement remains an ongoing challenge in the African context.

Furthermore, social awareness needs to be created towards collective action because many Africans are yet to fully understand the connection between sustainable climate and economic development. In this regard, even in the EU, there are issues about an equitable and optimal selection of projects to meet the climate change target and achieve the SDGs – due to divergence of local council, national and regional interests (Asekomeh, Gershon, & Azubuike, 2021).

Conclusion

Employing a green theory framework, we have reviewed the EUGD and the USGND as providing comparative arrangements against which an African Union Green Deal can be modelled in the post-COVID-19 recovery period. We observe that the EUGD has a more multilateral structure with the necessary regulatory framework and represents a model closer to what the AU should aspire to. However, we caution that the EU's approach cannot be adopted in its entirety without considering the peculiar legal/regulatory, economic, financing, technological and governance issues of the African continent.

The concept of a 'green new deal' for Africa has been proposed in this chapter as a framework for a joined-up approach to managing the impact of extreme climatic events. This proposition is in conjunction with the adjustments and rethinking necessary to ensure that COVID-19 pandemic responses do not foreclose the climate emergency response. Green theory provides a critique of existing power structures and nationalistic and political positions concerning climate change. We explored these structures to articulate mechanisms for fostering collective action and collaboration through an African green deal. Building on the African Union's existing agencies and arms, this chapter argues that an African Union Green Deal post-COVID-19 is crucial to achieving sustainable economic growth and development within the continent's Agenda 2063. The African continent should take advantage of collaboration opportunities within the continent and with the European Union, thereby strengthening its financing and governance structure to overcome limited private sector participation and funding constraints.

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