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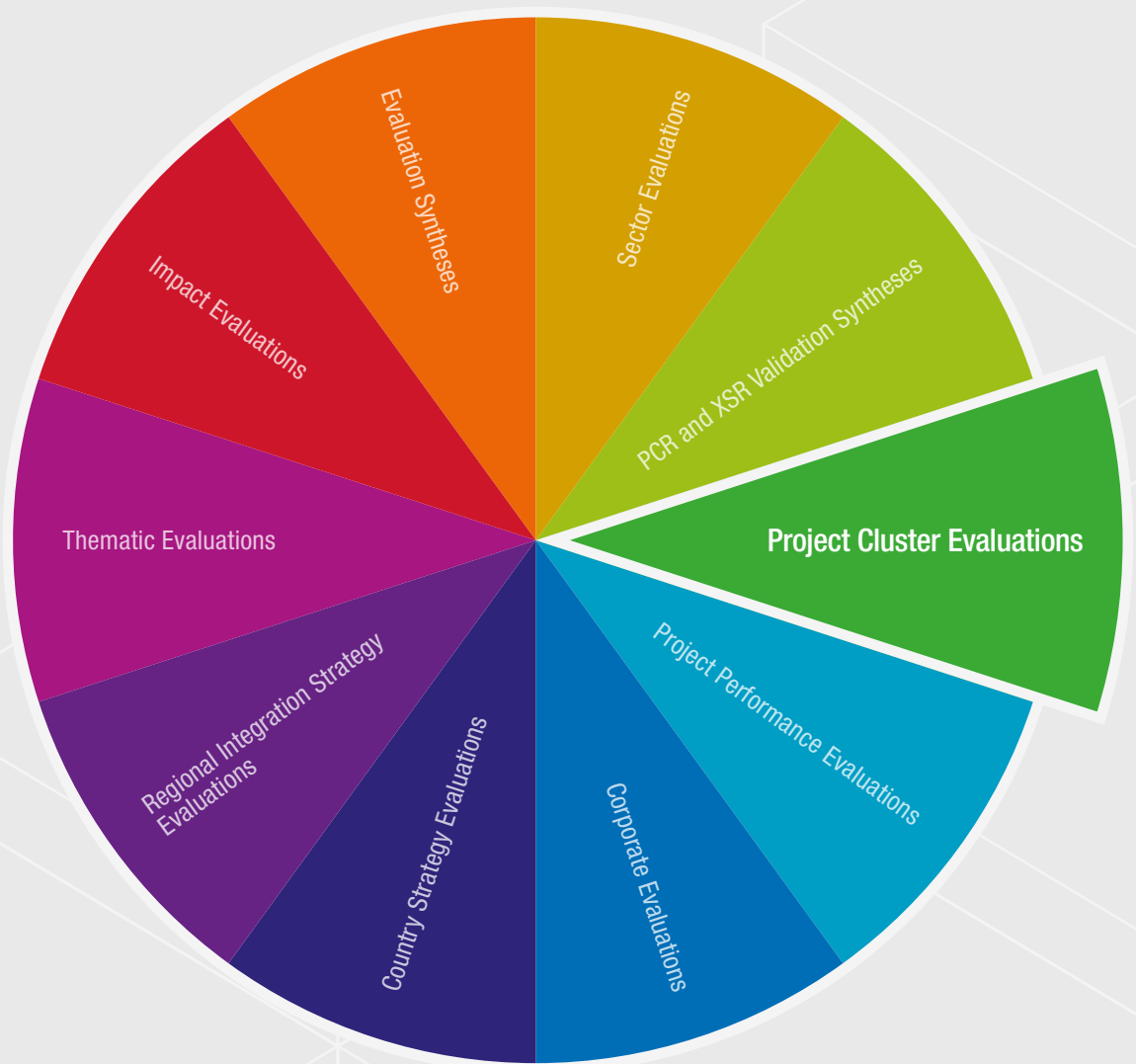
Evaluation of Mainstreaming Green Growth and Climate Change into the AfDB's Interventions: Energy and Transport Cluster



AFRICAN DEVELOPMENT BANK GROUP

March 2021

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March 2021

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Independent Development Evaluation (IDEV)

African Development Bank Group

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Abbreviations and Acronyms

ADB	African Development Bank	GoR	Government of Rwanda
ADER	Annual Development Effectiveness Review	GW	Giga Watt
ADF	African Development Fund	HFO	Heavy Fuel Oil
ADOA	Additionality and Development Outcomes Assessment	IDEV	Independent Development Evaluation, AfDB
AfDB	African Development Bank Group	LLDC	Landlocked Developing Country
AHAI	Agriculture and Agro-Industry Department, AfDB	LoC	Line of Credit
AHFR	Agricultural Finance and Rural Development Department, AfDB	MASEN	Moroccan Agency for Solar Energy
AHWS	Water Development and Sanitation Department, AfDB	NDC	Nationally Determined Contribution
AIKP	Africa Infrastructure Knowledge Program	NEPAD	New Partnership for Africa's Development
AREI	Africa Renewable Energy Initiative	NES	National Energy Strategy (Morocco)
AWF	African Water Facility	OSAA	Office of the Special Adviser on Africa
BRT	Bus Rapid Transit	PBO	Program-Based Operation
CBFF	Congo Basin Forest Fund	PCR	Project Completion Report
CC	Climate Change	PECG	Climate Change and Green Growth Department, AfDB
CCAP	Climate Change Action Plan	PESD	Power Systems Development Department, AfDB
CEIF	Clean Energy Investment Framework	PESR	Energy Statistics, Policy and Regulation Department, AfDB
CIF	Climate Investment Fund	PEVP	Power, Energy, Climate and Green Growth Complex, AfDB
CO	Country Office	PICU	Infrastructure and Urban Development Department, AfDB
CRMAS	Climate Risk Management and Adaption Strategy	PIFD	Financial Sector Development Department, AfDB
CSPs	Country Strategy Papers	PRA	Project Results Assessment
CTF	Clean Technology Fund	RDGC	Central Africa Regional Development and Business Delivery Office, AfDB
ECNR	African Natural Resources Centre, AfDB	RDGS	Southern Africa Regional Development and Business Delivery Office, AfDB
EQ	Evaluation Question	RDGW	West Africa Regional Development and Business Delivery Office, AfDB
ERG	Evaluation Reference Group	RE	Renewable Energy
FGD	Focus Group Discussion	REC	Regional Economic Commission
GCI	General Capital Increase	RISE	Regulatory Indicators for Sustainable Energy
GG	Green growth	RISP	Regional Integration Strategy Paper
GG-CC	Green Growth and Climate Change		
GGGI	Global Green Growth Institute		
GHG	Greenhouse Gas		
GoM	Government of Morocco		

RMC	Regional Member Country	SNOQ	Operations Committee Secretariat and Quality Assurance Department, AfDB
RMF	Results Measurement Framework	SOE	State-Owned Enterprise
RWSSI	Rural Water Supply and Sanitation Initiative, AfDB	SREP	Scaling Up Renewable Energy Program in Low-Income Countries
SAP	Systems, Applications, and Products	TOC	Theory of Change
SAPP	Southern Africa Power Pool	TOR	Terms of Reference
SCCF	Special Climate Change Fund	UA	Unit of Account
SCF	Strategic Climate Fund	UNECA	United Nations Economic Commission for Africa
SDG	Sustainable Development Goal	US\$	United States Dollars
SE4All	Sustainable Energy for All	VOC	Vehicle Operating Costs
SEAP	Scaling Up Energy Access Project		
SEFA	Sustainable Energy Fund for Africa		
SNSP	Strategy and Operational Policies Department, AfDB		



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总质量: 40400kg



Executive Summary

Background

The transition to Green Growth (GG) is one of the two overarching objectives of the African Development Bank Group's (the AfDB or the Bank) [Ten-Year Strategy](#) (2013–2022). Improved access to sustainable infrastructure and a reduction of waste and pollution are key development results to support the achievement of Green Growth. Energy and transport are central to the Bank's "High 5s", namely, Light Up and Power Africa, Feed Africa, Industrialize Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa. Lighting Up, Powering and Integrating Africa depend on appropriate energy solutions that are consistent with Green Growth and Climate Change (GG-CC) objectives. There are growing needs in the energy sector that challenge electricity generating capacity, network resilience, and community and household connections. Improving access and connectivity is central to Integrating Africa. Both energy and transport have a pivotal role to play in the other three priority areas of Feeding Africa, Industrializing Africa and Improving the Quality of Life of the People of Africa. As an integral part of the Independent Development Evaluation (IDEV) work program, this project cluster evaluation of the Bank's support for and mainstreaming of GG-CC into its energy and transport interventions is a building block in the overall corporate evaluation of the mainstreaming of GG-CC into the AfDB's interventions. This cluster evaluation provides lessons and good practices to enable the Bank to improve the quality and performance of its interventions and inform the new GG-CC strategic framework.

What was evaluated

To contribute to improving the performance of the Bank in terms of mainstreaming GG-CC considerations into its policies, strategies and operations, IDEV conducted a cluster evaluation of the Bank's efforts to mainstream GG-CC into its energy and transport interventions between 2008 and 2018. The evaluation assessed: (i) the extent to which the Bank mainstreamed GG-CC into its energy and transport sector interventions (including policies, strategies and operations); and (ii) the performance of Bank-funded infrastructure (energy and transport) projects that mainstream GG-CC in terms of relevance, effectiveness, efficiency and sustainability. This led to the formulation of lessons and good practices to enable the Bank to improve the quality and performance of its interventions (in the energy and transport sectors) and inform the new GG-CC policy and strategy framework currently being developed.

Purpose and scope of the evaluation

This cluster evaluation is one of six building blocks that evaluate the mainstreaming of GG-CC into the AfDB's interventions. The overarching purpose of the evaluation is to take stock of, and assess, the mainstreaming of GG-CC in the AfDB's interventions approved between 2008 and 2018. This project cluster evaluation covers a cluster of seven energy and transport projects in five countries: Cameroon, Morocco, Mozambique, Rwanda and Senegal, for a total value of USD 564 million¹.

Methodology

The project cluster evaluation used a theory-based approach broken down into the following 'components' to answer the main evaluation questions. The components were: (i) a literature review, focusing mainly on policy documents, independent thematic and project evaluations, as well as information gained from country-level reports, and literature from Multilateral Development Banks (MDBs), as well as key development partners. The focus on meta-level documents provided useful contextual insights and enabled a degree of benchmarking, while also providing a point of triangulation with the project-level and country-level sources; (ii) data and trend analysis of the energy and transport sector interventions that mainstream GG-CC; (iii) theory of change development; and (iv) analysis of energy and transport sector Project Results Assessments (PRAs). The seven projects were selected based on the following six criteria: (i) geographical representation (five regions of Africa: North, South, East, West and Central); (ii) the existence of the necessary documentation, mainly Project Completion Reports (PCRs); (iii) representativeness of the type of project (autonomous versus component); (iv) sectoral representativeness (energy and transport), including private sector operations; and (v) inclusion in the country case studies, through interviews with country-level and project stakeholders, focus group discussions with project beneficiaries, and project site visits for physical observation of the projects. The AfDB evaluation policy, the international evaluation criteria and the Evaluation Cooperation Group (ECG) Big Book on Good Practice Standards guided this evaluation, and a 4-point scale was used to assess project performance. Evidence from each of the six building blocks was then used to synthesize findings, and to develop a set of learnings.

The evaluation faced the following limitations: (i) lack of easily comparable databases for the energy and transport sectors at the AfDB; (ii) difficulty in generalizing the findings based on a limited sample size: only four energy and three transport projects (representing 6 percent of the total number of

energy and transport projects approved by the Bank over the evaluation period) were subject to PRAs; and (iii) challenges in defining the Bank's projects that have mainstreamed GG and CC within the cluster, especially in relation to the transport sector. To address these challenges, IDEV planned the evaluation in collaboration with PEGC and the AfDB's Regional and Country Offices. In addition to IDEV's internal review, the results of the evaluation were reviewed by an Evaluation Reference Group (ERG) comprising experts from the relevant departments at headquarters and decentralized offices, and external peer reviewers. Meetings were held with the ERG to discuss the emerging findings and lessons.

Findings

How well has the Bank mainstreamed GG-CC into its energy and transport sector interventions (including policies, strategies, and operations)?

The Bank has increasingly enhanced the integration of GG-CC principles into its sectoral policies and strategies, particularly in the energy sector, more so than in the transport sector. The evolution of the AfDB's energy policies since 1994 clearly reflects a growing emphasis on climate change (CC) and environmental considerations, and the increased importance of low-carbon development. This greater engagement with GG-CC considerations is also evident in the Bank's project-level funding and contribution to Africa-wide strategies. In the energy sector, the AfDB took a lead role in preparing the Clean Energy Investment Framework for Africa (CEIF) in 2008, highlighting approaches to increasing energy access and developing clean energy, and specifying resource requirements and the Bank's role. The 2012 Energy Policy took into consideration additional emerging challenges, including "increased concerns over climate change and other environmental issues." Critical issues identified and added to the updated policy reflect the greater integration of GG-CC considerations and include: (i) moving to low-carbon

solutions; (ii) social equity in the development of, and access to, the continent's energy resources; and (iii) the need for an integrated approach to on-grid and off-grid electrification. The goal of the New Deal on Energy for Africa (NDEA), launched in 2016, is to achieve universal access to electricity by 2025 by promoting on-grid and off-grid solutions. It facilitates AfDB collaboration with Regional Member Countries (RMCs) and the private sector to develop a Transformative Partnership on Energy for Africa.

An explicit focus on GG-CC in the AfDB's transport sector interventions is a relatively new development, and more recent than the focus on the energy sector. The Green Growth Sector Guidance Notes published in 2014 identify infrastructure and services as entry points for transformative action. Recent Bank publications demonstrate a growing recognition of the centrality of GG-CC issues to the transport sector. However, there remains a lack of a strategic framework, and specific policies and guidance to support the practical integration of GG-CC considerations within transport sector interventions.

The Bank has successfully mobilized and leveraged climate funds to finance major energy infrastructure projects. The Bank has successfully managed and mobilized climate funds for regional projects, including the Climate Investment Funds: Clean Technology Fund (CTF), the Scaling Up Renewable Energy Program (SREP), and private equity clean energy financing, an example of which is Morocco's Ouarzazate Concentrated Solar Power project. The leveraging of additional finance supports RMCs to address GG-CC issues through their infrastructure programming and is consistent with the greater engagement of the Bank's energy and transport policies on GG-CC.

Energy sector Program Based Operations (PBOs) have ensured more mainstreaming of GG-CC in the energy sector than in the transport sector, with no PBOs identified in the transport sector over the evaluation period. PBOs are key mechanisms through which the Bank can facilitate GG-CC mainstreaming in the

infrastructure sector. Evidence from [a previous IDEV evaluation](#), supported by country-level evidence from this cluster analysis, points to the central importance of sustained engagement at the policy level, supported by relevant country programming, in the success of PBOs in mainstreaming GG-CC considerations into RMC infrastructure policies.

The Bank is increasingly developing relevant knowledge products to support the integration of GG-CC in the energy and transport sectors. The Bank's knowledge programs reflect and reinforce the growing integration of GG-CC considerations into the energy and transport sectors. Knowledge programs in the energy sector, particularly through the Africa Infrastructure Knowledge Program (AIKP), have promoted GG-CC objectives. Progress in the transport sector is more recent, with important GG-CC-relevant publications, such as Economic and Sector Work (ESW) in rail and road networks focused on regional integration since 2014.

Although investments in green infrastructure have increased, particularly in renewable energy, there are still challenges faced in transitioning countries toward low-carbon development. While investments in energy projects that mainstream GG-CC have seen regional successes, several challenges to wider investments remain, including cost, existing fossil fuel-based infrastructure, underinvestment in power distribution, and the limited mobilization of private sector finance in transitioning countries.

How well have AfDB-funded energy and transport sector projects that mainstream GG-CC performed?

From the Bank's portfolio, seven projects were selected for in-depth analysis (PRAs), four in the energy sector and three in the transport sector. The PRA data were synthesized using scorecards to assess their relevance, effectiveness, and efficiency and the sustainability of their results based on a screening of project documents, log-frames, and other documents that were then cross-checked with on-site visits and through interviews with stakeholders.

Relevance: The overall relevance of the seven projects was assessed based on the alignment of their design with the associated Country Strategy Papers (CSPs) and Regional Integration Strategy Papers (RISPs) (where these refer to GG-CC at the time that the project was developed), as well as on the average alignment of the project with national policies, Bank strategies, tools and beneficiaries' needs that mainstreamed GG-CC. The overall relevance of the cluster projects was found to be satisfactory. Five of the seven projects were rated satisfactory or better in terms of relevance. The three highest-rated projects were all in the energy sector, reflecting the clear focus on green infrastructure investment options. Performance in the transport sector was less strong and a reflection of the fact that road transport interventions are rarely totally green. Success factors present in the three best-performing projects include clear alignment with the Bank's GG-CC strategy, and project design clearly targeted to achieve GG-CC objectives and reduce country dependence on non-renewable energy sources. Characteristics of less well-performing projects include the lack of a coherent theory of change or log frame to support GG-CC, the failure to clearly consider environmental impacts, and project objectives which are clearly counter to GG-CC goals.

Efficiency: The evaluation examined project efficiency in terms of budget, time usage, how a project had coped with challenges that significantly impacted project performance, and whether solutions were found to these challenges during implementation. The overall efficiency of the cluster projects was not satisfactory. PRA data analysis indicates that individual projects were not performing at a satisfactory level in relation to efficiency. Only three of the sample projects were rated satisfactory. No significant differences were observed in efficiency between energy and transport projects. Success factors present in the three best-performing projects include a high standard of technical verification, engaging stakeholders at all levels in decision-making, and competitive tendering to increase cost efficiency and design quality. The main reasons

for weak performance were poor technical design quality, implementation delays relating to technical challenges, and the failure to leverage funding for activities pertaining to GG-CC.

Effectiveness: The effectiveness of the projects in achieving their intended GG-CC mainstreaming results (outputs and outcomes) was also assessed, and was found to be satisfactory overall. Almost all the sample projects performed satisfactorily, with only one rated as unsatisfactory. Success factors present in the three best-performing projects include ensuring that environmental considerations are explicitly addressed in delivery, using term-based maintenance contracts to maximize outcomes in the area of GG-CC, and combining engagement at a sector policy level. Characteristics of less well-performing projects include a failure to consider realistic assumptions in project design, and a failure to demonstrate and document clear outcomes related to GG-CC.

Sustainability: Project sustainability was assessed in terms of the overall sustainability of project results (financial and institutional sustainability), to what extent projects had considered specific risks related to GG-CC or sustainability in their design or exit strategies, and whether projects were likely to be effective in the long term. Overall, sustainability of project benefits was seen as likely, with six of the seven projects rated satisfactory or better. The projects with sustainable benefits were associated with strong institutional ownership and vested interests in the continuity of energy and transport infrastructure. Both the public and the private sector projects show promising prospects for sustainability. Five out of the seven projects are revenue generating (all of the power sector projects and one toll road), and the other two roads in Rwanda and Cameroon are in countries with, in the case of Rwanda, strong public commitment to road maintenance, while in the case of Cameroon the roads sector is receiving significant development partner support to strengthen asset maintenance. PRA data from the sample energy and transport projects reviewed provide evidence

that interventions that explicitly consider their GG-CC impact and maintain environmental safeguards during implementation were more likely to make a sustained contribution to outcomes pertaining to GG-CC than those that did not.

Lessons

1. Establishing a clear strategic sector framework supported by complementary policies and strategies can support the mainstreaming of GG-CC considerations in sector interventions. In the case of the energy sector, the Energy Policy, Ten-Year Strategy (TYS) and the New Deal on Energy for Africa all have a clear integration of GG-CC considerations. In contrast, the transport sector lacks an equivalent overarching strategic framework and has only recently begun to substantively engage with GG-CC issues.
2. Designing interventions with clear alignment to GG-CC objectives is more challenging for projects in the transport sector. Given the greater complexities and trade-offs in defining what appropriate interventions pertaining to GG-CC look like in this sector, carrying out an in-depth analysis will be beneficial to determine what the key characteristics of GG-CC are within the transport sector to improve quality at entry, implementation, and supervision. More work is needed to help define what constitutes GG-CC and how it can be measured at the sector level.
3. The best-performing projects assessed in the cluster analysis were those projects that combined engagement at a sector policy level with project interventions, taking clear steps to ensure that environmental considerations are explicitly addressed throughout delivery and, in the transport sector, those projects that employ term-based maintenance contracts to maximize outcomes pertaining to GG-CC.
4. Successful GG-CC-aligned energy sector projects occur in countries that already have a strong commitment to GG-CC objectives in their energy mix. If the AfDB is to achieve its High 5s objective of Lighting Up Africa, much more needs to be done in countries that are not currently prioritizing GG in the energy sector. The onus on the AfDB is to try to create momentum for GG-CC in those countries where awareness is lower, and/or where other priorities are taking precedence. Power is capital intensive, and innovative investment is needed to achieve this, supported by effective knowledge-sharing programs.
5. A lack of coherence in regional responsibilities across Africa is a barrier to developing appropriate GG-CC solutions, particularly regarding harmonised technical standards in the transport sector. Despite this impediment, through a focus on the development of transit corridors and improving border crossings, Bank investments are able to realise GG-CC benefits from efficiency and effectiveness gains. This is consistent with both the High Fives and with GG-CC providing it is managed carefully.
6. Projects that have clear alignment with government priorities, build on long-term sector commitment and country engagement, establish robust institutional mechanisms to support financial sustainability, and effectively engage with end-users from the start have the greatest likelihood of sustainability.
7. It takes time, in-country resources, and extensive consultation to develop effective and appropriate GG-CC strategies and solutions. The Bank has been most successful in sectors with strong national leadership supporting GG-CC; where this is not present, a range of instruments including PBOs, project support, and knowledge products may help to develop the enabling GG-CC environment. This suggests that a GG-CC focus needs to be retained and mainstreamed over several CSP cycles. ■



Introduction

Background

The transition to Green Growth (GG) is one of the two overarching objectives of the African Development Bank's (the AfDB or the Bank) [Ten-Year Strategy](#) (2013–2022). Improved access to sustainable infrastructure, and a reduction of waste and pollution are key development results to support the achievement of green growth. Energy and transport are central to the Bank's "High 5s", namely, Light Up and Power Africa, Feed Africa, Industrialize Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa. Lighting Up, Powering and Integrating Africa depend on appropriate energy solutions that are consistent with Green Growth and Climate Change (GG-CC) objectives. There are growing needs in the energy sector that challenge electricity generating capacity, network resilience, and community and household connections. Improving access and connectivity is central to Integrating Africa. Both the energy and transport sectors have a pivotal role to play in the other three priority areas of Feeding Africa, Industrializing Africa and Improving the Quality of Life of the People of Africa. As an integral part of

IDEV's work program, this project cluster evaluation of the Bank's support for and mainstreaming of GG-CC into its energy and transport interventions is a building block of the overall corporate evaluation of mainstreaming GG-CC into the AfDB's interventions. This Cluster evaluation provides lessons and best practices to enable the Bank to improve the quality and performance of its interventions, and inform the new GG-CC strategic framework. This cluster evaluation is one of the corporate evaluation's six building-blocks, contributing to the overarching aim.

The focus of this cluster evaluation is limited to the energy and transport sectors.¹ Together, these two sectors cover over 40 percent of the AfDB's portfolio that mainstreams GG-CC by number and almost 60 percent by volume (Table 1)². The specific objectives of this evaluation are: (i) the extent to which the Bank mainstreamed GG-CC into its energy and transport sector interventions (including policies, strategies and operations); and (ii) the performance of Bank-funded infrastructure (energy and transport) projects that mainstream GG-CC in terms of relevance, effectiveness, efficiency and sustainability.

Table 1: Number and amounts of approved energy and transport projects that mainstream GG-CC, 2008–2018

Year	Number of projects			Net loan amount (UA billion)		
	2008-2012	2013-2018	2008-2018	2008-2012	2013-2018	2008-2018
Total (all sectors ³)	290	583	873	8.96	21.7	30.43
Energy	61	137	198	2.92	5.4	8.32
Transport	58	99	157	3.38	6.35	9.73
Cluster (Energy and Transport) sub-total	119	236	355	6.30	11.76	18.06
Cluster (Energy and Transport) projects as % of total projects	41.0	40.5	40.7	70.3	54.2	59.3

Source: IDEV Portfolio Review data.

Over the evaluation period from 2008 to 2018, there was an increase in the number of projects that mainstreamed GG-CC in the energy and transport sectors, but growth in lending in these sectors was lower than in other areas of the AfDB's portfolio.

Evaluation Approach and Methods

The project cluster evaluation of the Bank's support for and mainstreaming of GG-CC into its energy and transport interventions adopted a multi-pronged approach. The evaluation inception report presents a detailed account of the overall evaluation questions (in the [technical annex 1](#)), approach and methods, including sampling strategies.⁴ The key components are presented below.

Literature review. Key documents were identified and reviewed (listed in [technical annex 7](#)). The main policies, documents and milestones adopted by the Bank during the evaluation period (2008 to 2018) of relevance to the infrastructure cluster were mapped and summarized. The document review focused on policy documents, independent thematic evaluations and project evaluations, as well as information gained from country-level reports, and literature from Multilateral Development Banks (MDBs), including the World Bank, the Inter-American Development Bank and the Asian Development Bank, as well as key development partners, namely the European Union and bilateral donors, among others. The focus on meta-level documents provided useful contextual insight and enabled a degree of benchmarking to be undertaken, while providing a point of triangulation with the project-level and country-level sources.

Analysis of energy and transport sector Project Results Assessments (PRAs). PRAs were completed through a separate building-block activity, which involved in-depth assessments of 20 projects (four projects for each of the five case-study countries) sampled from the Bank's database of projects that mainstream GG-CC (prepared by IDEV). PRAs were primarily based on project-related documents, including Project Appraisal Reports

(PARs), Project Completion Reports (PCRs), Project Completion Report Evaluation Notes (PCR-ENs), Expanded Supervision Reports (XSRs), Expanded Supervision Report Evaluation Notes (XSR-ENs) and Project Performance Evaluation Reports. The evaluation team also conducted interviews with country-level and project stakeholders, focus group discussions with project beneficiaries, and project site visits to inform the PRA reports. The cluster analysis focused on the performance of the seven energy and transport projects among the 20 projects reviewed, with a total value of USD 564 million. The seven projects were allocated scores for overall performance against the international evaluation criteria.

This enabled an assessment of the projects' relevance to AfDB and national GG-CC strategies and policies, the efficiency with which the projects were implemented, the effectiveness of the interventions, and the sustainability of their results (both their overall and GG-CC specific sustainability profile). In addition, the evaluation team assessed the Bank's overall performance and value added in supporting GG-CC aspects of the projects, as well as each country's performance relating to its commitments to supporting GG-CC projects. A 4-point rating scale (highly satisfactory – 4, satisfactory – 3, unsatisfactory – 2, and highly unsatisfactory – 1) was applied to each project. The criteria for assessing the quality of the relevance, efficiency, effectiveness and sustainability of the AfDB's GG-CC portfolio are defined in the scorecard provided in [technical annex 3](#).

The analysis facilitated the identification of lessons from patterns of similarities and differences across the projects concerned. The findings of the cluster analysis complement the country case-study reports and were particularly useful in informing the assessment of the project cluster performance.

Data and trend analysis. IDEV's database on projects that mainstream GG-CC was used as the basis for data and trend analysis that quantified headline trends with respect to GG CC and, more

specifically, AfDB infrastructure programming in these areas. In particular, this analysis allowed the cluster evaluation to capture progress over the evaluation period, and differences across regions and subsectors.

Theory of change development. A combined theory of change (ToC) was prepared for the infrastructure cluster that draws together the energy

and transport infrastructure subsectors ([technical annex](#)). The evaluation team reconstructed this synthetic ToC in the absence of a current infrastructure ToC. It illustrates pathways of change and provides a framework for examining results, both at the individual project level, and at the project cluster level, and emphasizes and links the common characteristics of the two subsectors.

Limitations

Table 2: Identified methodological limitations and mitigation measures

Limitation	Mitigation Measures
Although energy and transport projects have technical linkages, they are managed by separate departments within the AfDB. Data sources were not entirely consistent, and data aggregation was difficult.	The impact of this challenge was minimized by ensuring that a broad range of diverse literature was reviewed, guided by discussions with key Bank staff and wider stakeholders. Inconsistencies between these documentary sources were noted and factored into the cluster analysis.
In most cases, RMCs have separate ministries covering energy and transport. In many cases, responsibilities are diffused further by the role of State-Owned Enterprises (SOEs), road authorities/agencies, independent regulators and private sector operators.	This challenge was addressed directly through evaluation fieldwork. Within the available timeframe, national stakeholders with a strong understanding of the national institutional and governance dimensions relevant to the cluster were consulted to ensure engagement with all relevant agencies.
Only four energy and three transport projects were subject to PRAs. It is not appropriate to overstate stand-alone conclusions by performance metric (relevance, development outcomes performance, etc.) given this small PRA sample.	Since the sample is small and the project characteristics and contexts differ greatly, the review drew on secondary, as well as primary, sources of information. While findings for specific PRA projects are considered robust, care was taken to avoid generalization when drawing broader, portfolio-level conclusions.
There are challenges defining projects that mainstream GG-CC within the cluster, especially in relation to the transport sector. This poses challenges in classifying projects that cover multiple sectors. As a result, the assessment of the progression of mainstreaming over time at the portfolio level was also limited.	Given the multi-faceted nature of infrastructure sector investments, care has been taken throughout this cluster evaluation to address this complexity and avoid over-simplistic conclusions. For instance, a light rail transit (LRT) system that uses electricity from a hydro power source might contribute to GG-CC objectives because: (i) it uses clean energy; and (ii) it reduces vehicle use and lowers the carbon footprint with the outcome: "Green House Gas emissions reduced". However, hydro power often requires dam construction that may adversely impact the environment, and contribute to the loss of productive land.



The Bank's Support for and Mainstreaming of GG-CC into its Energy and Transport Interventions

AfDB Policies in the Energy and Transport Sectors

Energy

Finding 1: The evidence is positive in support of the mainstreaming of GG-CC in the Bank's energy policies. The evolution of the AfDB's energy policy since 1994 clearly reflects growing emphasis on climate change and environment considerations, and the increasing importance of low-carbon development. This greater engagement with GG-CC considerations is evident in the Bank's project-level funding and contribution to Africa-wide strategies.

The AfDB's strategic framework for the energy sector is defined by the [Energy Policy](#) (2012), the [Ten-Year Strategy](#) (TYS 2013–2022) and the [New Deal on Energy for Africa](#) (NDEA 2016–2025). These three strategic documents identify the operational priorities of the Bank's activities and the guiding principles that underpin them. The mutually reinforcing principles outlined in the NDEA include raising aspirations to resolve Africa's energy challenges, establishing a Transformative Partnership on Energy for Africa, mobilizing domestic and international capital for innovative financing in Africa's energy sector, supporting African governments to strengthen energy policy, regulation and sector governance,

and increasing the Bank's investments in energy and climate financing. Operational priorities for the energy sector build on these principles and include:

- Improvement and modernization of energy infrastructure;
- Strengthening the capacity of sector institutions to develop and implement projects and to manage and maintain the developed infrastructure;
- Improving access for businesses and households;
- Regional integration through energy infrastructure; and
- Promoting private investment in energy infrastructure.

Policy evolution: The AfDB's previous energy policy was developed in 1994.⁵ Many of the issues identified then remain critical today, including the lack of investment capital, dependence on imported petroleum products, volatile prices and exchange rate risks, a shortage of technical skills, poor maintenance of energy infrastructure, limited regional cooperation, obstacles to efficient energy pricing, and inadequate demand-side management.

The 2012 Energy Policy considered additional emerging challenges, including: “*increased concerns over climate change and other environmental issues.*”⁶ Critical issues identified and added to the updated policy reflect the greater integration of GG-CC considerations and include:

- Moving to low-carbon solutions;
- Social equity in development of, and access to, the continent’s energy resources; and
- The need for an integrated approach to on-grid and off-grid electrification.

Before the evaluation period, the Bank relied on the private sector to expand energy investments and access, which created a financing gap. By the mid-2000s, the AfDB began to scale up funding to the public sector. This coincided with a growing focus on climate-related sustainable energy options, leading the Bank to initiate the Financing Energy Services for Small-scale Users (FINESSE) program to help RMCs generate a pipeline of investment projects in renewable energy and energy efficiency.

The AfDB took a lead role in preparing the [Clean Energy Investment Framework for Africa](#) (CEIF) in 2008 and [the Climate Risk Management and Adaption Strategy](#) (CRMA) in 2009. The CEIF highlights approaches to increasing energy access and developing clean energy, as well as specifying resource requirements and the Bank’s role. To reduce the vulnerabilities to climate change and climate variability within the RMCs and promote climate resilience, the Bank-financed development investments under the CRMA delineated into three areas of intervention: (i) “climate proofing” investments; (ii) policy, legal and regulatory reforms; and (iii) knowledge generation and capacity building.

The **NDEA**, launched in 2016, reflects evidence that about 60 percent of sub-Saharan Africa’s (SSA) population—or more than half a billion people—remain without access to electricity. In rural areas the situation is even worse, with only one in four

Africans having access to electricity. Per capita energy consumption in SSA, excluding South Africa, is still extremely low, at just 180 kWh compared with 13,000 kWh per capita in the United States, 6,500 kWh in Europe and 2,000 kWh in other developing countries. The NDEA goal is to achieve universal access to electricity by 2025⁷ by promoting on-grid and off-grid energy solutions. The NDEA facilitates the AfDB’s collaborations with RMCs and the private sector to develop a Transformative Partnership on Energy for Africa.

The growing engagement of the Bank’s policy with GG-CC issues is reflected in project-level funding. The share of renewable energy projects as a portion of the Bank’s portfolio of power generation investments increased from 14 percent in 2007–2011 to 64 percent in 2012–2016. The AfDB achieved 100 percent investment in renewable energy in 2017—a significant achievement that further demonstrates the organization’s commitment to clean energy and efficiency.⁸

Conversely, while the energy portfolio overall is becoming greener, during the evaluation period major investments were still made by the AfDB in fossil-fuel power generating capacity, for example in the 1,588 MW coal fired Medupi power plant in South Africa. This power plant complex has experienced serious construction quality and reliability challenges with its generators, subsequently affecting desulphurization. While this project was not included in the cluster evaluation, it is important to note that such investments are in contrast to the Bank’s wider move toward renewable energy and are not compatible with GG-CC objectives.

Despite the New Deal, AfDB assistance for rural electrification has generally remained low. Only 20 of the 201 AfDB-funded energy operations in 1999–2013 were for rural electrification. These operations provided financing of UA 494 million of UA 7 billion invested in the power sector.⁹ Rural electrification commitments totaled UA 257 million over the 2009–2013 period, but then declined to just UA 132 million in the 2014–2018 period.¹⁰

Off-grid solutions demonstrate considerable potential, as shown in Rwanda, but represent only a small share of total AfDB funding. Increasing support for rural electrification is crucial given low electricity coverage in rural areas across SSA. There seems to be a clear logic in the AfDB seeking to support all levels of power distribution in order to achieve the High 5s power target.

Transport

Finding 2: An explicit focus on GG-CC in the AfDB's transport sector interventions has been a relatively new development and more recent than that in the energy sector. Recent Bank publications demonstrate a growing recognition of the centrality of GG-CC issues to the transport sector. However, there remains a lack of a strategic framework, and specific policies and guidance to support the practical integration of GG-CC considerations within transport sector interventions.

The AfDB Group's vision to address the continent's infrastructure deficit has a strategic focus on both the national and regional levels.¹¹

At the **national level**, transport projects financed by the Bank should contribute to reducing infrastructure shortages, with a view to stimulating economic growth. This objective is sought by:

- Selecting projects according to their potential to contribute to economic growth; and
- Strengthening local capacity in managing and implementing projects through accommodating measures designed with the operations departments.

At the **regional level**, projects should contribute to facilitating the exchange of goods and services between countries. This objective will result in:

- Financing of regional strategic projects and programs, conducted in close collaboration with New Partnership for Africa's Development

(NEPAD),¹² the African Union (AU), and Regional Economic Communities (RECs). The programs financed should contribute toward regional integration and market expansion.

- Building of regional capacity to manage and implement operations.

The AfDB has placed considerable focus, at both the regional and national levels, on the development of Public-Private Partnerships (PPPs) to mobilize the necessary financing to meet the identified needs.

The **1993 AfDB Transport Sector Policy** provides the basis for interventions in the transport sector, based around two strategic pillars: (i) promoting intra-Africa and international trade and economic integration through improved transport systems; and (ii) the development of areas or "zones" of demonstrated economic potential. Climate is not identified as a key issue for the transport sector in this policy, which instead identifies maintenance and rehabilitation of transport infrastructure, regulatory and policy issues, barriers to international traffic, rural transport services, the use of appropriate technology, and safety, as the key issues facing the sector.

The focus on GG-CC in the transport sector is a more recent development. The Green Growth Sector Guidance Notes published in 2014¹³ identify energy, infrastructure and services as entry points for transformative action. It cites the following projects as examples of good practice:

- Bujumbura and Mpulungu ports (on Lake Tanganyika);
- Abuja bus rapid transit;
- Tangiers-Marrakesh Railroad Capacity project;
- Nacala Road Corridor Phase III, Mozambique; and
- Sustainable Urban Transport in East African Cities.

These projects focus on a diverse range of intervention types consistent with national and regional strategic priorities. Interventions include investments in inland waterways, improved public transport systems, improved rail freight, and capacity building of transport institutions, and they reflect the wider evolution of the Bank's support in the transport sector to incorporate projects with specific GG-CC goals.

The [2014 IDEV evaluation titled "Transport in Africa"](#) provides further evidence of this thinking evolution. This evaluation focused on mobility and accessibility, the contribution to regional integration, and PPPs. While the focus of the 2014 evaluation was not on GG-CC, the report nonetheless clearly identified climate change as a key emerging development challenge in the sector. It acknowledged the limited consideration of CC issues in the AfDB's transport projects under the 1994 Transport Sector Policy and identifies a range of GG-CC considerations for inclusion in future policies. In relation to CC in the transport sector, the evaluation highlighted the need to identify transport projects which CC could be expected to impact, and to develop a specific policy with respect to such projects. Other more specific GG-CC relevant considerations highlighted in the 2014 evaluation included the need for activities to facilitate growth in rail travel and steps to improve the efficiency of urban transport, including through the improved integration of public transport, introducing and enforcing emissions standards, and improved pedestrian and cycle facilities.

More recent Bank publications^{14,15} reflect this greater consideration of GG-CC issues. Specific activities include the Bank's engagement at the Transport and Cities Day of COP 24, and dialogue on challenges and opportunities facing African cities in relation to urban resilience, transport emissions, delivering low-carbon infrastructure, and implementing policies that improve air quality at the national and local levels. It is clear that the Bank has an important role to play in supporting infrastructure development that is responsive to the challenges posed by increasing climate variability and change across the continent.

Recent examples, such as those mentioned above, include Bank support to African governments with investments in sustainable transport initiatives that are climate-proofed to support sustainable urban development and build resilience to climate change.

While there is clearly a growing recognition of the centrality of GG-CC issues in the transport sector, greater efforts are needed in this area. There is currently a lack of clear transport-specific policies to provide direction and support to the integration of GG-CC considerations in transport sector interventions. Given the complexities and trade-offs associated with GG-CC considerations in the transport sector, this leaves a potentially significant gap.

In addition to these sector-wide documents, the AfDB has developed various sub-sectoral initiatives relevant to GG-CC. In the rail subsector, the Bank has prepared a report on the financing options¹⁶ that shows that, with a few exceptions,¹⁷ African railways lag behind those of other regions in the world, resulting in outdated infrastructure due to poor economic, technological and institutional conditions. Recently, the situation has been reversed in some places with ongoing major rail investments, including the first high-speed rail project in Africa and the construction of new rail lines in East Africa. The dominant investor/constructor has been China. Chinese support is attractive to borrowers as implementation can be faster due to streamlined approval processes.¹⁸ However, concerns have been raised about potentially lower environmental and social safeguards than would be the case for Bank-funded projects, and less alignment with the wider GG-CC objectives.

AfDB Leveraging of Additional Resources for the Energy and Transport Sectors

Finding 3: The AfDB has successfully managed and mobilized climate funds for regional application, including the Climate Investment Funds (CIF)—Clean Technology Fund (CTF), the Scaling Up Renewable Energy Program (SREP), the Global Environment Facility (GEF), and in private equity clean energy



financing. The leveraging of additional finance is supporting RMCs to address GG-CC issues through their infrastructure programming, and is consistent with greater engagement of the Bank's energy and transport policies on GG-CC.

As illustrated in the ToC for the energy and transport sectors ([technical annex 2](#)), the leveraging of additional resources is an important component of the AfDB's inputs and cluster investments in the energy and transport sectors. The Bank has a crucial role to play in supporting RMCs by leveraging additional resources to develop sustainable infrastructure. The Africa Renewable Energy Initiative (AREI), the goal of which is to deliver 300 Gigawatts (GW) of renewable energy by 2030 and 10 GW by 2020, is based within the Bank.¹⁹ The Bank is a key partner of the Global Environment Facility (GEF), mobilizing US\$313 million in grants since 2007.²⁰ The Bank is also an accredited entity of the Green Climate Fund (GCF), mobilizing almost US\$200 million since 2018 for mitigation and adaptation projects, and an implementing agency of the Climate Investment Funds (CIF). The US\$8.3 billion CIF supports low-carbon and climate-resilient development, of which one-third goes to Africa.²¹

The CIF provides grants, concessional loans, risk mitigation instruments, and equity that leverages significant financing from the private sector, MDBs and other sources. As part of the AfDB's commitment to supporting Africa's move toward climate-resilient development, the Bank is expanding access to international climate change financing. With CIF support, the AfDB has financed 39 investment plans in 27 countries to transform economies through renewables, sustainable transport, climate resilience and sustainable forest solutions. The CIF includes two key programs of direct relevance to the energy and transport sectors: the CTF and the SREP.

The CTF supports investment programs for low-carbon technologies²² in: (i) energy efficiency/demand-side management; (ii) the transport sector; (iii) concentrated solar power; (iv) integrated gasification combined-cycle power plants; (v) large-scale wind power; and (vi) residential lighting. As of December 2018, the AfDB had approved 22 projects for US\$2.5 billion (AfDB US\$1.8 billion, CIF US\$0.7 billion).²³ An AfDB report published in November 2018 that summarized progress during the first 10 years revealed that the AfDB and CIF had mobilized

an additional US\$12.3 billion in co-financing.²⁴ Key projects funded by the AfDB to date include:

- Morocco: Noor 1, 2 and 3 Concentrated Solar Power Projects
- Morocco: One Wind Energy Program
- South Africa: Eskom Renewables Support Projects and Sere Wind Farm
- South Africa: Sustainable Energy Acceleration Program and Xina Solar One Project
- Nigeria: Line of Credit for Renewable Energy and Energy Efficiency
- Kenya: DPSP II: Concessional Finance Program for Geothermal Generation and 35 MW Geothermal IPP Project²⁵

The AfDB is also implementing the SREP in Ethiopia, Kenya and Mali. The Bank is supporting its RMCs to coordinate with their respective private sectors, civil society and other stakeholders to develop SREP investment plans. The AfDB expects to co-finance approved SREP projects from its own resources in addition to channeling SREP funds.

The SREP can provide policy support and technical assistance to develop national renewables strategies. It can also underwrite additional capital costs and risks associated with renewable energy (RE) investments and other instruments for reducing risk to investors. Eligible investments include:

- RE technologies: solar, wind, bio-energy, geothermal and small hydro <10 MW.
- RE deployment applications: electricity generation, thermal applications, and mechanical operations.
- Technology modes: national/regional grid connected, off-grid, stand-alone or distributed generation.

- Interconnection improvements related to RE scale-up programs.

The AfDB is also mobilizing further private sector investment. This includes an investment made in 2017 of US\$20 million in the Evolution II Fund—a Pan-African clean and sustainable energy private equity fund. Evolution II is a 10-year closed-ended fund based in South Africa with a mandate for equity and equity-related investments into two investment streams: (i) development and project finance infrastructure-type investments in clean and sustainable energy; and (ii) growth equity investments in energy and resource efficiency companies, and the value chains that support them.²⁶

This analysis shows that the Bank has leveraged significant additional finance and mobilized resources to support green and climate-resilient energy and transport programs. Key success factors are discussed in more detail in the *Project Cluster Performance* section, in relation to the Noor 1 project in Morocco, including effective country leadership, cluster of investments, and strong technical assistance and contracting support.

Improved Resource Management to Support Sustainable Energy and Transport Reforms

Finding 4: Policy-Based Operations (PBOs) are a key mechanism through which the Bank can facilitate GG-CC mainstreaming in the infrastructure sector. Evidence from a previous IDEV evaluation, supported by country-level evidence from this cluster evaluation, points to the central importance of sustained engagement at the policy level, supported by relevant country programming, in the success of PBOs in mainstreaming GG-CC considerations into RMC infrastructure policies.

The AfDB supports sustainable infrastructure at the project level, but to effectively support the integration of GG-CC considerations in the energy and transport sectors, effective policy engagement

is also essential. PBOs at the sector level provide a key instrument to the Bank for facilitating energy and transport sector reforms and management, with the potential to support GG-CC. The AfDB has used PBOs more extensively in the energy sector than in the transport sector, as illustrated in Table 3.²⁷ No PBO projects over the timeframe were classified as transport sector interventions, although one multi-sector project refers to transport in its title. This is consistent with the greater integration of GG-CC in the Bank's energy policies compared with the transport sector, as discussed in the AfDB Policies in the *Energy and Transport Sectors* section.

An [IDEV evaluation of PBOs in the energy sector](#) provided insights into the use of PBOs in the sector.²⁸ This evaluation covered five countries with programs executed between 2012 and 2017. Key lessons were as follows:

- I Programming: Energy PBO success needs medium-term engagement:** Structural reform objectives targeted by PBOs can in most contexts only be attained through continuous and gradual change to consolidate improvements rather than trying to force rapid change. In most cases, sustained multi-year PBO operations are required to engender significant change.
- I Programming: Maximizing the effects of the PBOs' contribution to fiscal space requires that PBO design and programming take into**

account the country's immediate financial needs and appropriate medium- and long-term structural reforms. The primary interest of most RMCs when approaching the Bank to undertake PBOs is short-term financial assistance to help protect fiscal space and/or facilitate macroeconomic stabilization. The lesson drawn here is that careful attention needs to be given to the way this fiscal space is used to address structural constraints and short-term needs. PBOs should aim to create a "bridge" between short-term macro relief and medium- to long-term structural reform.

- I Strategic: The contribution to fiscal space is the most obvious benefit of PBOs and should therefore be used strategically to ease structural constraints in support of longer-term reforms.** PBOs should reflect this reality and provide explicit guidance for the assessment of the contribution to fiscal space and for targeting its utilization.
- I Performance:** For successful medium-term PBOs, sufficient staffing and technical assistance need to be in place. Country Offices with the appropriate staff mix should be able to conduct a continuous, strategic and analytical dialogue.

These lessons are of direct relevance to GG-CC integration into PBOs and are consistent with the country-level findings from this evaluation. The

Table 3: Use of PBOs in the energy and transport sectors

Country	Project name	Sector Classification	Value (UA) '000	Year of Approval
Angola	Power Sector Support Program	Power	49,000	2014
Tanzania	Power Sector Reform and Governance Support Program	Power	20,000	2015
Madagascar	Energy Sector Reform Support Program (PARSE)	Power	13,770	2016
Benin	Energy Sector Support Program (PSRGSP)	Power	19,920	2017
Nigeria	Transport Sector & Economic Governance	Multi-sector	194,636	2013

GG-CC evaluation sample found that PBOs drive change where there is mutual interest with an RMC in implementing GG-CC. Where this is the case, sustained engagement through PBOs increases RMC policy engagement with GG-CC issues. In Morocco and Rwanda, for example, keen policy-level commitment to reforming energy and transport, and mainstreaming GG-CC considerations within these sectors, was made possible through sustained PBO support to these countries over time, as well as targeted funding for interventions of direct relevance to the Bank's GG-CC objectives, such as the Noor Ouarzazate Solar project in Morocco.

The AfDB's Contribution to Sustainable Energy and Transport through Knowledge Programs

Finding 5: The Bank's knowledge programs reflect and reinforce the growing integration of GG-CC considerations in the energy and transport sectors.

Knowledge programs in the energy sector, particularly through the Africa Infrastructure Knowledge Program, have promoted GG-CC objectives. Progress in the transport sector is more recent, with important GG-CC relevant publications evident since 2014.

Energy

The **Africa Infrastructure Knowledge Program (AIKP)** is hosted within the AfDB and is intended to create momentum for the Bank's High 5s in energy. A recently published technical AIKP report²⁹ to support the **Roadmap to the NDEA** detailed analysis of the costs of the New Deal by country pursuing GG energy solutions. It observes that:

"The additional costs for Africa in pursuing a low carbon development path ... provide AfDB with an opportunity to front the case for these costs being covered by the global community which wants to see a "clean development path" for Africa. Most international funders are no longer willing to finance



fossil-fuel based generation sources. Specifically, the Low Carbon Scenario implies US\$10 billion in additional annual investment and US\$5.8 billion in additional annual system costs from 2030 compared to the reference scenario."

The report provides a basis for the AfDB to make Africa's case for the international community to cover these costs. Through the AIKP, the Bank has supported and informed the development and operationalization of the Roadmap to the New Deal on Energy in Africa. The New Deal promotes the transition to RE and the greening of the grid, and has enabled progress to this end in several countries across the continent.

Africa currently has an unprecedented 80 GW of new capacity under construction. This limits the need for additional investments until 2025, and even introduces likely surpluses in Eastern and Southern Africa. About 49 percent (39 GW) of this new capacity is being added in Northern Africa, which is set to retire 19 GW during the period. On the other hand, Central Africa has only 1 GW under construction compared with East Africa's 12 GW. At the continent level, these numbers indicate that there is already momentum to achieve the New Deal's targets, supported by the AIKP, although greater action is needed to address the issue of unequal access across the continent.

The case of Kenya provides a particularly striking example of what can be achieved with sufficient levels of financial investment, together with policy and knowledge support. Having previously faced energy deficits, the country could achieve universal access to electricity by 2022 if it continues with its current policy, which has brought a large contribution of renewables into the energy mix. Ethiopia could follow suit toward the end of the decade.

Transport

The transport sector has evolved during the period under evaluation (from 2008 to 2018), from having

little focus on knowledge products and modest policy engagement to a position where, guided by the High 5s, the sector is working to support regional integration in terms of transport corridors and enhanced connectivity.

The previously mentioned 2014 IDEV evaluation of Transport in Africa found that the AfDB had not taken the lead in transport sector knowledge programs.³⁰ It found that: *"The Bank's transport sector projects have rarely been leveraged to advance policy dialogue or Economic and Sector Work (ESW). Country and regional case studies revealed that non-lending activities have similarly not been used to open discussion about other sub-sector challenges beyond project management issues."*

Since the 2014 evaluation, the Bank's Transport and Urban Development Department has increased its focus on strengthened ESW in terms of regional analyses. Key products have been prepared for both rail and road transport modes that are relevant to GG-CC, including: "Rail Infrastructure in Africa: Financing Policy Options"³¹ and "Cross-Border Road Corridors: The Quest to Integrate Africa."³² Railways generally have lower negative externalities in terms of accidents, air-pollution, climate change and noise, as well as lower impact on landscape and biodiversity losses than alternative transport modes, especially road modes and in urban areas. The analysis of road corridors identifies the AfDB's contributions to key corridors supporting trade, and shortening journey times and distances, thereby benefiting GG-CC objectives.

Overall, in both the energy and transport sectors, the AfDB has prepared high value-added knowledge products and programs. In the energy sector, AIKP has prepared important projections bearing in mind the need for, and the cost of, achieving GG-CC objectives. In the transport sector, the AfDB has strengthened its role since 2014.

Green Growth Investment Models for Sustainable Energy and Transport Infrastructure

Energy

While investment in energy projects that mainstream GG-CC has seen regional successes, several challenges to wider investment—including cost, existing fossil fuel-based infrastructure, underinvestment in power distribution and limited mobilization of private sector finance—still remain.

Finding 6: Innovative investment is needed to support RMCs to retire their fossil-fuel generating capacity. These fossil-fuel (heavy fuel oil and coal) plants may be repurposed to provide standby generating capacity, which would curtail their overall emission levels while increasing resilience. This is already happening in Rwanda where cleaner fuels, including those produced by KivuWwatt, replace existing heavy fuel oil burning power plants.

Finding 7: Opportunities for funding energy in Africa are likely to increase as GG-CC momentum builds in the investment community. The challenge is for the AfDB to harness and “crowd in” investment by increasing transparency and predictability in the energy marketplace.

Some regions in Africa, including East Africa, are experiencing very high levels of investment in power generation with mixed generation methods that support system resilience.³³ Despite this, there are challenges in meeting the aspirations of the New Deal:

- Despite improving viability, investment costs increase when using green technology;
- The Bank has until recently been funding fossil-fuel generation, even with a change in investment direction (for example, the Dibamba power plant in Cameroon, which uses heavy fuel oil, and the Medupi coal-fired power plant in South Africa);

- Many problems in providing power to African populations relate to both rural and urban distribution, but to date the Bank has not been investing heavily in power distribution; and
- The AfDB's investment in power generation has been predominantly in public sector projects. However, much of the potential to mobilize additional financial resources for the energy sector requires private finance and management.

Shifting away from fossil fuels: The AfDB has recently made major commitments in terms of supporting RMCs to retire thermal power stations. AfDB President Akinwumi Adesina unveiled ambitious plans to scrap coal-fired power plants across the continent and switch to renewable energy at UN climate talks in September 2019.³⁴ Plans were outlined to close coal-fired power plants and build the “largest solar zone in the world” in the arid Sahel belt. He observed that: “*Coal is the past, and renewable energy is the future. For us at the African Development Bank, we're getting out of coal*”. The President noted that plans for US\$20 billion of investments in solar and clean energy would provide the Sahel region's 250 million people with 10,000 MW of electricity. The challenge is to bring this vision to fruition through ambitious programs, such as the Desert to Power initiative³⁵ that is now being rolled out.

The private sector: A key driver of investment in energy is the increasing attractiveness of green energy to investors. Risk factors related to climate change have become more prominent since the 2015 Paris Climate Change Agreement. Financial markets link GG to the broader classification of environmental, social and governance (ESG). Some stakeholders, including Amundi Asset Management, argue that the fund industry will most likely embrace a near 100 percent ESG-based model by 2030.³⁶ Where ESG adoption has been higher, such as in Europe, markets have rewarded ESG factors by pricing in their risks.

One investment model is to put sustainability and financial criteria on an equal footing. This approach integrates ESG factors into traditional fundamental analysis to improve portfolio returns, followed up by active shareholder engagement to gain information and drive changes in the most relevant ESG issues. A key challenge is to define and measure outcomes, isolating the impact of pure ESG from that of other factors, given their interlinkages. This requires specialist skills in three distinct areas: (i) selecting the ESG factors that are material to a company; (ii) integrating them with other value drivers to deliver superior long-term risk-adjusted returns; and (iii) engaging with investee companies to ensure that they are managing financial and non-financial risks that matter to survival and growth.

This evaluation found that the AfDB has invested in GG energy projects in countries such as Morocco and Rwanda, where there have already been government-led drives to support investment in the area of GG-CC. Support for sustainable forms of energy have been less prominent where national leadership has not been shown. A key challenge, then, is to generate momentum in a broader range of RMCs, which can in turn attract more private sector, ESG-focused energy sector investment.

Transport

Finding 8: There is a clear Africa-wide vision for the future of transport across the continent that incorporates GG-CC considerations. However, while there is a broad framework of institutional coordination at the regional level, there are many overlapping responsibilities that make it challenging for the AfDB and other stakeholders to effectively mainstream GG-CC objectives at the policy, strategy and project levels. Other additional factors include:

- The AfDB has successfully increased its focus on regional land corridors, including addressing border crossing times, and this enhanced connectivity is consistent with increasing trade while enhancing transit efficiency.

- With rapid urbanization, the need for an additional focus on transport in urban areas is growing from both GG and CC perspectives. The AfDB is increasing its focus to support public transport, including rail investment.

The African Union Commission (AUC) Agenda 2063³⁷ provides a vision for the future that envisages affordable, efficient, and safe transport to facilitate the economic and social integration of the African continent. It builds on and seeks to accelerate, the implementation of continental initiatives for green growth and sustainable development.

The AfDB is engaged in several regional transport sector initiatives, including:

- The New Partnership for Africa's Development (NEPAD), adopted in Lusaka, July 2001;
- The Program for Infrastructure Development in Africa (PIDA);
- Steps by Africa's eight Regional Economic Communities (RECs) to strengthen transport infrastructure provision and management;
- Infrastructure investment and arrangements for key corridors, including the Northern Corridor, the Central Corridor, the Dar es Salaam Corridor, the Walvis Bay Corridor, the Maputo Corridor and the Abidjan-Lagos Corridor;
- The Africa Transport Policy Program (SSATP) to support transport sector reform and capacity building measures; and
- The Presidential Infrastructure Champion Initiative (PICl).

While the vision articulated in Agenda 2063 is clear, existing governance structures include overlapping responsibilities. As noted on the AUC website, a key factor for successful implementation is the capacity of institutions to take ownership and contribute, described as the "*domestication of the Agenda.*"

Within Africa, regional responsibilities for transport, and to a lesser extent energy, lack clarity. This lack of coherence is a barrier to developing appropriate GG-CC solutions, particularly regarding harmonized technical standards.

Articulation of GG-CC priorities in transport has been facilitated by the AfDB through corridor initiatives.³⁸ Time savings using key corridors, combined with one-stop border posts, increase transport efficiency by improving journey times and creating fuel economies. While transport investment is inherently important given poor regional and national connectivity in many parts of the continent, evidence suggests that despite the GG framework, the response to GG-CC has not generally incorporated major investment switches to more sustainable transport systems (e.g., trains and light rail transit [LRT] systems, bus rapid transit [BRT] systems). Constraints to achieving GG-CC objectives in the transport sector reflect the following issues.

Urbanization contributes to congestion, pollution and travel times: Economic and population growth, together with rapid urbanization, creates challenges and opportunities. While mobility is improving, pollution and congestion are growing problems in African cities. In 2010, the share of the African population living in urban areas was about 36 percent, and this is projected to increase to 50 and 60 percent by 2030 and 2050, respectively.³⁹ Road transport is responsible for 10 percent of global green-house gas (GHG) emissions and more than 70 percent of transport sector emissions. Growing urban areas are contributing to an increased rate of motorization, further increasing their carbon footprint.⁴⁰ North Africa has a higher urban population (47.8 percent) relative to SSA (32.8 percent).

Improved urban transport can reduce income inequalities by opening opportunities for the population to access better-paying jobs and educational opportunities, thereby enhancing social mobility. It also has clear links to outcomes pertaining to GG-CC, with rapid urbanization and motorization, combined with limited capacity to manage traffic, resulting in urban congestion and rapidly rising GHG

emissions from urban transportation.⁴¹ BRT and LRT solutions may offer GG-CC-appropriate approaches in urban areas but have not been prominent areas for investment by the AfDB to date.

To address Africa's rapid urbanization and the inherent challenges associated with this (such as rising urban GHG emissions, insufficient access to essential services, and growing insecurity and poverty), the AfDB has established a thematic multi-donor trust fund, the Urban & Municipal Development Fund (UMDF) housed in the Infrastructure & Urban Development Department (PICU).⁴²

Connectivity is adversely affected by the time required for cross-border trade. The World Bank's Doing Business 2017⁴³ survey results indicate that the average ranking of SSA countries for the category "Trading across Borders" is 130th out of the 190 countries surveyed. The World Trade Organization (WTO) notes that Africa's development is more hampered by trade and transport facilitation issues than any other region.⁴⁴ Levels of intra-regional trade in Africa are low, which is both a cause and effect of missing transport linkages.⁴⁵ The United Nations Economic Commission for Africa's (UNECA) Trade Similarity Index highlights the lasting effects of these features in the trade statistics, which point to a low 12 percent of total intra-Africa trade.⁴⁶ A recent Political Economy Analysis (PEA) of the African Union⁴⁷ suggests that, despite geographic proximity, cultural affinity and economic size, "Africa is under-trading with itself."⁴⁷ Slow border crossing times increase GG-CC burdens, with trucks held up at border points, idling in queues and contributing to fuel emissions.

Inland countries: Africa's 16 inland countries face acute problems with trade connectivity. The lack of direct territorial access to the sea, remoteness and isolation from major international markets make Landlocked Developing Countries (LLDCs) in Africa highly dependent on transit countries for seaborne trade. Additional border crossings and remoteness from major markets, coupled with cumbersome transit procedures and inadequate infrastructure,

substantially increase the total costs of transport that erode the competitive edge of LLDCs, reduce economic growth, and inhibit their capacity to promote social development and environmental sustainability.⁴⁹ In the case of Rwanda, for example, most of the country's fuel (petrol, heavy fuel oil and diesel) must be trucked in, as there are to date no pipelines or any rail access (although it is noted that the Isaka-Kigali Standard Gauge Railway is under preparation).⁵⁰ LLDCs face trading costs that are much higher than in Africa's coastal countries.⁵¹ Without extensive development of green transport infrastructure, including passenger and freight railways, and fuel pipelines, this will remain a significant constraint to GG.

Transport governance: As with many aspects of transport governance, a key part of the challenge relates to the allocation of responsibilities for setting standards, and facilitating their roll-out and enforcement. The AUC, RECs and national governments all have a role to play, but there is strong industry opposition to measures that impose the additional costs necessary to support GG-CC objectives on key stakeholders, such as haulage companies. In some RMCs, politicians are direct stakeholders in the haulage subsector, having financial stakes in owning and/or controlling companies operating in the subsector.⁵² The increased use of PBOs and other relevant instruments would enable the AfDB to engage more broadly on issues of road-pricing schemes, fuel taxation and vehicle excise duty, to support efficient GG transport operations.

The 2017 and 2018 Infrastructure and Urban Development Department Annual Reports⁵³ illustrate that a high share of the Bank's spending continues to go into highways, airports and, in some years, ports. These play a vital role in terms of regional and national trade, especially for landlocked countries,

but they may not address issues of pollution, as they facilitate increases in vehicular traffic. There may be several contributory factors to the dominance of road transport investment by the AfDB:

- The AfDB has a comparative advantage in major highway projects and, with rapid vehicle growth, the demand for improved roads by RMCs remains high; and
- The Government of China is funding port and rail projects across Africa under its Belt and Road Initiative (BRI). This financing, although largely tied from a procurement perspective, is attractive to borrowers, as implementation can be faster due to streamlined approval processes.⁵⁴

Although not totally green, road transport investment may reduce congestion and vehicle operating costs (VOC). Even rural roads, once upgraded to all weather roads, can enhance connectivity, and contribute to one or more of the High 5s.

The AfDB is increasing its investment in air transport and published a Framework and Guidelines to Support the Aviation Sector in 2019.⁵⁵ This includes limited references to GG-CC, for example, proposing that brownfield land should be used for airport investment where possible and endorsing the choice of single-aisle aircraft. It notes that on short- and medium-haul flights, single-aisle aircraft improve airline performance (better load factors, higher aircraft utilization and lower operating costs) and are the most viable options for airlines to operate intra-African routes with low traffic levels. New single-aisle aircraft will help reduce operating and maintenance costs, as well as a reduction in noise and CO₂ emissions. Overall coverage of the aviation sector seems largely from a growth and connectivity perspective, rather than a GG-CC perspective. ■



Common Features and Differences between the Energy and Transport Sectors

Finding 9: Clear integration of GG-CC principles into country strategy papers is an important mechanism for mainstreaming these principles into country programming across both sectors. Common barriers to greater integration of GG-CC issues in sector interventions include challenges to investment in urban areas, structural and temporal obstacles to private sector engagement, and the comparative efficiencies of focusing funding on large capital investments.

A key difference between the sectors is the ease with which interventions can be classified as green investment.

The demand for energy and transport is generally derived as a means to an end. Energy is needed for industry, commerce, transport, and domestic consumption (e.g., for heating, cooling, etc.). Similarly, transport is normally a means to support economic diversification, trade, and mobility, etc.

The energy and transport sectors may include both positive and negative externalities. Positive externalities from a GG-CC perspective include the potential for employment generation, increased mobility, etc. Negative externalities include air, dust and noise pollution, climate impacts, the destruction and degradation of ecosystems and biodiversity, etc.

There are inherent synergies between the two sectors. Energy is needed to power transport, while transport is needed to facilitate energy production. The energy and transport sectors face similar contextual challenges in relation to GG-CC.

Barriers to GG investment in urban areas: It is difficult to invest quickly and at scale in power and transport networks in cities because of complex institutional responsibilities such as overlapping city and municipal boundaries, the high cost of land acquisition (normally an RMC and not an AfDB responsibility) and unclear land titles. In many cases, safeguards prevent compulsory land acquisition. A portfolio review undertaken for the AfDB's Operations Committee (OPSCOM) identified land acquisition as a frequent cause of delays in projects reaching effectiveness.⁵⁶

Private sector regulatory oversight: Both the energy and transport sectors have selective opportunities to increase private sector investment with appropriate regulatory controls and oversight. While private investment in power generation is common, in most cases power distribution networks, which are effectively monopolies, remain in the public sector.⁵⁷

In relation to transport, although there is the potential to increase private sector investment in toll roads, for reasons of equity there is usually a desire for untolled parallel routes. This may have adverse impacts in relation to GG-CC due to the additional land required. Land acquisition has delayed some private sector road investments. This challenge is being faced in Uganda, with the China-funded Kampala-Entebbe Expressway project⁵⁸ and the Kampala-Jinja Expressway project.⁵⁹ One reason why external investment from China is often attractive to RMCs is that it is perceived to be faster to mobilize, with a lower burden of safeguards which, while creating necessary checks and balances, slows approval processes, and delays reaching "effectiveness."⁶⁰

Private sector timeframes: Private sector GG-CC-focused infrastructure investments are seen by some private investors as unaffordable or too long-term. Although public sector management is soundly GG-CC directed, the private sector response to GG-CC objectives has been weak, which is a barrier to sustainable energy and transport infrastructure. This was demonstrated by the evaluation's fieldwork in Rwanda. The Rwanda Ministry of Environment observed that elements of GG *“represent public goods, such as reduced pollution, and are difficult to monetize for the private sector.”* It was noted that *“participation of the private sector (to date) has been very low. The private sector needs a quick return, whereas GG is costly and long term. It is difficult for the private sector given the need to repay loans”* [and achieve a positive return on capital employed].

GG framework: For both the energy and transport sectors, integrating GG principles into Country Strategy Papers (CSPs) and programs provides a key implementation mechanism. The GG framework asserts that: *“Strategies related to the implementation of the five priority pillars of the AfDB have already gone a long way in GG mainstreaming.”* Several pillars guide the AfDB's interventions in the energy and transport sectors, and are directly integrated with GG principles. These include:

- Ensuring energy security and increasing access for all, promoting resilience and efficiency;
- Moving toward a cleaner energy path, reducing pollution;
- Enhancing governance at the national level, bringing efficiency and welfare gains;
- Promoting social and environmental responsibility, ensuring inclusion and sustainability; and
- Integrating a response to CC, which builds resilience.

Sectoral focus: For both the energy and transport sectors, a high share of the AfDB's funding has been

directed toward large capital investments rather than lower-level distribution systems. In the power sector this has been toward power generation, and regional and national transmission systems rather than local electricity distribution systems (acknowledging that there has been some recent investment in investments in distribution and last-mile connections, such as the Last Mile Connectivity Programs in Kenya). In the transport sector much of the investment has gone on major trunk roads, including motorways, rather than feeder roads. One reason for this is that, in many cases, feeder roads are the responsibility of local governments rather than national authorities. Lower-level investments can be more difficult to manage,⁶¹ although the output-based payment methods used in Rwanda for projects such as Scaling Up Energy Access Project (SEAP) show that it can be managed successfully.

GG definitions at the sector level: The energy sector has a much more binary approach to its green infrastructure investment options. The AfDB Board can readily see whether a power plant is operated by fossil fuels (coal, oil and gas) or by renewable sources (wind, solar, hydro-electric). There are cross-over points such as the naturally renewing methane gas used by the KivuWatt power plant in Rwanda, but these are the exceptions and not the norm.

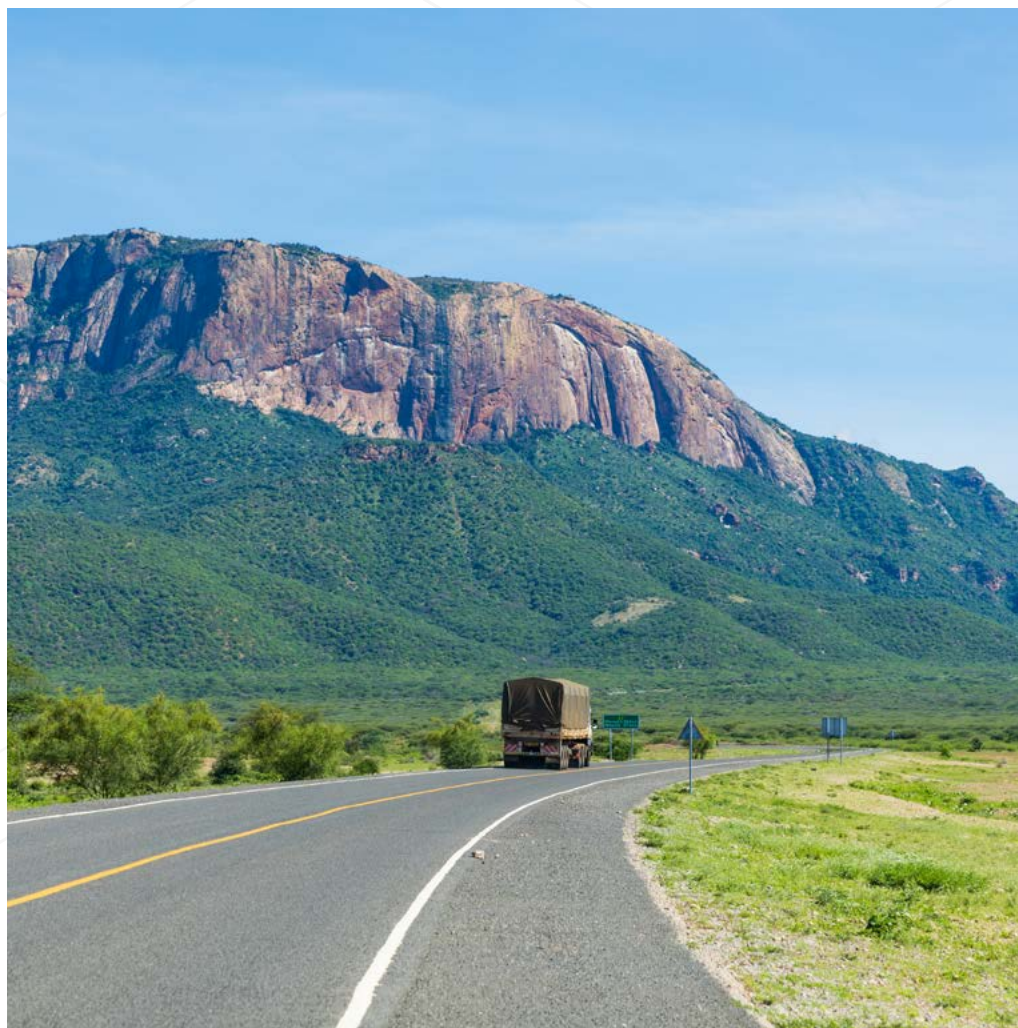
In contrast, there is a broad spread of project characteristics in the transport sector to determine whether a project may be “green”, and definitions are not clear. Road projects may encourage further private car utilization (not generally green), although they could also be used for public transport services. Project designs may encapsulate some green characteristics, such as tree planting, using natural vegetation for slope stabilization, and incorporating recycled plastics in bitumen. It is however less binary than the energy sector, and the definition and classification of green characteristics have not been agreed on a universal basis.

It is difficult to determine whether investments in ports, airports and aircraft count as green investments. A second runway at an airport may

reduce congestion and time spent by aircraft circling waiting for a landing slot, but it may also be contributing to increasing air travel. Investment in modern aircraft may be greener than using old less fuel-efficient aircraft but may also be expanding air travel overall.

The AfDB's Climate Change and Green Growth Department (PECG), established in 2015, has been supporting the mainstreaming of GG-CC principles across operational departments within the Bank to

reduce the adverse impacts of CC on the African continent, as well as to take advantage of the opportunities it might bring. Given the additional complexities associated with GG-CC in the transport sector and the lack of clear integration of these themes into Bank transport policy, PECG has an important role to play in analyzing the development and GG-CC trade-offs in the transport sector, and to provide the necessary support and advice for Bank programming. ■





Project Cluster Performance

This section of the report presents the results and analysis of project cluster performance of the seven selected projects to address the second key evaluation question: *How well have Bank-funded infrastructure (energy and transport) projects that mainstream GG-CC performed in terms of relevance, effectiveness, efficiency and sustainability?*

The energy and transport sectors cover seven out of 20 projects in four of the five fieldwork countries (Morocco, Rwanda, Senegal and Cameroon), as presented in table 4 below. No eligible energy and transport projects were found in the Mozambique portfolio. The projects include four in the energy sector and three in the transport sector.

The PRA data were synthesized using scorecards to assess their relevance, effectiveness, efficiency and the sustainability of their results, based on a screening of project documents, log frames and other documents that were then cross-checked during country on-site visits and through interviews with stakeholders. [Technical Annex 3](#) provides information on the portfolio performance scoring methodology. The seven projects of specific relevance to this evaluation are summarized as follows.

Relevance of Objectives and Design Aspects

The relevance of the seven projects was scored based on the alignment with Bank and country-level policies and strategies related to GG-CC, as well as whether the projects responded to local beneficiaries' needs (Table 5 summarizes the relevance scores per project).

Finding 10: Overall relevance of the cluster projects is satisfactory, as their objectives and designs are aligned with Bank and country-level policies and strategies related to GG-CC, as well as responding to local beneficiaries' needs. Energy projects had higher scores than transport projects.

Overall, the objectives and design of the projects considered in the cluster evaluation are aligned with country-level and Bank-level policies and strategies related to GG-CC (as presented in the *AfDB Policies in the Energy and Transport Sectors* section), as well as respond to local beneficiaries' needs. However, within the cluster there is considerable variability between projects regarding this alignment, and energy projects were seen to be more relevant than transport projects.

Table 4: A profile of the seven selected projects in the energy and transport sectors

Country	Project Name	Sector Name	Net Loan (USD)	Approval Year
Cameroon	Dibamba Power Project	Energy	25,663,495	2010
Cameroon	Cameroon/Congo: Ketta-Djoum Road (Phase I)	Transport	173,284,005	2009
Rwanda	Butare-Kitabi-Ntendezi Road Project	Transport	18,836,201	2009
Rwanda	Scaling-Up Energy Access Project	Energy	39,134,412	2013
Rwanda	Kivu Watt	Energy	25,917,193	2011
Morocco	Ouarzazate Solar Complex - Phase I - Centrale Noor I	Energy	218,896,394	2012
Senegal	Dakar-Diamniadio Highway	Transport	62,334,033	2009
	Total		564,065,733	

Morocco:

1. **Ouarzazate Solar Power Station (Noor 1) (approved April 2012)** is the first of an innovative complex of solar power stations, with 160 MW capacity.

Rwanda:

2. **KivuWatt 1 (approved January 2011)**. This privately-operated methane gas extraction facility and 28 MW power generation station on Lake Kivu utilizes naturally replenishing gases from the bottom of Lake Kivu, a volcanically active lake adjoining the DRC. The facility pipes gas to shore, where it is converted into electricity to supply the national power grid. The AfDB extended a Line of Credit (LoC) to the developer/operator, Contour Global, which has a term-based concession with the Government of Rwanda.
3. **Scaling Up Energy Access Project (SEAP) (approved June 2013)**. This is a power distribution project to extend the electricity grid through upgrading and rehabilitating existing power substations, constructing medium and low voltage distribution networks, and connecting households, schools and offices to the grid.
4. **Butare-Kitabi-Ntendezi Road (approved September 2009)**. This project rehabilitated parts of a major trunk road that runs through Nyungwe Forest National Reserve, which is of high environmental significance.

Senegal:

5. **Dakar-Diamniadio Highway Project (approved July 2009)**. This toll road is designed to facilitate better connections between the center of Dakar and Diamniadio, the gateway to a new economic development pole, and strengthen regional integration through improving competitiveness of the Port of Dakar and sub-regional transport systems.

Cameroon:

6. **Dibamba Power Plant (approved April 2010)**. This project comprises the engineering, financing and construction of an 86 MW thermal power plant at Dibamba, in the suburbs of Duala. It includes a 2 km 90 kV transmission line to connect the plant to the national grid. The Dibamba power plant is powered by heavy fuel oil (HFO).
7. **Ketta-Djoum Road (approved September 2009)**. The project aims to improve the level of service of the transport logistics chain on the Yaoundé-Brazzaville road corridor. The project evaluation covered the first phase (Djoum-Mintom).

Full details of these projects are provided in [technical annex 4](#) and have been used to inform the cluster evaluation findings.

Three projects (Projects 1, 2 and 3) of the seven cluster projects: Morocco: Ouarzazate Solar Power Station (Noor 1), Rwanda: KivuWatt 1 and Scaling Up Energy Access Project (SEAP) were found to be highly relevant. Two of the projects (Projects 4 and 7), Rwanda: Butare-Kitabi-Ntendezi Road and Cameroon: Ketta-Djoun Road, were relevant, and the remaining two projects (Projects 5 and 6) Senegal: Dakar-Diamniadio Highway Project and Cameroon: Dibamba Power Plant were deemed to have low relevance.

Projects that were rated as being highly relevant were those that included GG-CC issues and national (GG) strategies as an integral part of project objectives and were designed to reduce country dependence on non-renewable energy sources. Project 1 in Morocco was the first of a cluster of four solar power stations in the country that helped improve technology and viability of the investment in solar power, with the explicit intention of achieving positive sustainable development outcomes. Projects 2 and 3 in Rwanda were both specifically funded to help reduce reliance on polluting power generators and traditional biomass leading to deforestation and soil erosion, and to help reduce harmful risks of pollution and/or exposure to poisonous gases for local populations.

Projects 4 and 7 did not have a coherent theory of change or log frame to support GG-CC and lacked clear evidence to demonstrate GG-CC benefits. However, they did provide regional connectivity of either power or transport infrastructure to support the improvement of living conditions for affected

communities. In addition, these two projects factored in CC as a clear objective.

Projects that were deemed to have low relevance were those where no environmental aspects were clearly considered, and where different transport or power alternatives would have resulted in more beneficial outcomes pertaining to GG given the geographic context. Despite Environmental and Social Impact Assessments being carried out, Project 5 outlined environmental risks, but CC impacts were not explicitly integrated into the objectives and design of the project. The objective of Project 6 in Cameroon was to close the supply gap by about 38 MW, while meeting increasing energy demand through the construction of an 86 MW thermal power plant. The project risked large negative impacts on environmental and social welfare to support industrial expansion while having no consideration within its objectives and design of its implications for, or alignment with, GG-CC. Furthermore, it is a heavy fuel oil (HFO) thermal power plant, which would not be approved by the Bank under current policies as it does not align with the Bank's GG-CC objectives.

As discussed in the *Common Features and Differences between the Energy and Transport Sectors* section, there is a clear binary approach to green infrastructure investment options in the energy sector. In the transport sector, the situation is less clear cut. Improving transport connectivity is essential, yet roads are rarely totally green, as discussed in the *Green Growth Investment Models for Sustainable Energy and Transport Infrastructure* section. For example, Project 4 in Rwanda is a strategic road construction project with trade potential (i.e., part

Table 5: Summary of relevance scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1, 2, 3
Satisfactory (3)	4, 7
Unsatisfactory (2)	5, 6
Highly Unsatisfactory (1)	None
Average Score: 3.14	



of a corridor initiative to DRC) going through an environmentally sensitive forest area. In addition, the road only has a 15-year design life, which is relatively short compared with design standards for other roads that have been subsequently increased to 20 years. This means that the determination of GG-CC aspects of road investment is not binary and there are case-by-case aspects to consider. In the case of Project 5, a motorway in Senegal, for example, the intervention is likely to increase traffic volumes and is a toll road (requiring an un-tolled parallel route), therefore adding to traffic volumes, GHG emissions, and wider environmental disturbance. It is therefore poorly aligned with GG-CC objectives.

The three highest rated projects were all in the energy sector, reflecting the clear binary approach to green infrastructure investment options. Performance in the transport sector was less strong, reflecting that road transport interventions in this sector are rarely totally green.

Success factors present in the best-performing projects include clear alignment with the Bank's

GG-CC strategy, project design clearly targeted to achieve GG-CC objectives, and reducing country dependence on non-renewable energy sources. Characteristics of less well-performing projects include the lack of a coherent theory of change or log frame to support GG-CC, failure to clearly consider environmental impacts, and projects the objectives of which are clearly counter to GG-CC goals.

Development Effectiveness

The effectiveness of the seven projects was scored based on the achievement of the results in terms of outputs and outcomes. Table 6 summarizes the effectiveness scores per project.

Finding 11: Overall effectiveness of the cluster projects is satisfactory in terms of outputs and outcomes achieved, with a marginally higher average score than the score for relevance. Differences in achieving development results between the energy and transport sectors was also less marked.

Technical annex 4 presents the results achieved for each of the projects in terms of energy capacity and generation, tonnes of CO₂ reduced, percentage of renewable energy, road constructed, connectivity and access to energy and transport services, travel time reduction and vehicle traffic. Three out of the seven projects were rated as highly satisfactory in relation to outputs and outcomes related to GG-CC. Projects 1 and 2 illustrated that renewable alternative power generation solutions can achieve major benefits pertaining to GG-CC, and Project 4 ensured proper protection of affected forests during road construction, and appropriate maintenance thereafter.

The electricity distribution project in Rwanda highlights the importance of using realistic assumptions regarding energy pricing and affordability if GG is to be achieved. A key concern is whether the price of electricity can be made affordable to rural populations for cooking, to reduce the consumption of firewood and other biomass such as charcoal. Off-grid solutions are becoming more efficient and affordable, and may be supported to increase equity (for example, to subsistence farmers unable to afford utility bills) in support of the AfDB High 5s objectives. This may help the poorest who cannot afford to pay utility bills, and those in the most remote areas. More broadly, it strengthens the case for combining engagement at a sector policy level (possibly through sector level PBOs), as well as at the project level.

In the transport sector, road projects (Projects 4, 5 and 7) rarely have totally green development outcomes,

but their benefits can be maximized through the use of term-based maintenance contracts (as is being implemented in Project 4) and PPP arrangements (as in Project 5 in Senegal). Development benefits from roads projects typically reflect improved connectivity, and the potential for economic growth and diversification. Project 4 in Rwanda was scored highly satisfactory as it reduces VOCs from the 6- to 3-hour reduction in travel time, while also supporting regional integration by shortening travel times to the eastern DRC. The remaining two of the three transport projects (Projects 5 and 7) were scored satisfactory. Project 5 in Senegal has reduced travel times from 90 to 30 minutes with VOC savings, but is attracting far fewer Heavy Goods Vehicles (HGVs) than projected. These HGVs are likely to be using non-tolled more congested roads. Project 7, in Cameroon, is performing well from a technical perspective, but is only the first phase of a regional corridor development and therefore will not yet be achieving full benefits.

Project 3 in Rwanda was rated satisfactory. Only Project 6 received an unsatisfactory score, since the main benefit of this project was to reduce power outages by 500 hours per year for about 76,000 consumers. The project is producing power as projected, but from a GG-CC perspective generation is not clean, even though documentation makes a case that this represents a modest share of global emissions.

Success factors present in the best-performing projects include ensuring environmental considerations are explicitly addressed in delivery,

Table 6: Summary of effectiveness scores for PRAs

Project Score	Project(s)
Highly Satisfactory (4)	1, 2, 4
Satisfactory (3)	3, 5, 7
Unsatisfactory (2)	6
Highly Unsatisfactory (1)	None
Average Score: 3.28	

using term-based maintenance contracts to maximize outcomes related to GG-CC, and combining engagement at a sector policy level. Characteristics of less well-performing projects include a failure to consider realistic assumptions in project design, and a failure to demonstrate and document clear outcomes pertaining to GG-CC.

Efficiency of Resource Use

Projects were scored based on whether resources were used in a timely and cost-effective manner, and whether there were any issues relating to project delays and financial allocation from the Bank. Table 7 summarizes the efficiency scores per project.

Finding 12: Efficiency scored lowest compared with the other evaluation criteria, with over half of the sample projects rated unsatisfactory mainly due to implementation delays. No major differences were observed in efficiency between energy and transport sector projects.

PRA data from the sample projects reviewed indicate that projects are not performing at a satisfactory level in relation to efficiency, mainly due to implementation delays given the complexity and technical quality of interventions in the energy and transport sectors.

In the energy sector, the economics of solar power are improving due to technical advances and scalability. Project 1 in Morocco was scored highly satisfactory because the project benefited from excellent and extensive technical verification, competitive

tender award pricing and efficient execution. The international bidding process to select a private consortium for the design, financing, construction, operation, and maintenance was very competitive, which resulted in high quality offers (i.e., better value for money).

Project 3 in Rwanda was scored satisfactory, since it was well executed overall. Local stakeholders reported that resources were used in an efficient manner and processes called for a high degree of participation and bottom-up decision-making. However, delays occurred due to one contractor failing to deliver as planned, which led to a project extension period of an additional year.

Two energy projects were scored unsatisfactory. Project 2, KivuWatt I, was delayed by three years due to technical challenges and disputes with contractors, given the technological complexities of energy generation through large-scale extraction of methane gas and CO₂ from Lake Kivu in Rwanda. Project 6, in Cameroon, a private sector project, also suffered delays due to financial allocations and issues on the disbursement of funds, which are currently in the process of being resolved.

Two transport projects (Projects 5 and 7) scored unsatisfactory. In the case of Project 5 in Senegal, the financial rate of return was insufficient because of a shortfall of about 50 percent in heavy goods vehicle (HGV) traffic, probably to avoid the toll fees. This is an environmental disbenefit, given that the same HGVs will be using ordinary urban roads.⁶² For Project 7 in Cameroon, there were problems with receiving

Table 7: Summary of efficiency scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1
Satisfactory (3)	3, 4
Unsatisfactory (2)	2, 5, 6, 7
Highly Unsatisfactory (1)	
Average Score:	
	2.57

matching funds for environmental measures and, as a result, planned activities pertaining to GG-CC were not delivered.

Success factors present in the best-performing projects include a high standard of technical verification, engaging stakeholders at all levels of decision-making, and competitive tendering to increase cost efficiency and design quality. Characteristics of less well-performing projects include limitations in technical design quality, implementation delays relating to technical challenges, and a failure to leverage funding for activities regarding GG-CC.

The composite cluster efficiency score is 2.57 with the dominant inhibitor attributed to delays and problems associated with environmental components for two of the road projects.

Sustainability of Project Results

Project sustainability was assessed in terms of the overall sustainability of project results (financial⁶³ and institutional⁶⁴ sustainability) and to what extent projects had considered specific risks related to GG-CC or sustainability in their design or exit strategy, and whether projects were likely to be effective in the long term. Table 8 summarizes the sustainability scores per project.

Finding 13: Overall sustainability of the cluster projects is satisfactory with no significant difference identified between the energy and transport sectors.

Overall sustainability of the reviewed projects is rated as more than satisfactory, with strong institutional ownership and vested interests in the continuity of energy and transport infrastructure. Both the public and private sector projects show promise in terms of their sustainability. Five out of the seven projects are revenue-generating (all of the power sector projects and one toll road), and the other two roads in Rwanda and Cameroon (Projects 4 and 7) are in countries with, in the case of Rwanda, strong public commitment to road maintenance, while in the case of Cameroon the roads sector is receiving significant development-partner support to strengthen asset maintenance.

Two energy sector projects (1 and 3) scored 4 and were rated highly satisfactory, since GG-CC benefits from the project show longevity in sustainability/exit strategies. Project 1 shows evidence that the intervention operates at an optimal scale, being the first of four plants. Meanwhile, the Government of Morocco (GoM) has signaled its long-term commitment to renewable solar power. The financial and economic viability of the project was ensured by the establishment of an institutional mechanism guaranteeing the financial balance of the project covering all costs of construction, repair, and maintenance of equipment. The other was Project 3 in Rwanda, where there is a high degree of end-user ownership. Households strongly desire to be connected to the grid and for power supplies to be reliable, which puts pressure on the utility company to ensure reliable electricity supply.

Table 8: Summary of sustainability scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1, 3, 4
Satisfactory (3)	2, 5, 7
Unsatisfactory (2)	6
Highly Unsatisfactory (1)	
Average Score:	3.28

Project 2 in Rwanda scored 3 because there is a high focus on safety, given the inherently high-risk operation (methane escaping from the bottom of Lake Kivu remains a threat and the lake forms part of the border with DRC). Project 6 in Cameroon was assigned a score of 2. Although the project is financially sustainable, it is a source of pollution, therefore not contributing to long-term environmentally sustainable solutions.

In the transport sector, Project 4 in Rwanda was scored highly satisfactory because of the presence of a periodic maintenance contract, as well as a high level of strategic and security-related commitment that the Government of Rwanda has for funding road infrastructure. Project 5 in Senegal was scored satisfactory. This is a toll road with a 30-year PPP contract—an indication of a major investment that is financially sustainable. However, from a GG perspective, it will contribute to traffic growth, and therefore will be a source of pollution in the longer term. Finally, Project 7 in Cameroon is not yet carrying its full corridor traffic. The World Bank has committed US\$200 million to road maintenance and institutional strengthening on a network basis, so the project was scored satisfactory, but for similar reasons as with other road infrastructure it is likely to be a greater source of pollution due to increased traffic congestion in later years.

Success factors present in the best-performing projects include alignment with government priorities and long-term commitment to the intervention sector, establishing robust institutional mechanisms to support financial sustainability, and ensuring relevance to and buy-in from end users from the start of the project.

PRA data from the sample energy and transport projects reviewed provide evidence that interventions that explicitly consider impact pertaining to GG-CC, and maintain environmental safeguards during implementation, are more likely to produce sustained outcomes in the area of GG-CC than those that do not.

Project Monitoring and Evaluation

The project monitoring and evaluation of the Bank's sampled energy and transport projects for this cluster evaluation was assessed along two dimensions: whether M&E system in place and integrated throughout the project cycle and M&E system-strengthening activities and monitoring progress in M&E implementation pertaining to GG-CC. Table 9 summarizes the M&E scores per project.

Finding 14: Overall cluster performance in relation to M&E of the seven sample projects analyzed was found to be satisfactory.

PRA data from the sample energy and transport projects reviewed provide evidence that, while M&E performance across the portfolio is variable, projects as a whole are performing satisfactorily in relation to M&E in terms of their GG-CC aspects.

Two energy projects (1 and 3) were rated highly satisfactory. In Morocco, Project 1 had a high degree of technical oversight (by the Moroccan Agency for Solar Energy, MASEN). Project monitoring was enhanced because it had to satisfy the requirements of several development partners, and joint-supervision missions were conducted. The Bank participated in all the joint supervision missions. Outcome and impact-level indicators were also included to monitor the target share of renewable energy in Morocco's energy supply to 370 GWh by 2016 by constructing a solar power station, which was achieved and exceeded expectations (generating 414 GWh by the time of the project completion date). In addition, the log frame of Project 1 included outcome indicators for GHG reduction targets, which were almost achieved by the project's end date. Overall, Project 1 reported a 217,000 tonne CO₂ reduction (target reduction was 240,000 tonnes of CO₂). Project 3 benefited by making "Payment by Outputs", which ensured a real focus on compliance with key milestones. This justifies broader application. In addition, Project 3 included outcome indicators to monitor the number of households, and priority institutions in northern and western provinces of Rwanda, with access to

Table 9: Summary of M&E scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1, 3, 4, 5
Satisfactory (3)	2
Unsatisfactory (2)	6
Highly Unsatisfactory (1)	7
Average Score:	3.14

electricity through (rehabilitated) substations. The project provided electricity for 25,438 households connected to national electricity, and 179 schools, 29 health centers, and 25 sector and cell administration offices in the project area, which was 70 percent of the total target.

For the other energy sector interventions, Project 2 did not have log-frame indicators for the reduction of GHG emissions by use of energy from methane contained in Lake Kivu. However, it had good quality quarterly financial, technical and environmental reports, including some independently verified reports covering the “plume” of waste products released into Lake Kivu. In contrast, Project 6 in Cameroon suffered from inadequate supervision by the AfDB in the first two years, and hence was rated unsatisfactory under M&E systems of the project, and had no evidence to report on and/or monitor any activities pertaining to GG-CC.

Project 4 was rated highly satisfactory for the transport sector projects due to evidence of excellent supervision by an experienced in-country Bank task manager. A consultant was also recruited to control and supervise road work, to make the affected populations aware of safety and environmental protection measures, and to ensure compliance with national laws and regulations. Similarly, Project 5, Senegal’s toll road project, was scored highly satisfactory. This PPP project has several financiers and a high degree of accountability. This ensured that the recommendations and measures agreed upon during the Bank’s various supervision missions for Project 5 were fully implemented. By contrast, in Cameroon, Project 7 was assessed as

highly unsatisfactory in relation to M&E for GG-CC. In this case, there was no environmentalist in the Project Implementation Unit and Project Implementation Status reports did not adequately cover environmental factors, while there was no evidence that tree-planting activities were completed as planned to reduce the environmental impact of road construction.

Success factors present in the best-performing projects include the presence of a high level of technical oversight, regular joint supervision missions, supervision by an experienced in-country Bank task manager, inclusion of GG-CC indicators in project log frames, and accountability to multiple development partners. Conversely, characteristics of less well-performing projects were found to relate to insufficient supervision from AfDB staff, and a lack of inputs and oversight from technical environment specialists, resulting in limited consideration of impacts pertaining to GG-CC in reporting.

The composite cluster score for M&E is 3.14. Good M&E requires well-structured and planned M&E with appropriate staffing. In addition, it is appropriate to consider scope for more contracts to be structured to provide “Payment by Outputs” (or outcomes), as this includes scrutiny on performance.

Bank Performance

Bank performance was assessed based on whether the Bank’s financial and human resources, procedures, and capacity were able to implement the project sufficiently in terms of GG-CC. It was also



assessed as to whether the project demonstrated that the Bank showed value-added and effective partnership. Table 10 summarizes the Bank performance scores per project.

Finding 15: Overall, Bank performance in the cluster projects was found to be satisfactory, although achievement at the project level was mixed.

The PRA data provide evidence that the AfDB-funded energy and transport cluster is performing satisfactorily overall, with significant variability at the project level. Three out of four energy projects (Projects 1, 2, and 3) were rated highly satisfactory and scored 4. Project 1 leveraged funds from the CIF-CTF, which was an important starting point for the first of four solar power stations in Morocco.

There was also evidence of good cost controls and supervision throughout the construction of the project, and it was said to have also drawn on technical support from the Bank's task-manager, as well as on the Bank's environmental and social expertise. Project 2 was relatively easy to manage, as the Bank was only providing a Line of Credit (LoC) and only one of several funders, but nonetheless the Bank performed well in terms of supervision and providing evidence that key issues were being monitored. This was also the case for Project 3 where no difficulties were reported, and the Bank co-chaired the Energy Access Sector Group.

Project 6 was scored unsatisfactory given the low level of AfDB supervision during the first two years, which adversely impacted the project's performance.

Table 10: Summary of Bank performance scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1, 2, 3, 4
Satisfactory (3)	
Unsatisfactory (2)	5, 6
Highly Unsatisfactory (1)	7
Average Score: 3.0	

Although supervision improved later, several constraints to project delivery were not identified early enough. The Bank later provided support to improve the management of its resources, where the Bank became more engaged with program partners.

Project 4 was rated 'highly satisfactory' due to the strong field office expertise among the transport sector projects. The Bank was actively engaged throughout all technical and implementation issues, and the follow-up to advance project implementation. In addition, AfDB support for the project acted as a pathfinder to leverage resources from the Arab Bank for Economic Development in Africa (BADEA).

In Senegal, Project 5 was scored unsatisfactory, mainly because the Mbeubeuss landfill issue was not resolved despite being prominently used as a justification for the project on environmental grounds. Engagement with key stakeholders during field visits provided evidence that many in Senegal consider this project to be a large source of air, water and soil pollution. Finally, in Cameroon, Project 7 was rated highly unsatisfactory from an environmental perspective. An audit revealed that the project was not in compliance with the AfDB's Environmental Policy (2004) or the Environmental and Social Assessment Procedures (ESAP) due, in particular, to the lack of measurable monitoring parameters in the ESAP.

Success factors present in the best-performing projects include the effective leveraging of additional GG-CC funding, the continuity of task management and supervision, robust cost controls, and access to appropriate technical GG-CC support, including

field office expertise. Characteristics of less well-performing projects include insufficient AfDB supervision during the initial implementation to identify delivery constraints early on, and more fundamentally the failure to address clear environmental concerns or adhere to Bank procedures during the design and implementation stages.

The composite cluster score for Bank performance is 3.0. Good continuity of project management by in-country task managers can make a huge difference, as demonstrated with Projects 1 and 4.

Country Performance

These scores were based on whether the project and CSPs showed that the country had adopted policies and strategies and has the necessary institutional structures supporting GG-CC project operations. Whether the project demonstrated long-term political commitments and had the necessary incentives in place to achieve GG-CC was factored into the scores assigned to each of the seven projects in Table 11.

Finding 16: Overall, cluster performance in relation to country performance was found to be satisfactory. Two projects were rated unsatisfactory and no clear differences were evident between the energy and transport sectors.

In the energy sector, Projects 1 and 3 were scored highly satisfactory. Project 1 also scored well under the AfDB/GGGI Readiness Review. It was rated Green under RISE, based on a high degree of strategic and

Table 11: Summary of country performance scores for PRAs

Project Score	Project
Highly Satisfactory (4)	1, 3, 4
Satisfactory (3)	2, 5
Unsatisfactory (2)	6, 7
Highly Unsatisfactory (1)	
Average Score:	
3.14	

policy leadership alignment with GG-CC objectives, supported by a clear strategy, the National Energy Strategy (NES), 2009. MASEN, as the project owner, proved fully capable to support project operations from a GG-CC perspective. Project 3 in Rwanda was also scored highly satisfactory for its impressive ownership at both utility and district levels, together with sound oversight systems.

Project 2 was scored satisfactory due to financial/pricing issues experienced due to poor relationships between the Ministry of Finance and the project partner, Contour-Global. In Cameroon, Project 6 was scored unsatisfactory as activities pertaining to GG-CC lacked prominence to address environmental issues throughout project implementation explicitly.

In the transport sector, Project 4 was scored highly satisfactory given the presentation of clear sector strategies within the country, for example that all roads have to include tree planting and environmental considerations, while mitigation measures were set out during the project design stage. Project 5 was scored only satisfactory because it faced land acquisition challenges, which is a government responsibility. In Cameroon, Project 7 was scored unsatisfactory since there was a lack of capacity at the project implementation level in environmental management.

The composite cluster score for country performance was 3.14. Country performance varied considerably,

with large gaps between Morocco and Rwanda, which performed very well, and Cameroon and Senegal, which performed less well, particularly in terms of alignment with GG-CC aspects within the country strategies. Long-term political commitments for projects that mainstream GG-CC are more apparent in Rwanda and Morocco with regards to achieving GG-CC mitigation/adaptation. This finding is consistent with the Readiness Review findings. [Technical annex 6](#) contains a detailed review of the evolution of CSPs and the integration of GG-CC issues within the five case-study countries.

Success factors present in the best-performing countries include a high degree of strategic and policy leadership, alignment to the Bank's GG-CC objectives, and a clear strategy and ownership at all intervention levels, together with robust oversight systems. Characteristics of less well-performing countries include poor relationships with key stakeholder institutions and project partners, and a failure to address specific GG-CC aims, while treating GG-CC solely as a cross-cutting issue rather than a central intervention objective.

Overall project scoring to country performance was found to be heavily dependent upon the links between GG-CC ambition and country strategies. This demonstrates the importance of Bank engagement at the policy level to build an enabling environment that supports GG-CC focused interventions. ■





Key Issues and Lessons

Key Issues

This cluster evaluation aims to address two key evaluation questions: *How well has the Bank mainstreamed GG-CC in its energy and transport sector interventions?* and *How well have Bank-funded energy and transport sector projects that mainstream GG-CC performed in terms of relevance, effectiveness, efficiency and sustainability?* Several important issues related to these questions have been identified through the analysis presented in this report.

At the Bank level there is clear evidence of greater engagement with GG-CC considerations following the publication of the GG-CC framework in 2013. The evolution of Bank energy policies since 2012 clearly reflects this trend (Finding 1). The explicit focus on GG-CC in AfDB transport sector interventions has been a newer development. Recent Bank publications indicate the growing inclusion of GG-CC considerations within transport sector operations (Finding 2). This cluster evaluation has highlighted some key issues related to this, including the less binary nature of transport sector interventions (which are rarely fully GG-CC oriented), and the lack of clear sector policy and guidance on how GG-CC considerations can be equitably assessed in transport interventions.

As discussed in the *Improved Resource Management to Support Sustainable Energy and Transport Reforms* section and summarized in Finding 3, another key GG-CC issue of relevance at the Bank level is the availability of, and access to, wider climate funding. The Bank has demonstrated an impressive ability to mobilize substantial additional funds from various sources, including the CTF, SREP, GEF and GCF. The increasing availability of funding for GG-CC interventions through these sources can help to

support the greening of future Bank infrastructure interventions and is consistent with the growing engagement of the Bank's energy and transport policies regarding GG-CC issues.

In addition to the demonstrable growth in sector policy engagement on GG-CC and access to climate finance, the Bank has a number of tools at its disposal that have been shown to be effective in supporting the mainstreaming of GG-CC in the Bank's policies, strategies and operations. Sustained engagement at the policy level through PBOs is an effective means of mainstreaming GG-CC considerations in the infrastructure sector when supported by relevant country programming (Finding 4). The Bank's knowledge-sharing programs also have an important role in supporting this through the promotion of GG-CC objectives in sector interventions (Finding 5). As noted above, progress in the energy sector is more advanced than in the transport sector.

While the Bank's energy portfolio is currently more clearly aligned with GG-CC objectives, there remains a need to widen the geographic scope of these interventions beyond the relatively small number of countries in which it already has a track record and where country commitment to GG in the energy mix is strong. Challenges to wider investment mean that innovative funding streams are needed to support this expansion and enable RMCs to phase out their fossil-fuel generating capacity (Findings 6, 7 and 8). As noted above, burgeoning opportunities for accessing finance for GG-CC-focused energy interventions exist and may help to support such growth.

A further key issue, particularly for the transport sector, is the rapid rate of urbanization that is taking place across the continent. This is creating significant challenges as well as opportunities. Effectively

addressing the urban GG-CC challenge in both sectors is a key issue for the Bank. With more than 80 percent of Africa's population growth expected to occur in cities over the next 30 years, this issue will continue to grow in importance alongside the imperative of effectively addressing GG-CC issues across the Bank's infrastructure cluster.

At the cluster level, the infrastructure portfolio is performing at a satisfactory level regarding GG-CC against all of the international evaluation criteria. Key issues identified in the *Project Cluster Performance* section include the marked difference between the energy and transport sectors in relation to the ease with which interventions can be classified as investment pertaining to GG-CC, resulting in higher relevance scores for interventions in the energy sector.

Aside from relevance, the cluster evaluation indicates that better-performing projects across both sectors in the cluster had similar traits, including continuity of management by Bank staff, with task managers typically based in-country, access to appropriate GG-CC technical expertise, and a supporting enabling environment at the country level.

Lessons

1. Establishing a clear strategic sector framework supported by complementary policies and strategies can support the mainstreaming of GG-CC considerations in sector interventions. In the case of the energy sector, the Energy Policy, Ten-Year Strategy (TYS) and the New Deal on Energy for Africa all have a clear integration of GG-CC considerations. In contrast, the transport sector lacks an equivalent overarching strategic framework and has only recently begun to substantively engage with GG-CC issues.
2. Designing interventions with clear alignment to GG-CC objectives is more challenging for projects in the transport sector. Given the greater complexities and trade-offs in defining what appropriate interventions pertaining to GG-CC look like in this sector, carrying out an in-depth analysis will be beneficial to determine what the key characteristics of GG-CC are within the transport sector to improve quality at entry, implementation, and supervision. More work is needed to help define what constitutes GG-CC and how it can be measured at the sector level.
3. The best-performing projects assessed in the cluster analysis were those projects that combined engagement at a sector policy level with project interventions, taking clear steps to ensure that environmental considerations are explicitly addressed throughout delivery and, in the transport sector, those projects that employ term-based maintenance contracts to maximize outcomes pertaining to GG-CC.
4. Successful GG-CC-aligned energy sector projects occur in countries that already have a strong commitment to GG-CC objectives in their energy mix. If the AfDB is to achieve its High 5s objective of Lighting Up Africa, much more needs to be done in countries that are not currently prioritizing GG in the energy sector. The onus on the AfDB is to try to create momentum for GG-CC in those countries where awareness is lower, and/or where other priorities are taking precedence. Power is capital intensive, and innovative investment is needed to achieve this, supported by effective knowledge-sharing programs.
5. A lack of coherence in regional responsibilities across Africa is a barrier to developing appropriate GG-CC solutions, particularly regarding harmonised technical standards in the transport sector. Despite this impediment, through a focus on the development of transit corridors and improving border crossings, Bank investments are able to realise GG-CC benefits from efficiency and effectiveness gains. This is consistent with both the High Fives and with GG-CC providing it is managed carefully.

6. Projects that have clear alignment with government priorities, build on long-term sector commitment and country engagement, establish robust institutional mechanisms to support financial sustainability, and effectively engage with end-users from the start have the greatest likelihood of sustainability.
7. It takes time, in-country resources, and extensive consultation to develop effective and appropriate

GG-CC strategies and solutions. The Bank has been most successful in sectors with strong national leadership supporting GG-CC; where this is not present, a range of instruments including PBOs, project support, and knowledge products may help to develop the enabling GG-CC environment. This suggests that a GG-CC focus needs to be retained and mainstreamed over several CSP cycles. ■





Annexes

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Technical Annexes

The Technical Annexes can be found on the following page:

<https://idev.afdb.org/en/document/evaluation-mainstreaming-green-growth-and-climate-change-afdb-interventions-energy-and>

1. Detailed Evaluation Questions
2. Theory of Change
3. Portfolio Performance Scorecards
4. Project Results Assessment Performance
5. Synthesis of Cluster Level PRA Findings
6. Country GG-CC Strategies/Policies for the Power and Transport Sectors
7. Documents Reviewed

Endnotes

- 1 Other infrastructure sectors, such as water and sanitation, have not been considered in the cluster analysis. In this document, infrastructure is used solely in reference to the energy and transport sectors, unless otherwise specified.
- 2 The Bank's projects, interventions, or portfolio in the context of this cluster evaluation refer to those that mainstreamed GG-CC into their designs. Because the Bank's systems do not classify or mark projects in this way, the evaluation team went through the Bank's project database and undertook the identification itself.
- 3 'All sectors refer to the totality of AfDB-funded projects that have mainstreamed GG-CC.
- 4 Given the size and diversity of the AfDB's 873 GG-CC interventions and the limited scope of the evaluation, a sample of five case-study countries was selected as the focus of the evaluation based on geographical representativeness and availability of projects with good documentation representing as many characteristics of the portfolio as possible. For each country, four projects were selected for more in-depth results assessment and review, based on the same criteria as the countries (geographic representativeness, existence of PCR documentation, representativeness of project type, sectoral coverage, and inclusion of some private operations).
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- 23 <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/climate-investment-funds-cif>
- 24 https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Towards_a_climate-smart_Africa__The_AfDB_and_CIF_driving_Africa_s_climate_action_-_November_2018.pdf.
- 25 See Annex 3 for full details.
- 26 <https://inspiredevolution.co.za/funds/evolution-two-fund/>.
- 27 IDEV: Independent Evaluation of AfDB Program Based Operations (2012-2017) Summary Report, October 2018.
- 28 IDEV: Evaluation of the African Development Bank Group's Program Based Operations: Energy Governance Cluster, April 2019.
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- 31 Rail Infrastructure in Africa: Financing Policy Options, Transport, Urban Development and ICT Department, 2015.

- 32 Cross Border Roads Corridors: The Quest to Integrate Africa, Infrastructure and Urban Development Department, AfDB, 2019.
- 33 AITB report, September 2019 (ibid).
- 34 <https://www.afdb.org/en/news-and-events/press-releases/unga-2019-no-room-coal-africas-renewable-future-akinwumi-adesina-30377>.
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- 61 Finding of Portfolio Review undertaken for OPSCOM, 2014 (ibid).
- 62 AfDB Evaluation of Bank Strategies and Programmes in Senegal 2004 – 2013 Summary Report, IDEV, January 2016. Technical data source Mott MacDonald.
- 63 Financial sustainability refers to whether the future financing of a given activity was included in an exit strategy; whether the interventions planned to continue after the end of the project lifetime were financially sustained/self-sustaining or otherwise sustainability funded at the end of the project.
- 64 Institutional sustainability refers to the systems, institutions, policies and procedures at the local level that need to be in place and function after the end of the project to support the continued impact of the project. With institutional sustainability, end users, beneficiaries, authorities and service providers at the local/national level have clear roles, tasks and responsibilities, and are capable of fulfilling these roles effectively.





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About this evaluation

This project cluster evaluation is a building block in the overall corporate evaluation of mainstreaming Green Growth and Climate Change (GG-CC) into the AfDB's interventions. It covers seven energy and transport projects in five countries: Cameroon, Morocco, Mozambique, Rwanda, and Senegal, for a total value of USD 564 million.

The evaluation examined how well the Bank has mainstreamed GG-CC into its energy and transport sector interventions, and how well Bank-funded energy and transport sector projects that mainstream GG-CC have performed in terms of relevance, effectiveness, efficiency and sustainability.

Overall, the evaluation found that the Bank has increasingly enhanced the integration of GG-CC principles into its sectoral policies, strategies and operations, particularly in the energy sector, more so than in the transport sector. The Bank has also successfully mobilized and leveraged climate funds to finance major energy infrastructure projects.

The projects were found relevant in terms of the alignment of their design with policies, strategies and beneficiaries' needs, and effective in achieving their intended GG-CC mainstreaming results (outputs and outcomes), but efficiency was deemed unsatisfactory. The sustainability of project benefits was seen as likely.

The evaluation provides lessons and good practices to enable the Bank to improve the quality and performance of its interventions and inform the development of its new GG-CC strategic framework.



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