



The Role of Regional Infrastructure in Promoting Green Economies in the East African Community



Authorship

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Disclaimer

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Abbreviations and Acronyms

ACTO	Amazon Cooperation Treaty Organization
ACTS	African Centre for Technology Studies
ADB	Asian Development Bank
AF	Adaptation Fund
AfDB	African Development Bank
AMCEN	African Ministerial Conference on the Environment
ASEAN	Association of Southeast Asian Nations
ATL	Aviation Travel and Logistics Holdings Limited
BNDES	<i>Banco Nacional de Desenvolvimento Econômico e Social</i>
BRT	(Dar es Salaam) Bus Rapid Transit
CAN	Climate Action Network
CAREC	Central Asia Regional Economic Cooperation
CBO	community-based organisation
CDF	consultative dialogue framework
CDIA	Clean Development Initiative in Asia
CDM	Clean Development Mechanism
CEPP	Clean Energy Production Plan
CIIPP	City Infrastructure Investment Programming and Prioritization
CLUVA	Climate Change and Urban Vulnerability in Africa
CO ₂ e	carbon dioxide equivalent
COFIDE	<i>Corporación Financiera de Desarrollo S.A.</i>
COICA	Coordinator of the Indigenous Organization of the Amazonian Basin
COMESA	Common Market for Eastern and Southern Africa
CRBC	China Road and Bridge Corporation
CSA	climate-smart agriculture
CSO	civil society organisation
DAC	Durban Adaptation Charter
DARCOBOA	Dar es Salaam Commuter Bus Owners Association
DART	Dar es Salaam Rapid Transit
DFID	UK Department for International Development
EA	East African

EABC	East African Business Council
EAC	East African Community (an intergovernmental organisation composed of Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda)
EALA	East Africa Legislative Assembly
ECOWAS	Economic Community of West African States
EECA	Energy Efficiency and Conservation Agency
EIA	environmental impact assessment
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FGD	focus group discussion
FONERWA	National Climate and Environment Fund
GCF	Green Climate Fund
GDP	gross domestic product
GESIP	Green Economy Strategy and Implementation Plan
GGBP	Green Growth Best Practice
GGDS	Green Growth Development Strategy
GGGI	Global Green Growth Institute
GHG	greenhouse gas
GIS	geographic information system
GMS	Greater Mekong Sub-region
GOK	Government of Kenya
GOR	Government of Rwanda
GOT	Government of Tanzania
GWP	Global Water Partnership
ID	identification
IDB	Inter-American Development Bank
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IPF	Infrastructure Prioritization Framework
IPP	independent power producer
IUCEA	Inter-University Council for East Africa
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management Project

JICA	Japan International Cooperation Agency
KFW	Kreditanstalt für Wiederaufbau
KPLC	Kenya Power and Lighting Company Ltd.
kW	kilowatt
KWSCRIP	Kenya Water Security and Climate Resilience Project
LAC	Latin America and Caribbean
LAPSSET	Lamu Port, South Sudan, Ethiopia Transport Corridor
LRER	Law to Promote Investment in Electricity Generation with Renewable Resources
LTWPP	Lake Turkana Wind Power Project
LVBC	Lake Victoria Basin Commission
M&E	monitoring and evaluation
M-IWRMP	Mekong Integrated Water Resources Management Project
MDB	multilateral development bank
MINAM	<i>Ministerio del Ambiente</i> (Ministry of Environment)
MINEM	<i>Ministerio de Energía y Minas</i> (Ministry of Energy and Mines)
MJ	megajoules
MOA	Matatu Owners Association
MONRE	Vietnam Ministry of Natural Resources and Environment
MOU	Memorandum of Understanding
MRC	Mekong River Commission
MTP	Medium Term Plan
MW	megawatt
NBA	Niger Basin Authority
NDA	National Designated Authority
NDC	Nationally Determined Contributions
NGO	non-governmental organisation
NIE	National Implementing Entity
NWA	National Water Authority
O&M	operations and management
OECD	Organisation for Economic Co-operation and Development
OMVG	<i>Organisation pour la Mise en Valeur de fleuve Gambie</i> (Gambia River Basin Development Organisation)

PACJA	Pan African Climate Justice Alliance
PDO	Programme Development Objective
PDR	(Lao) People's Democratic Republic
PFCM WA	Permanent Framework for Coordination and Monitoring of IWRM in West Africa
PPA	power purchase agreement
PPP	public-private partnership
PPP PAUN	Public Private Partnership Project Advisory Unit Network
PRC	People's Republic of China
PUTON	Public Transport Operators Union
RDB	Rwanda Development Board
RDF	Railway Development Fund
RIC	Regional Integration Centre
RIPA	Regional Infrastructure Program for Africa
SAP	Strategic Action Plan
SDAP	Sustainable Development Action Plan
SE4All	Sustainable Energy for All
SEA	strategic environmental assessment
SGL	Simon Group Limited
SGR	standard gauge railway
SNAPP	Science for Nature and People Partnership
TOR	Terms of Reference
UDA-RT	Usafiri Dar es Salaam Rapid Transit
UN	United Nations
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States dollar
US EPA	United States Environmental Protection Agency
UWADAR	Association of Transporters in Dar es Salaam
WAPP	West African Power Pool
WRA	Water Resources Authority

WRMA

Water Resources Management Authority

Executive Summary

Infrastructure investments are often thought to propel economic growth, particularly when the investments are regional (Shi et al., 2017; Bhattasali and Thomas, 2016; Kodongo and Ojah, 2016; Crescenzi and Rodriguez-Pose, 2012; Wagner, 2012; Roland-Holst, 2009). This study investigates how regional infrastructure development can promote the transition to green economies with respect to the energy, transport and water sectors in the East African Community (EAC). We conducted a literature review; developed five case studies from relevant international regions and engaged with stakeholders from the study countries¹ through workshops, interviews and focus groups to identify enabling national policies and plans and related financing options and incentives to build integrated, effective and sustainable systems.

Findings

Policies, strategies and plans aimed at building green economy infrastructure exist within the EAC and have the potential to promote green economies.

Each country has separate policies and regulations that align with its national development agenda and vision. Opportunities exist for regional integration and harmonisation of individual country plans, policies or regulations, but political support for regional integration from individual EAC member states is needed. Some countries have dedicated green growth strategies, including Kenya and Rwanda—Kenya used its National Climate Change Action Plan and Strategy to integrate climate resilience into their Vision 2030 and can now enforce climate actions and standards through its Climate Change Act of 2016. Stakeholders interviewed indicated that the EAC member countries will be better positioned to achieve the Nationally Determined Contribution (NDC) target (30% greenhouse gas emissions reduction by 2030) if regional cooperation occurs.

Global examples of regional infrastructure projects include green growth-supportive conditions that, if considered during project conceptualisation, could increase the chances for a transition to green economies.

Green growth supportive conditions are defined as conditions that make green activities attractive opportunities for investors and businesses. The supportive conditions identified (see **Table ES-1**) focus on the national (versus regional or transboundary) context; however, most of the supportive conditions presented apply to a regional context.

The case study projects fall on a spectrum, with variability in the number of supportive conditions in place. Some projects studied were not initially designed to promote green growth, but still provide green growth benefits.

Although national policies and strategies can facilitate the development of infrastructure that supports green growth, they do not always underlie green growth development. Whilst, green growth policies can shape the design of infrastructure projects, sector-based policies may also

Global Regional Infrastructure Case Studies

1. Central Asia Regional Economic Co-operation Transport Corridor 1 Investment Programme
2. Chaglla Hydropower Plant (Peru)
3. Gambia River Basin Development Organisation (*Organisation pour la Mise en Valeur de fleuve Gambie* [OMVG]) Interconnection Project
4. Mekong Integrated Water Resources Management Project
5. Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

¹ This study is based on the findings from fieldwork in Kenya, Rwanda, Tanzania and Uganda only.

help countries meet green growth objectives, even in the absence of formalised green growth policies or strategies.

Table ES-1. Green Growth Supportive Conditions

Table Head?	Table Head?	
Financing	<ul style="list-style-type: none"> • Diversity of financing options • Investor leadership 	
National Conditions	<ul style="list-style-type: none"> • National government leadership • National policies, laws, regulations, strategies or plans that support regional collaboration • Improved enforcement of the national-level policies and regulations • Completion of a needs assessment 	
Outreach and Capacity Building	<ul style="list-style-type: none"> • Inclusive stakeholder engagement to build project support • Institutional capacity building and development of knowledge products 	
Proof-of-concept	<ul style="list-style-type: none"> • Existing project(s) of similar scope (to attract financing) • Quantification of benefits and trade-offs using accepted methods 	
Regional Conditions	<ul style="list-style-type: none"> • Regional strategy for green growth • Mechanisms to foster collaboration across countries • Completion of a regional baseline assessment, pre-feasibility study or feasibility study 	
Social and Environmental	<ul style="list-style-type: none"> • Beneficiaries • Resource efficiency • Minimal risks and impacts • Increased resilience 	<ul style="list-style-type: none"> • Poverty alleviation • Job creation • Minimal resettlement and cultural impacts • Inclusivity across different groups of society

Capacity building in technical areas, more generally in financing, could increase the potential for regional co-ordination and project implementation.

Significant capacity gaps and needs for technical assistance exist at the EAC and national levels across the sectors. Developing local expert negotiators in national ministries to empower staff to design, implement and promote infrastructure is needed to achieve green economic growth and allow the ministerial technical teams to effectively negotiate with contractors when seeking financing for infrastructure projects.

Stakeholders interviewed indicated that the sector working groups established by the EAC Secretariat need a knowledge-sharing platform to promote sharing of lessons learnt to inform, as well as policy-making and infrastructure project implementation across EAC member states.

Inclusive stakeholder engagement can result in strong stakeholder support and the eventual promotion of green economies and green infrastructure.

Involving stakeholders in the design and implementation of regional and green infrastructure can help overcome the power relations, political obstacles and implementation challenges that are unique to regional and green infrastructure projects. Including stakeholders may facilitate ownership of the infrastructure by local communities, provide benefits at the household and local community levels and build the capacity of local communities to utilise the infrastructure in delivering other goods and services. Additionally, community members can derive benefits, such as skills development and job creation opportunities, particularly for youth.

Development bank investment in infrastructure projects provides an opportunity for them to drive the green growth agenda.

The study team found that multilateral development banks (MDBs) were the primary funders of the regional infrastructure projects studied, even when compared to other types of institutions combined. Although national infrastructure to promote green growth has many benefits, it is unclear whether these results can be extrapolated to regional infrastructure and who will be positively or negatively impacted by the transition to green economies. The private sector alone cannot fund all of Africa's regional infrastructure needs, even if all the right conditions are in place. MDBs, because they will likely continue to finance most of these projects, could drive the regional green growth agenda by screening projects for supportive green growth conditions.

Although a needs assessment to identify specific regional projects by sector in the EAC has not been completed as part of this study, the stakeholders interviewed suggested ideas, such as the creation of regional transport policies; moving towards an intermodal approach linking rail, road, air and maritime transport; increasing cross-border marine transport on rivers and lakes and shifting from geothermal and wind energy to offset uncertainties with hydropower productivity caused by increased drought and low-rainfall situations.

The EAC has the potential to mobilise public financing and leverage public-private partnerships (PPPs).

Opportunities exist for EAC member states to scale up their mobilisation of public finances through taxation and private sector pool formation. For example, the Government of Rwanda is contributing up to 50% of the total financial support for the construction of the Bugesera International Airport, which is the largest public investment in a mega-infrastructure project provided by a national government in the EAC, while private sector pool funding was successfully used in the Lake Turkana Wind project. National and regional authorities could promote viable green investment opportunities to the private sector across the EAC. Although each EAC member country studied has developed a private-sector development strategy to attract private sector investment, there is no regional EAC PPP strategy. The EAC member states are venturing into bilateral, tripartite and multilateral agreements to fund infrastructure and tapping into international climate funds (e.g., Green Climate Fund [GCF]). However, they need to further develop their PPP strategies.

Stakeholders interviewed noted that governments tend to favour international investors for PPPs. This creates competition for local stakeholders when considering the scale of investment and may make it harder for local companies to benefit from green growth.

Recommendations

Policies, strategies and goals relating to green economic growth are divided along national and sector lines, but harmonisation would increase co-operation and attract investments in infrastructure from the private sector and development partners.

The EAC should develop a regional strategy for green growth and harmonise nations' and sectors' policies, including those related to regional infrastructure investments. For example, the EAC Secretariat has a strategic action and sustainable development plan for the Lake Victoria Basin. Stakeholders interviewed consider these policy instruments insufficient, which contributes to Lake Victoria's under-utilization for regional maritime transport. Harmonising each country's National Vision and green growth strategy with the EAC Vision 2050 could guide finance mobilisation for regional infrastructure and help member states achieve net-zero

emissions. The path to harmonisation would be clearer after completing a policy gap and Strengths, Weaknesses, Opportunities and Threats analysis by sector and by country.

Investments and financing from various sources should be coordinated.

Infrastructure experts consulted noted that conditionality attached to market loans for infrastructure can delay the completion of infrastructure projects. Co-ordination amongst the various entities at the regional level may help overcome the high cost of infrastructure investments and create a pool of resources to fast-track integrated infrastructure development aligned with the aims of the EAC Secretariat and the member nations' National Visions.

Gaps in technical capacity and negotiator expertise should be filled through capacity building and knowledge sharing.

To implement regional policies, the EAC member states should invest in building their technical skills and negotiations capacities; share knowledge about regional infrastructure project development by establishing information-sharing mechanisms, such as web portals and working groups and consider working with local academic institutions, many of which offer consulting services and are developing curricula related to infrastructure projects.

Customised capacity building programmes related to developing proposals, managing financials and accounts for the GCF and Adaptation Fund and in mobilising resources for national or regional climate-proof infrastructure are also needed.

Development partners and EAC member states should participate in the Global Infrastructure Forum to keep informed of regional infrastructure and green economies.

Projects should be screened for their potential to prioritise regional infrastructure that promotes green economies.

Lenders, such as MDBs, should create a screening tool to evaluate and prioritise proposed regional infrastructure projects in terms of their potential to promote green economies. The tool would facilitate prioritising those projects with the highest potential to improve climate resiliency and green growth in the region, whilst helping to familiarise stakeholders with important concepts relating to how regional infrastructure development promotes green growth. Existing screening tools could be adapted for this purpose.

The study team recommends screening indicators and a three-step process for selecting and scoping regional infrastructure options to promote green economies in the EAC (see Section 5.4). Prioritisation tools should be used to prioritise regional infrastructure opportunities based on their benefits, costs and risks. These tools can help governments and lenders develop a pipeline of projects and make evidence-based decisions on which projects to move forward.

A baseline assessment and pre-feasibility and feasibility studies should be performed for all regional infrastructure projects.

During the conceptualisation and design stage, a baseline assessment should be completed to determine the landscape for green growth and what projects can be prioritised. This step could help identify (and even remove) risks or barriers later in the project design and implementation stages. Pre-feasibility and feasibility studies will determine the project's technical and operational feasibility and chances for contributing to green growth.

Section 1. Purpose and Organisation of this Report

East Africa (EA) is the world's most rapidly urbanising region (Laros & Jones, 2014). As East African populations grow, governments face near- and long-term challenges in the provision of electricity, water and surface transport infrastructure, in addition to reducing greenhouse gas (GHG) emissions and preparing for the impacts of climate change. Further, cross-country trade, movement of people and exchange of goods and services across the East African Community (EAC) common markets are increasing, providing both opportunities and challenges for green growth.

Despite the opportunities and need for regionally integrated infrastructure, many African countries experience weak governance structures, high levels of poverty and limited infrastructure and service delivery (Elmqvist et al., 2013). To narrow the infrastructure gap, it has been estimated that an annual investment of \$7.5 billion² is needed to keep pace with the infrastructure priorities identified in the Programme for Infrastructure Development in Africa 2011 Priority Action Plan; to-date investment is below the need.³ The Regional Infrastructure Program for Africa (RIPA) found that there is not only a gap in funding to support the current infrastructure pipeline but that the costs of project preparation are inhibitive, and the complex nature of projects requires coordination and collaboration across national governments and among stakeholders, which also inflates costs. RIPA also found that regional infrastructure produces an unequal distribution of costs and benefits across countries, which can hinder decision-making regarding prioritising infrastructure projects.

This report presents the findings of the study, *The Role of Regional Infrastructure in Promoting Green Economies in the East African Community (EAC)*. The research team, led by RTI International in partnership with the African Centre for Technology Studies (ACTS), seeks to answer questions put forth in the Terms of Reference (TOR), including, 'how existing regional and national development policies and plans work together, how to influence and prioritise regional investments in infrastructure to transition towards green economies, the collective benefit of this to national economies and who within the population stands to benefit if it is'. To answer the study questions and meet the three study objectives outlined in the TOR (see text box and **Section 3.1**), the team employed an integrated, iterative approach to gathering and analysing data, drawing from desk research to develop global case studies; fieldwork in Kenya, Rwanda, Tanzania and Uganda;⁴ and participation in regional policy and academic events. Through these activities, the study team

Study Objectives

- 1) Understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy.
- 2) Scope the opportunities for the role of regional infrastructure to promote the transition to green economic growth in the EAC with respect to energy-, transport- and water-related infrastructure.
- 3) Make recommendations on effective policy and implementation approaches for regional infrastructure to support more sustainable growth patterns, reduce poverty and enhance climate resilience within the political context of the EAC.

² All dollar amounts are given in United States dollars (USD).

³ DFID. (2012). *Regional infrastructure programme for Africa [GB-1-202579]*. Retrieved from <https://devtracker.dfid.gov.uk/projects/GB-1-202579/documents>

⁴ The study team acknowledges that Burundi and South Sudan are part of the EAC, but field work was not conducted in those countries because of security concerns and the project scope, respectively.

generated evidence to better understand the opportunities for and constraints to regional infrastructure development, including the political economy of the region, the mechanisms to encourage collaboration across national governments and the barriers to and opportunities for attracting financing.

This report is organized as follows:

- Section 1: Overview of the study, including the study context, approach and objectives
- Section 2: Definitions developed by the study team after a review of the related literature
- Section 3: Approach and research methodology
- Section 4: Assessment of the policy landscape and institutional arrangement in the EAC
- Section 5: Findings vis-à-vis the study objectives, organised by research question
- Section 6: Recommendations.

Section 2. Definitions

Based on the findings from the literature review, the study team developed a set of definitions, described below. These definitions provide context for the study objectives and methodological approach presented in the remainder of the report.

Energy infrastructure: The supportive technologies to generate, transport and transmit energy, including the following: coal, oil, natural gas and off- and on-grid renewable energy, including hydropower, geothermal, solar and wind.

Green growth: A pathway towards sustaining economic growth whilst ensuring climatic and environmental sustainability (Naumann et al., 2011).

Although the concept of green growth is present in both white and grey literature sources, a universal model for green growth does not exist in these sources; that is, the ways in which a particular region or country defines green growth vary. Through our stakeholder engagements, we found that in the EAC, green growth is defined and understood differently across governments, civil society and the private sector. The Global Green Growth Institute (GGGI) remarks that, ‘green growth must be defined locally, based on domestic preferences and circumstances, and the pathway to its achievement will vary accordingly’ (Green Growth Best Practice Initiative [GGBP] Initiative, 2014, p. 83). For some stakeholders with whom we have engaged in the EAC, green growth is focused on ensuring that infrastructure projects are designed with environmental sustainability in mind, primarily through the use of environmental impact assessments (EIAs). This understanding of green growth aligns with the literature we reviewed, which indicates that some ‘approach green growth from an environmental perspective – the potential to internalise environmental externalities by mainstreaming sustainable development requirements into economic decision-making, notably through resource pricing and land use/infrastructure choices’ (Organisation for Economic Co-operation and Development [OECD], 2012, p.5). For others, green growth is better understood as a means to achieve broader economic growth targets.

Green infrastructure: Green infrastructure is the network of natural and semi-natural areas, features and green spaces in rural, urban, terrestrial, freshwater, coastal and marine areas that

enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services.

There is no single, universally accepted definition of green infrastructure. For the purposes of this project, we reviewed the literature for definitions and incorporated portions of multiple definitions of green infrastructure to develop the definition presented above (Benedict & McMahon, 2006; Brown, Kim, & Romani, 2015; Climate Change and Urban Vulnerability in Africa [CLUVA], 2013; European Commission, 2016, 2012; Inter-American Development Bank [IDB], 2014; Naumann, Davis, Kaphengst, Pieterse, & Rayment, 2011; World Bank, 2018). In general, green infrastructure is defined differently depending on the audience and the focus of the literature (e.g., water or green growth). In literature focusing on water, for example, the definition of green infrastructure related to water resource management (US Environmental Protection Agency [US EPA], 2016). Additionally, through consultations with stakeholders in the EAC, we determined that green infrastructure may also be defined in the context of economic growth (specifically, green growth) and infrastructure investments that comply with national environmental regulations and standards through the integration of environmental, climate change and biodiversity considerations.

Because the definition of green infrastructure varies widely, it is necessary to provide additional context. Green infrastructure can be strengthened through strategic and coordinated initiatives that focus on maintaining, restoring, improving and connecting existing areas and features and the creation of new areas and features (Naumann et al., 2011). Examples of green infrastructure that can promote the transition to a green economy when the infrastructure project in question has positive or minimal adverse impacts on the surrounding environment include

- projects that provide environmental, social, climate change adaptation and mitigation and/or biodiversity benefits;
- stand-alone, new infrastructure;
- new infrastructure added to existing projects;
- projects with core areas of high biodiversity value, such as protected areas;
- projects with core areas outside of protected areas containing large, healthy, functioning ecosystems;
- projects that include natural features acting as wildlife corridors or stepping stones;
- certain artificial components and/or infrastructure that preserves or increases the productivity of natural resources and/or reduces emission intensity (i.e., reduces GHG and other air pollutant emissions), such as
 - eco-ducts/eco-bridges, fish ladders, bicycling paths, urban transit, improved energy efficiency, renewable energy projects, integrated waste management practices, porous pavements, and carbon capture and storage; and
 - frameworks, such as reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries and the Low Emission Development Strategy.

- projects that include buffer zones that are managed sustainably and help improve both the general ecological quality and permeability of the landscape to biodiversity and the environmental sustainability (e.g., wildlife-friendly farming); and
- projects with multi-functional zones where compatible land uses can join forces to create land management combinations that support multiple land uses in the same spatial area.

Natural green infrastructure includes large protected natural areas, such as large lakes, river basins and forests (these are considered regional in scale); low-intensity agricultural areas; high-nature value forests; extensive dune systems; coastal lagoons; mountain ranges (considered regional/transboundary in scale); restored wetlands; and native plant vegetation.

Regional infrastructure: This study uses the RIPA definition of ‘cross-border or national components of regional, multi-country infrastructure networks’ but will also include projects that are *geographically* located in one country but may have a sphere of influence that extends beyond the host country borders. For example, although the infrastructure for the Chaglla Hydropower Plant is limited to Peru, the project itself has regional implications. The Huallaga River is part of the Amazon basin headwaters, and the Chaglla Plant (see **Annex C**) opens a remote region of Peru to roads, increased trade and other services. This new infrastructure is likely to pave the way for more infrastructure around the plant and in western Brazil, contributing to further deforestation and fragmentation of the Amazon. Because major infrastructure projects, such as the interoceanic highways linking Brazil and Peru, open the Amazon to development, smaller projects, such as Chaglla, will likely be proposed to support small communities along the highway, further contributing to deforestation. Similarly, a port rehabilitation project may be geographically located in one country but have green growth benefits that extend to other countries.

Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET): ‘Eastern Africa’s largest and most ambitious infrastructure project bringing together Kenya, Ethiopia and South Sudan. This mega-project consists of seven key infrastructure projects starting with a new 32 berth port at Lamu (Kenya); interregional highways from Lamu to Isiolo, Isiolo to Juba (South Sudan), Isiolo to Addis Ababa (Ethiopia), and Lamu to Garsen (Kenya); a crude oil pipeline from Lamu to Isiolo and Isiolo to Juba; product oil pipeline from Lamu to Isiolo and Isiolo to Addis Ababa; inter-regional standard gauge railway (SGR) lines from Lamu to Isiolo, Isiolo to Juba, Isiolo to Addis Ababa and Nairobi to Isiolo; three international airports – one each at Lamu, Isiolo and Lake Turkana; three resort cities – one each at Lamu, Isiolo and Lake Turkana; and the multipurpose High Grand Falls Dam along the Tana River.’⁵

Transport infrastructure: Examples of transport infrastructure include roads, railways, ports and airports.

Water infrastructure: This study is focused on catchment-level water supply and management planning. For the purposes of this study, we define this sector as including rivers and lakes transport infrastructure (i.e., regional inland waterways), water storage and inter-basin water transfers. Water consumption (or usage), sanitation and municipal wastewater treatment infrastructure were excluded from the search scope because they tend to be monitored or managed at the local level.

5 Taken directly from the project website. LAPSSET. (n.d.). Retrieved from <http://www.lapsset.go.ke/>

Section 3. Objectives and Methodology

3.1 Study Objectives

The three objectives of this study are to

1. understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy;
2. scope the opportunities for the role of regional infrastructure to promote the transition to green economic growth in the EAC with respect to energy-, transport- and water-related infrastructure; and
3. make recommendations on effective policy and implementation approaches for regional infrastructure to support more sustainable growth patterns, reduce poverty and enhance climate resilience within the political context of the EAC.

The study employed an integrated, iterative approach to gathering and analysing data and drew from desk research, fieldwork and participation in regional policy and academic events, as described below. The complete study methodology, including the specific research questions to meet the study objectives, can be found in **Annex A**.

3.2 Methodology

3.2.1 Case Studies

To identify global case studies, the study team developed a comprehensive list of regional infrastructure projects by reviewing donor agency project databases and performing a sector-specific literature review. More than 470 large, potentially multi-national infrastructure projects were identified. The sector breakdown was as follows: energy and mining (30.0%); transportation (22.9%); industry and trade (15.8%); agriculture, fishing and forestry (15.5%); information and communications (9.8%) and water, sanitation and flood protection (6.0%). Two filters were then applied to narrow the list: (1) a filter for regional projects (multi-national or other large projects in the water, energy or transport sectors) and (2) a filter to ensure that that our case studies would include a sub-set of regional infrastructure projects that can promote a transition to a green economy. The study team then looked at project clustering by region and selected five case studies from regions with greater concentrations of relevant projects. The study team narrowed the list to five projects and developed a set of case studies (**Annex B**).

We also selected a set of EAC regional case studies for analysis based on recommendations from the EAC stakeholders and a desk review of recent news articles that mainly considered a set of parameters including transnational impact, potential contribution to green growth, existence of a policy and regulatory environment, demonstrable public private framework and innovative funding streams in support of the selected infrastructure.

3.2.3 Stakeholder Engagements

Included below is a summary of stakeholder engagements that the study team held to address the research questions. The research questions were not asked in a survey format; thus, not every stakeholder provided a response to each research question to facilitate a comparative analysis.

Policy workshops and interviews

In February and March 2017, the study met with stakeholders across Kenya, Rwanda, Tanzania and Uganda. To better understand the political economy of the region, the study team first met with the EAC Secretariat in Arusha, Tanzania, and interviewed experts in the transport and energy sectors. In all four countries, interviews were held with state and non-state actors in the water, climate change, energy and transport sectors. In addition to individual interviews, the team held focus group discussions (FGDs), which built on individual interviews and captured cross-sector issues. Interviewees and informants were identified through a stakeholder analysis, one-on-one interactions at different forums and conferences (e.g., the United Nations [UN] Framework Convention on Climate Change [UNFCCC] Conference of the Parties 22 in Morocco), regional and national networks and a review of recent studies. See **Annex C** for a summary of engagements with stakeholders and **Annex D** for the questions used to guide stakeholder engagements.

Focus groups and policy roundtables

We convened focus groups and policy roundtables with stakeholders with expertise in water, energy, transport, finance, climate change and green growth. Participants deliberated on their respective countries' engagements in regional infrastructure, sectoral infrastructure and the linkage to a green economy and the policy landscape. Financial and institutional arrangements for infrastructure activities/projects were also considered.

In-depth interviews and key informants

Key informants are individuals who have deep and strategic insights about particular subjects, objects or interactions and are conversant with the trends and relationships between observed features (Chambers, 1997). We sought to gain information on three aspects through key informant interviews: (1) the key narrative behind the projects (i.e., economic, environmental and social value), (2) the design of infrastructural projects (e.g., the operational procedures, environmental and social safeguards and impacts), and (3) the linkages between projects across sectors and regions.

Regional workshop

During the national-level consultations, the study team determined that a regional stakeholder workshop would help fill the evidence and data gaps. Therefore, the team organised a two-day East Africa Regional Policy Roundtable and Workshop in Nairobi, Kenya, in April 2017, which included participants from government and civil society and UN representatives from the four countries (see **Annex C**). The workshop provided a platform for various East African policy-makers to share their knowledge and experiences.

3.2.4 Cross-cutting Methods and Activities

Stakeholder analysis, including gender roles

The stakeholder analysis was performed to identify which stakeholders are involved in regional infrastructural design, implementation, finance and regulations and determine their understanding of the ways in which regional infrastructure can foster green growth in the EAC. The study also included a set of research questions to address gender.

Policy analysis

The policy analysis helped the study team better understand the green growth policy and regulatory landscape, including policies related to energy, water and transport. The policy analysis was augmented by exploratory interviews, focus groups and policy roundtables and in-country workshops and in-depth interviews with government officers and advisors. The study team developed a matrix to identify and map key sectors, cross-cutting sub-sectors, existing approved policies, draft policies and examples where there were no existing policies.

3.2.5 Supportive Conditions for Green Growth

By synthesising the case studies and stakeholder input, the study team developed a set of supportive conditions that underpin the development of regional infrastructure projects supporting green growth. The methodology for developing these green growth-supportive conditions is summarised in this section and a checklist showing how each case study relates to these conditions is presented in **Section 5.1.3** and **Annex B**.

First, we reviewed published green growth frameworks, criteria and supportive factors from the following sources:

- **United Nations Economic Commission for Africa (UNECA) (2016). *Enabling Measures for an Inclusive Green Economy in Africa*.** This report is specific to Africa and presents six major categories of enabling measures to enhance African institutions and policies that effectively foster the transition to an inclusive green economy whilst contributing to sustainable transformation and poverty eradication.
- **GGBP Initiative (2014). *Lessons from Country Experiences*.** This report presents lessons learnt from 85 case studies, organised into nine practice areas.
- **OECD (2012). *Green Growth Framework for Developing Countries*.** This report includes six national supportive conditions for green growth, four green growth-mainstreaming mechanisms and eight green growth policy instruments. A comprehensive list of regional initiatives and organisations is also included, but the specific projects discussed are at the national versus regional level.
- **Green Growth Knowledge Platform (2013). *Moving Towards a Common Approach on Green Growth Indicators*.** This report focuses on green growth indicators rather than green growth-supportive conditions and was reviewed to determine if the indicator categories could be matched to the supportive conditions in other sources.
- **Sierra, Hultman, Eis and Shapiro (2012). *Green Growth Innovation: New Pathways for International Cooperation*.** This report focuses on improving innovation in green growth and presents several opportunities in response to green growth barriers. The opportunities presented are a combination of those identified by the authors; UN Educational, Scientific and Cultural Organization (2010); European Bank for Reconstruction and Development (2011); and Ockwell et al. (2010) and cover 10 topics.

Although not explicitly stated in these sources, the supportive conditions presented focus on the national (versus regional or transboundary) context; however, most of the supportive conditions presented are also applicable to a regional context.

Second, we compiled a list of supportive factors for each case study. The case study projects fall along a spectrum, with variability in the number of supportive factors in place for any one

project. The study team found examples of projects that were not initially designed to promote green growth but that still provided green growth benefits. For example, the *Organisation pour la Mise en Valeur de fleuve Gambie* (Gambia River Basin Development Organisation; OMVG) Interconnection Project was not conceptualised to support green growth in the region but rather international trade and economic growth more generally. However, this project has significant and direct green growth benefits in the form of emission reductions, which provided a secondary justification for the project.

Third, we identified common themes across the case study supportive factors and created a generalised list (i.e., non-case study specific). Additional stakeholder input regarding shortfalls or gaps was also reviewed and included in this list.

Fourth, we compared the generalised list of supportive conditions against those in the published sources reviewed to identify commonalities and differences. The differences in the published lists of supportive conditions were reviewed for relevance to a regional (multi-country) context, and any conditions that the study team considered relevant were added.

Section 4. EAC Policy Landscape and Institutional Arrangements

The EAC member states have national development blue prints (i.e., visions) that are designed to guide each country to transition from a lower-income country to a middle-income country by 2025. These visions include the following:

- Kenya National Vision 2030
- Rwanda Vision 2050
- Tanzania Development Vision 2025
- Uganda National Vision 2040.

These visions are further broken down into medium-term plans. For example, because Kenya is amongst the most vulnerable countries to climate change in East Africa, stakeholders in Kenya helped ensure that the National Climate Change Strategy 2010 was reflected in the Second Medium Term Plan (MTP) (2013–2017) of the Kenyan Vision 2030 to facilitate integrating climate change into national and sub-national development activities. Kenya transitioned into a lower middle-income country after the completion of MTP I (2008–2012) of their Vision 2030; the rest of the East African countries are still considered developing countries.

The technical experts, private sector, academia and civil society organisation (CSO) representatives interviewed shared challenges and opportunities that EAC member states must address to achieve the goals in their vision plans. Although sector policies, strategies and plans at the EAC Secretariat level are guiding countries as they transition towards upper middle income and climate resilient economies, there is no regional strategy to lead them along a green growth pathway. The stakeholders emphasised the need to harmonise the national visions, existing and future policies, legislations and plans to help them build synergy and mobilise resources to attract investments from the private sector and development partners at local and international levels to invest in energy, transport and waster infrastructure.

4.1 Institutional Arrangements

The institutions assessed include government entities, the UN and regional economic blocks, civil society, and the private sector. There are several mechanisms for interaction, including EAC sector working groups, regional panels and conferences, and informal community engagement as described in the remainder of this section. In general, the institutions operate under their home country's national vision and policies and participate in regional activities through the formal EAC sector working groups and sector-specific regional organizations such as the Lake Victoria Basin Commission. The government players, UN and economic blocks interact on the national- and regional-levels, while civil society and the private sector tend to interact on the project-level.

4.1.1 Government entities

The EAC Secretariat in Arusha, Tanzania, is the executive branch of the EAC, whose member states include Burundi, Kenya, Rwanda, Tanzania, South Sudan and Uganda. The EAC was established in 2000 to increase intra-regional trade and raise the international prominence of the East African region (Grail Research, 2012). The Secretariat's mandate is to ensure that regulations and directives adopted by the Council of Ministers are properly implemented and to provide the Council of Ministers with strategic recommendations. It is empowered to make regional policies and laws by the East African (EA) Legislative Assembly (EALA), which is its legislative body—each member state has an EALA Chapter. Sector working groups established by the Secretariat provide linkages to national ministries and, thereby, enable the technical teams to share data and information. However, these working groups are limited by weak knowledge-sharing platforms to share lessons that inform policy making and implementation. The heads of government of partner countries give strategic direction to meet the goals and objectives of the EAC, while the ministries of the respective countries guide the implementation of national and regional policies at the national and sub-national levels. The national-level Sectoral Council, under the coordination of the respective ministries and departments of East African Affairs, initiates the development of background papers and country positions according to the EAC calendar. Once each EAC member state concludes their country position for each sector, it proceeds to the EAC Council of Ministers and Full Council at the EAC Secretariat for the EAC Summit.

To date, the EAC has established a Customs Union (2005) and a Common Market (2010) and has made progress towards a common currency (African Development Bank [AfDB], n.d.). The AfDB notes that the EAC faces tremendous political, economic and social challenges, including threats to peace and security in the region, weak public participation, lack of institutional and financial capacity and infrastructure shortages (AfDB, n.d.). Despite these challenges, the EAC has an environment that is conducive for the successful integration of regional infrastructure projects (AfDB, n.d.) and green growth.

4.1.2 UN and Regional Economic Blocks

Each EAC Member state has assigned a Minister for the Environment to participate in the African Ministerial Conference on the Environment (AMCEN). Through its regular meetings and programmes, AMCEN supports Africa's capacity to implement regional and international environmental agreements to improve the environmental conditions in Africa while achieving economic growth and eradicating poverty. The UN Economic Commission for Africa (UNECA) is

supporting the EAC Secretariat in developing an EA Energy Security Policy Framework. UN agencies, think tanks, development partners, civil society and the private sector are supporting and advocating for inclusive policy and legislation in the EAC member states. For example, the UN Environment Programme (UNEP) supported Kenya in developing the Green Economy Assessment Report 2014, and in Uganda, the UN Development Programme (UNDP) assisted with the drafting of the Green Growth Development Strategy (GGDS), which is awaiting parliamentary approval. Other regional bodies, such as the New Partnership for Africa's Development, are providing support to the EAC member states in achieving green economies.

4.1.3 Civil society

Several non-governmental organisations (NGOs), international NGOs and community-based organisations (CBOs) are advocating for inclusive, green economic development across EA. Most national NGOs work in partnership with CBOs and at both the national and local levels. These national NGOs have formed umbrella platforms, such as the Kenya Climate Change Working Group, which brings together CSOs to advocate for climate change mitigation and adaptation in Kenya. National NGOs and working groups are brought together through regional platforms, such as the Pan African Climate Justice Alliance (PACJA), which is based in Kenya but works across Africa. PACJA also works closely with UN agencies, governments and the private sector by co-organising side events at UN-led meetings, AMCEN and other regional and global processes. There are also international platforms, such as the Climate Action Network (CAN), which has chapters including CAN-Uganda. A key gap that the study team identified through consultations with CSOs is that there is no vibrant, inclusive EA civil society platform to bring together EA-based CSOs to push for the EAC integrated development agenda in line with the EAC vision.

4.1.4 Private sector

In the EAC member states, the private sector is working closely with the EAC, national governments, civil society and other development partners. The East African Business Council (EABC) is the formal business body established in 1997 to represent the interests of the region's private sector in the EAC regional integration process. The EAC Secretariat works jointly with the EABC to bring together stakeholders seeking to invest in infrastructure in the region. The EAC Secretariat has provided a consultative dialogue framework (CDF) for engaging the private sector in the integration process, which includes an annual EAC Secretary General Forum for stakeholders. The EAC Secretariat is facilitating the capacity building of EAC member states and the private sector through the Public Private Partnership Project Advisory Unit Network (PPP PAUN), which is the implementing partner of the East African Chamber of Commerce, Industry and Agriculture. The PPP PAUN's mission is to strengthen the capacity of the private sector across EA to participate in infrastructure projects.

In Kenya, private sector stakeholders are organised through the Kenya Private Sector Alliance, which advocates for infrastructure investment opportunities on their behalf; the Rwanda Private Sector Federation plays a similar role in Rwanda. The private sector stakeholders interviewed by the study team in the four countries raised concerns about weak policy and legislative support to locally based private investors.

In particular, the local private sector stakeholders interviewed indicated that large international investors are being favoured by public-private partnership (PPP) policies and legislation in EAC

member states. Favouring large international investors may have an unintended consequence of creating competition for local stakeholders when considering the scale of investment, thereby impeding some local private sector engagement. These private sector stakeholders at local and international levels are playing an instrumental role in terms of supporting research, providing capacity building, deploying environmental and gender sensitive technologies, leveraging both local and international finance (e.g., the Green Climate Fund [GCF]) and driving business growth in the EAC.

These local and international private sector stakeholders have initiated regular dialogue with high-level political leadership in the EAC, and this is a great opportunity for other development partners to build synergy to support investment in the water, transport and energy sectors to support green national economies.

4.2 Green Economy Strategy Stocktake

Although no single, regional green economy strategy exists, the study team reviewed the Green Economy Strategies of EAC countries (**Annex E**). The transition towards green economies in the EAC member states is being enabled by plans in Kenya through its Green Economy Strategy and Implementation Plan (GESIP), 2016, and in Rwanda through its Green Growth and Climate Resilience Strategy 2011–2050: National Strategy for Climate Change and Low Carbon Development, 2011. In Kenya, GESIP advocates for infrastructure projects in the transport, energy and water sectors to support low-carbon, resource-efficient technologies. It indicates that, ‘although there is no consensus on a common definition of green economy, in the Kenya context it refers to a shift towards a development path that promotes resource efficiency and sustainable management of natural resources, social inclusion, resilience and sustainable infrastructure development’. Kenya’s key policies and programmes that are in support of a green economy include investments in renewable energy, the promotion of resource-efficient and cleaner energy production, enhanced resilience to economic and climatic shocks, pollution control and waste management, environmental planning and governance and the restoration of forest ecosystems.

In Uganda, development partners, led by UNDP, have provided technical assistance for the country’s green economy strategy; this plan is still awaiting approval by the parliament and executive branch. The stakeholders consulted believed that these green economy strategies in Kenya, Rwanda and Uganda will facilitate investment in low-carbon development strategies and green infrastructure and, thereby, spur economic growth towards green economies. Tanzania is yet to develop a stand-alone green economy strategy but is facilitating the integration of environmental concerns and climate resilience through compliance with existing environmental regulation and climate change strategies (**Annex E**).

4.3 Economic Development and Climate Change Plans

The Kenya Climate Change Act of 2016 and GESIP are helping transition Kenya’s recently achieved lower middle-income country status⁶ towards a green, resilient and fast-growing economy. To improve the resilience of the social, economic and environmental sectors, Kenya

6 For more information about Kenya’s middle-income status, see <http://www.businessdailyafrica.com/World-Bank-confirms-Kenya-lower-middle-income-status/539546-2773210-hf1ya0z/index.html>

has used its National Climate Change Action Plan and Strategy to integrate climate resilience into the Second MTP II of Vision 2030. Consequently, Kenya is now able to enforce climate actions and standards through its Climate Change Act of 2016.

Rwanda's Vision 2020 endeavours to help the Rwandan economy achieve middle-income status. The National Strategy on Climate Change and Low Carbon Development focuses on capacity building and includes actions to reduce climate variability, increase knowledge-sharing of climate information and science and facilitate evidence-based decision-making at all government levels. Rwanda has also established the Fund for Environment and Natural Resources for Rwanda, which channels domestic and international environment and climate change finance to line ministries, districts and charitable and private entities (Government of Rwanda [GOR], 2012).

Tanzania and Uganda have Vision 2040 and Vision 2025 plans, respectively, to facilitate their transition to middle-income economies. In Tanzania, the primary policy documents and plans that oversee the integration of climate change and resilience into policies across all sectors are the National Environment Policy and the National Environment Management Act. Uganda developed a National Climate Change Policy in 2015, but it has no specific law relating to climate change. However, several relevant Ugandan laws exist, such as the National Environmental Management Act 1995, which align with the climate change policy and guide the integration of climate information into economic sectors.

The EAC initiated its regional integration process by creating the Political Federation, which has established sectorial policies and programmes that will build, expand and strengthen economic, political, social and cultural integration that will benefit the member states. The EA countries are benefiting from the EAC Secretariat's strategy for regional cooperation on green and resilient economies through the existing policy framework (**Annex E**).

4.3.1 Implementation of NDCs

All six countries in the EAC submitted their NDCs to the UNFCCC as part of their commitment to the Paris Agreement. Although the implementation of and reporting on NDCs are national obligations, stakeholders interviewed from academia, CSOs, national ministries, and the private sector indicated that the EAC member countries will be better positioned to achieve the NDC target (30% GHG emissions reduction by 2030) if regional cooperation occurs.

The devolved nature of the Paris Agreement gives countries agency to pursue their own, self-defined pathways to implement their NDCs. Through their respective NDCs, Kenya, Rwanda, Tanzania and Uganda aspire to reduce emissions by diversifying their energy portfolios with increased geothermal, wind, solar and other clean energy sources. Kenya has enacted climate change legislation to enforce emissions reduction standards for each sector, while the green growth strategies of Kenya and Rwanda will also support the transition towards low-carbon economies.

The EAC Secretariat recognises that to support its member countries to achieve their respective NDCs, climate governance must be improved, access to climate finance increased, technical and policy support provided and the implementation of climate actions that support the sustainable development agenda at national, regional, continental and global scales ensured. The EAC, in partnership with development partners and member countries, is expending substantial effort to ensure that enhanced political, policy, legislative and resource support is

delivered to fast track the implementation of resilient and sustainably managed trans-boundary resources and infrastructure to help member countries transition to green economies. Therefore, EAC countries can leverage international climate finance to support each other in implementing their respective NDCs. The East African countries also have agency to coordinate regionally and inter-regionally to increase their lobbying power and the efficacy of their actions.

The EAC member state economies are primarily dependent on agriculture (e.g., crops and livestock). Stakeholders interviewed noted that to meet the demands for domestic consumption and export for agricultural projects, there is increasing pressure to clear forested areas. Therefore, land use planning to balance different sector demands is needed.

For example, employing climate-smart agriculture (CSA) strategies and more efficient agricultural practices (e.g., intensive agriculture in greenhouses), EAC countries can balance their agricultural needs with GHG mitigation goals. For example, Kenya has developed a CSA strategy to help mitigate the environmental impact of agriculture whilst building resilience and enhancing productivity.

NDC implementation and tracking have received support from think tanks and development partners. Analyses performed by the German Development Institute⁷ and Mbeva, Ochieng, Atela, Khaemba, and Tonui (2016) reveal that the EAC member countries have identified energy, water and transport (in addition to other sectors, such as agriculture) as priority areas for low-carbon transitions. The various infrastructure projects prioritised by these countries have regional dimensions/implications in terms of impacts, outcomes and geographical scope.

4.4 Sector-specific Policies

4.4.1 Energy

At the regional scale, the EAC, in its *Regional Vision for Socio-Economic Transformation and Development* (2015), which is also called the EAC Vision 2050, seeks to establish an Energy Efficiency and Conservation Agency to promote energy efficiency and conservation in the EA region. This is in addition to the already operational EA Power Pool, which endeavours to harness, store and distribute the most environmentally and economically viable sources of energy for regional growth.

All four of the EAC countries included in this report have energy-related policies, plans, programmes and strategies that, if implemented, could provide sufficient energy to power the development of projects prioritised in their national plans. Rwanda's Energy Policy 2011, Kenya's Energy Policy 2006 and Tanzania's Energy Policy 2003 were reviewed and updated in 2015. However, Uganda continues to rely on an old policy formulated in 2002. Kenya has an ambitious energy plan to lower the cost of power under the Least Cost Power Development Plan 2011–2031, whilst Kenya, Rwanda and Uganda have initiated nuclear energy development as a source of clean energy. All four countries have feed-in-tariffs to incentivise renewable energy.

An analysis by ACTS (manuscript in preparation) determined that increasing inclusive and/or universal access to green energy would benefit Kenya, Tanzania and Uganda in terms of their

7 See <http://www.acts-net.org/media-centre/news/258-ndc-explorer>

economic, environmental, public health and climate adaptation and mitigation interests, as recognised in their national legislation and policies. The legal, policy and legislative frameworks in each of these three countries' energy sectors can be characterised as supportive of inclusive green and/or renewable energy. However, a significant gap remains between the aspirations embodied in key legal, legislative and policy documents (which tend to be relatively supportive of green energy) and actual practice within the energy sector, which is still relatively dominated by non-green and non-renewable energy sources and practices that are not socially inclusive. Therefore, finalising the draft Energy Security Policy Framework to support the implementation of the Power Master Plan (2011) and Regional Strategy on Scaling up Access to Modern Energy Services in EAC (2006) to provide reliable energy for the planned electrification of rail transport, for optimal hydropower generation and for anticipated industrial economic growth resulting from the expansion and modernisation of transport systems.

4.4.2 Transport

The EAC regional policies and strategies (e.g., the EAC transport strategy and road sector development programme and the East African Railways Master Plan [2009]) and countries' respective national transport policies and master plans and policies have enabled Kenya, Rwanda and Uganda to fast track the signing of a joint concession agreement to construct the SGR project to link key ports and cities and ensure the efficient transport of goods across the region. Similarly, Tanzania adopted its National Transport Policy (2011) to facilitate improving the transport sector. In Kenya, the East African Railway Plan and GESIP influenced the development of the Kenya SGR, which was designed to reduce GHG emissions and support green growth in the region.

4.4.3 Water

Kenya has made the most advanced water policy reforms among the four countries studied. In 2016, this country reviewed and updated both its Water Act (2002) and Forest Act (2005) to re-align them with the provisions in the Constitution of Kenya (i.e., ensuring access to clean and portable water and realigning policies and legislations with constitutional and international agreements). Rwanda, Tanzania and Uganda have national water legislation and policies designed to ensure conservation and the provision of clean water across their economies, in addition to regional EAC policies, plans and programmes, such as the Strategic Action Plan (SAP) for the Lake Victoria Basin (March 2007), which focuses on transboundary water bodies.

The study team found that the EAC member countries have established policy frameworks designed to achieve their respective targets in the energy, transport and water sectors. These sectors are among the key areas selected to help EA countries transition to an economic growth level that will create more jobs, reduce poverty and help the EA population create wealth. The stakeholders consulted placed more emphasis on national-level sector policies, which were formulated in the spirit of each country's constitutional provisions as provided for in the Constitutions of Tanzania (1998), Rwanda (2003), Uganda (1995) and Kenya (2010).

Section 5. Findings from the Case Studies and Field Work

This section includes the findings from Research Objectives 1 and 2 as presented in **Table 1**. Case studies, financing options, and lessons learnt in the form of supportive conditions that could be applied to the EAC are presented in **Section 5.1**.

Section 5.2 presents findings from Research Objective 2 and **Section 5.3** presents capacity gaps at the EAC and national level. **Section 5.4** presents screening criteria to help identify and prioritise suitable countries/regions for regional green growth projects.

Table 1. Organisation of responses to Research Objectives 1 and 2

Research Objective 1: Understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy	
Report Section	Page Number
Examples of Regional Infrastructure to Promote Green Economies (Section 5.1)	20
Research Objective 2: Scope the opportunities for the role of regional infrastructure to promote the transition to green economic growth in the EAC with respect to energy-, transport- and water-related infrastructure	
Report Section	Page Number
Coherence of existing EAC policies, strategies and plans intended to encourage regional green economies (Section 5.2.1)	32
Infrastructure Projects (Section 5.3.1)	39
Financing for Projects in the EAC (Section 5.3.2)	43
Equity and Inclusion (Section 5.3.3)	46

5.1 Examples of Regional Infrastructure to Promote Green Economies: Research Objective 1

Based on the study's Research Methodology Summary (**Annex A**), we used case study analysis and field work to answer the research questions related to **Research Objective 1: Understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy** (as presented in the text box to the right).

Research Questions for Research Objective 1

#1.1: Which regional contexts have similar socio-political settings to the EAC?

#1.2: What are examples of successful regional infrastructure approaches that support green growth? If such approaches are not available, what are examples of successful regional infrastructure in general?

#1.3: How were these successes achieved?

#1.4: As national governments work to mobilise finance, what can be learned from experiences globally that can be applied to the EAC?

What are the challenges for raising funding, and what are the synergies across funding sources, if any?

#1.5 How can lessons learnt be applied across the EAC?

Note: all research questions are presented in Annex A.

To answer Research Objective 1.1, the study team first sought to document the socio-political settings within the EAC. The study team identified the following regions that have similar socio-political settings to the EAC: Southeast Asia (Mekong Region), Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), South America (Amazonian Region) and West Africa.

5.1.1 Successful Regional Infrastructure Case Studies

This study relied on case studies from global sources and the EAC to better understand the following:

- the supportive policy environment and the extent to which national policies currently or could support green growth in their respective countries;
- the political dimensions and decision-making processes that enable or hinder the development of regional infrastructure projects;
- the funding sources mobilised to construct the projects and
- how lessons learnt can be applied to the EAC context.

Table 2 presents a high-level summary of the case study projects with additional details described in the remainder of this section. The full set of case studies can be found in **Annex B**.

Global Case Studies	
1.	Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Programme
2.	Chaglla Hydropower Plant (Peru)
3.	Gambia River Basin Development Organization (<i>Organisation pour la Mise en Valeur de fleuve Gambie</i> [OMVG]) Interconnection Project
4.	Mekong Integrated Water Resources Management (IWRM) Project (M-IWRMP)
5.	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
EAC Case Studies	
6.	Kenya Water Security and Climate Resilience Project (KWSCRIP)
7.	Lake Turkana Wind Power Project (LTWPP)
8.	Standard Gauge Rail (SGR) Project

Table 2. High-level summary of selected case study projects

Case Study Name and Anticipated Impact	Region (Countries)	Project Duration and Cost	Public/Private Finance Option	Supportive Conditions
1. Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Programme <i>Impact:</i> Reduced transport costs and transit times and increased regional trade and tourism between the Kyrgyz Republic and People's Republic of China	Central Asia (People's Republic of China, Kazakhstan, Kyrgyz Republic and Russian Federation)	2009–2014 1.48 billion United States dollars (USD)	International banks	<ul style="list-style-type: none"> • Existing regional institutions and cooperation over the past decade since the launch of CAREC in 1997 • Strong political will (the development of the transport sector is a priority for the Kyrgyz Republic) combined with significant and recent investments in the transport sector • Strong stakeholder support • Leadership from financing institutions who created regional institutions and promoted regional strategies • Ability to obtain financing from multiple sources (all international banks)
2. Chaglla Hydropower Plant (Peru)	Peruvian Amazon (Peru with downstream)	2011–2016	International and local private banks (as junior financiers)	<ul style="list-style-type: none"> • Thorough assessment of environmental and social risks (an EIA law exists in Peru)

Case Study Name and Anticipated Impact	Region (Countries)	Project Duration and Cost	Public/Private Finance Option	Supportive Conditions
<u>Impact:</u> Reliable energy to Peru's national grid	impacts on Brazil and the larger Amazon River basin)	1.2 million USD		<ul style="list-style-type: none"> Stakeholder engagement early in the planning process Partial private financing (private banks) and business advocates for renewable energy, specifically hydropower in the region National Energy Plan (2010–2040 and, more recently, 2014–2025) with targets for renewables
3. OMVG Interconnection Project <u>Impact:</u> Increased and more efficient electricity trade between West African countries	West Africa (Gambia, Guinea, Guinea-Bissau and Senegal)	2015–2022 696 million USD	International banks	<ul style="list-style-type: none"> Strong political support A sustainable financing plan consisting of development bank loans with longer repayment periods and concessional interest rates compared to those from private investors Existing regional institutions focused on transport and energy infrastructure projects (OMVG, Economic Community of West African States [ECOWAS] and West African Power Pool [WAPP]) New and complementary power generation projects to ensure interconnection between the countries Existing regulations adopting a common electricity management, monitoring and exchange framework An institutional structure that protects investors and the establishment of various agreements (e.g., power sharing, purchasing and transmission) Projected CO₂ equivalents (CO₂e) emissions reductions
4. Mekong Integrated Water Resources Management Project (M-IWRMP) <u>Impact:</u> Stronger institutional capacity for Integrated Water Resources Management (IWRM) and more effective water resource and fisheries	Southeast Asia (Cambodia, Lao People's Democratic Republic [PDR], Thailand and Vietnam)	2012–2021 70.59 million USD (over three project phases)	International banks and local country governments	<ul style="list-style-type: none"> Existing regional institutions (Mekong River Commission [MRC]) Existing regulatory and policy environment that promotes IWRM and socioeconomic growth Previously completed projects under a similar scope Movement towards the development of national green growth strategies for Vietnam and Cambodia Project scope that addresses three levels: regional, transboundary and national initiatives Combination of institutional capacity building and development of

Case Study Name and Anticipated Impact	Region (Countries)	Project Duration and Cost	Public/Private Finance Option	Supportive Conditions
management along the Mekong River				knowledge products within the project scope
<p>5. Niger Basin Water Resources Development and Sustainable Ecosystems Management Project</p> <p><u>Impact:</u> Increased productivity of water resources and improved regional coordination of water resources management in the Niger basin</p>	West Africa (Benin, Guinea, Mali, Niger and Nigeria)	<p>2007–2017</p> <p>233 million USD</p>	International banks	<ul style="list-style-type: none"> Existing regional institution (Niger Basin Authority [NBA]) that formed a Shared Vision process (for joint decision-making in the basin) in 2002 and a Sustainable Development Action Plan (SDAP) in 2007 Strong political will Desire across NBA member countries to move away from unilateral planning and towards coordinated development actions throughout the basin

Case Study 1. CAREC Transport Corridor 1 Investment Programme: China, Kazakhstan, Kyrgyz Republic and the Russian Federation

The CAREC Transport Corridor 1 Investment Programme contributes to sustainable economic growth by spurring transit traffic, promoting trade and strengthening regional cooperation (Figure 1). This project was not conceptualised to support green growth in the region but to support international trade and economic growth more generally (i.e. to reduce the transport costs for freight transiting through the corridor from 10% to 5% of cargo value).

However, the project has some green growth benefits in the form of emissions reductions on a per vehicle basis: the travel time decreases when the corridor is used and the number of hours of engine use decreases because of road enhancements. Nonetheless, these benefits

Figure 1. Map of the CAREC transportation corridor



Map Source: <http://slideplayer.com/slide/710085/>

have not been quantified, nor were they mentioned as justification in any of the strategic planning or lending documents.

Separately, the overall impact of the project will lead to a net increase in energy consumption and emissions as it is expected to create an induced growth in traffic volume: from 4,000 to 7,000 vehicles per day transiting through the corridor. The emissions from this additional vehicular traffic is likely to exceed the per vehicle emissions reduction benefits produced by increased travel speeds and reduced travel time through the corridor.

Although this project was not designed as part of a comprehensive green growth strategy, there is widespread recognition by the government of Kazakhstan on the role and impact of transport on green growth outcomes. The government prepared a Green Growth Strategy in 2013 that prioritises energy efficiency through energy-saving transportation technologies. However, this strategy does not mandate any higher energy efficiency standards in vehicles than what is already committed to by international treaties and standards.

Case Study 2. Chaglla Hydropower Plant: Peru

Overall, the infrastructure (e.g. transportation, energy and drinking water) in Peru is poor; however, the Hidroelectrica de Chaglla project will be the country's second largest hydropower facility and will represent approximately 13% of Peru's installed hydropower capacity.

In addition to acting as a renewable source of energy, this plant will provide local jobs and access roads in and out of the region. The Peruvian Green Growth Strategy was released in 2014, three years after this project began.

The green components of this project include

- increased access to social services and new services, markets and jobs via improved or new roads;
- a renewable source of energy and an approximate reduction of 467,000 CO₂e per year in GHG emissions (from offsetting non-renewable energy sources) and
- the construction of a greenhouse that will host a collection of ~9,000 orchids and the provision of upstream and downstream biodiversity monitoring.

Although the infrastructure for the Chaglla Hydropower Plant is limited to Peru, the project has regional implications. The plant is located on the Huallaga River, which is part of the Amazon basin headwaters. It opens a remote region of Peru to roads, increased trade and other services. This new infrastructure will likely pave the way for more infrastructure around this area and in western Brazil, contributing to further deforestation and fragmenting of the Amazon. As major infrastructure projects, such as the inter-oceanic highways linking Brazil and Peru, open the Amazon up to development, it is likely that smaller projects, such as Chaglla, will be proposed to support small communities along the highways, thereby further contributing to deforestation in the name of economic development.

Additionally, a dam was built for the Chaglla Plant and it is one of several existing or proposed dams in the Andean-Amazon headwaters; many of the proposed dams will export energy to Brazil. Regional governments are prioritising hydroelectric dams as the centrepiece of their long-term energy plans, but the current level of planning lacks adequate regional- and basin-

scale assessments of potential ecological impacts. The Chaglla Plant is one recent example where regional- and basin-scale assessments were performed, and components of this project can inform best practices for sustainable hydropower.

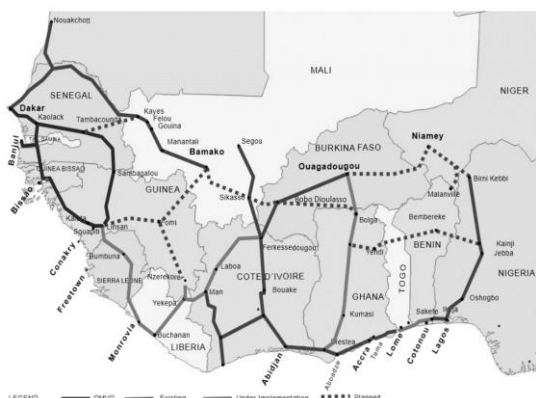
We also chose the Chaglla Plant because it is an example of a ‘hard’ infrastructure investment in the region, whereas the two other water case studies focused on delivering capacity building to the existing network of organisations. We wanted to highlight how a smaller, hard infrastructure project situated in one country can have implications for downstream countries.

Case Study 3. OMVG Interconnection Project (Gambia, Guinea, Guinea-Bissau and Senegal)

Regional integration is critical to shared prosperity and poverty alleviation in the 15-member states of ECOWAS. Despite abundant energy resources, West African countries continue to

have low rates of electricity access and energy resources are concentrated in a few countries.

Figure 2. WAPP Network by 2010



Source: The World Bank

(<http://documents.worldbank.org/curated/en/442701468194079362/pdf/895940PAD0P146010Box391424B00OUO090.pdf>)

The overall project goal is to enable electricity trade between countries; the completion of the OMVG will represent a critical step for the interconnection of the WAPP network from Nigeria to Senegal (Figure 2). It will connect the existing OMVG network to the north and the Côte d'Ivoire, Liberia, Sierra Leone and Guinea interconnector network to the east. The OMVG grid will allow for the transfer of surplus generation from a country with lower future generation costs to a country with higher generation costs. The Gambia, Guinea-Bissau and Senegal are highly

dependent on expensive liquid fuel thermal generation, whilst Guinea has great hydropower potential. Therefore, aggregating demand from OMVG countries will enable the development of competitively priced power supply capacity through economies of scale. The regional integration of the power systems in ECOWAS will facilitate large-scale development of the region's cost-effective and clean hydropower and natural gas resources. Guinea's 6,000 megawatts (MWs) of hydropower potential could provide a sustainable power supply in West Africa.

This project was not conceptualised to support green growth in the region but international trade and economic growth more generally. However, the project does have direct green growth benefits in the form of emission reduction, which provided a secondary justification for the project. More specifically, as part of the due diligence activities for this project, a GHG accounting analysis was conducted for the interconnection project and estimated that the net emissions reduction will be 392 ktCO₂e.

Case Study 4. Mekong Integrated Water Resources Management Project (M-IWRMP)

The programme development objective for the series of projects under the M-IWRMP is to establish key examples of IWRM practices in the Lower Mekong basin at the regional, national and sub-national levels and, thereby, contribute to more sustainable river basin development in the six countries the Mekong flows through. At the time of project conceptualisation (2007), the catchment area was just beginning to see a surge in development for human use (including hydropower, increased irrigation and development), and the need to establish a consensus on managing the Mekong's resources against development was evident. Soft infrastructure, such as IWRM planning, institutional capacity building and technical assistance for environmental monitoring and stakeholder engagement, were included in all phases to establish adequate capacity for sustainable development in the region (World Bank, 2007). The supportive conditions for the M-IWRMP include the following:

- the existence of the MRC, which joined all the lower Mekong basin countries together; a stronger, more comprehensive Commission would also include the upstream countries (China and Myanmar);
- previous policies/strategies that promoted IWRM (e.g., the 1995 agreement);
- the existing relationships between the MRC and the water and environment ministries of the member countries;
- previous IWRM projects implemented by the MRC and others (e.g., UNDP and the International Union for Conservation of Nature) in the region and
- national growth strategies (e.g., the Vietnam Green Growth Strategy, 2011–2015) and progress in that direction for Cambodia (when this project started in 2008).

Case Study 5. Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

The Niger River is the economic mainstay for its nine riparian countries (Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria). The region is wrought with economic water scarcity and economic output in Niger basin countries is highly dependent on the Niger River. This project will invest in hydropower plants, reservoirs, irrigation schemes and navigation facilities, which have the potential to significantly contribute to economic growth, food security, climate resilience and improved livelihoods. No formally documented green growth agenda exists for the Niger River basin, but an SDAP was formalised in 2002; this project was most likely conceptualised as a response.

The project goals are to achieve a sustainable increase in the overall productivity of existing water resources to foster economic development in selected countries of the Niger River basin, enhance regional coordination, improve water resources management in the Niger River basin and create a collaborative framework that benefits the 100 million people living in the basin. The most effective approaches to advancing green growth at the transnational level and fostering coordination and ambition across the key players include

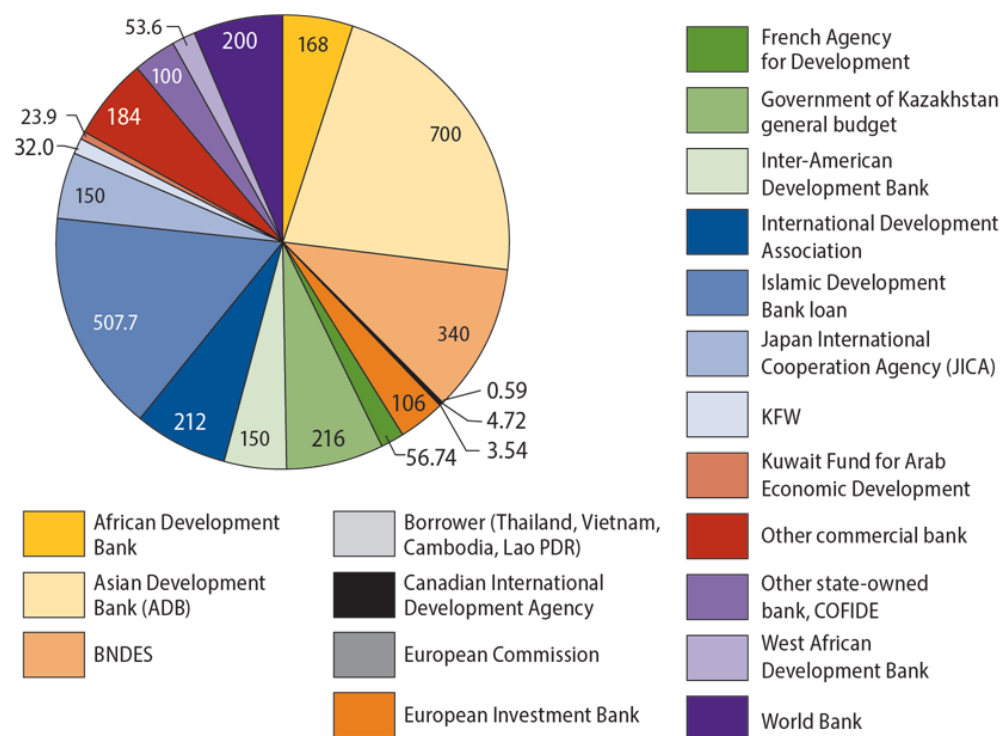
- a decision-making body comprising individuals from the highest level of authority, such as heads of state, from each member state (i.e. the NBA and the Shared Vision process);
- strong political will across the member states and a desire to move away from unilateral planning and towards coordinated development actions throughout the basin (as noted in the Appraisal Document [World Bank, 2007]) and
- sector knowledge within the NBA, which is composed of several technical teams/individuals from the member states.

5.1.2 Financing of Global Case Studies

The following figures consolidate data from the five global case studies and indicate the percentage of each type of funding received and the amount and source of funding.

Figure 3 describes all donors from the five case studies to facilitate easily identifying major contributors to infrastructure development projects. The Asian Development Bank (ADB) and Islamic Development Bank provided the most funding: approximately USD 700 million and USD 507 million, respectively.

Figure 3. Funding by organisation



Donors from the five case studies were categorised by institution type. **Figure 4** indicates that multilateral development banks (MDBs) provided 67% of the funding for the projects studied, nearly twice the number funded by all other types of institutions combined.

Each source of funding was also classified by type of aid. As **Figure 5** shows, multilateral aid constituted 65% of all funding mentioned in the case studies. This amount is more than three times greater than bilateral aid, which was the second largest type.

Figure 4. Funding by type of institution

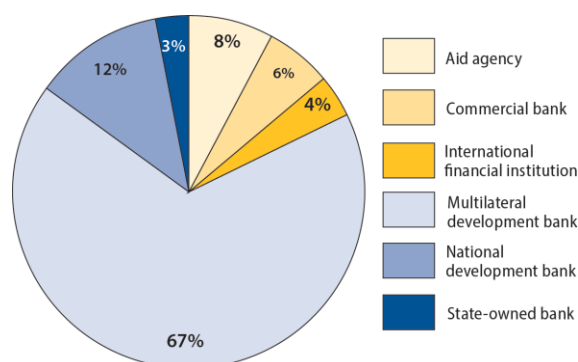
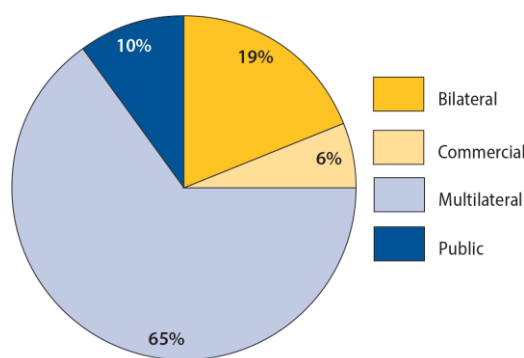


Figure 5. Funding by type of aid



The study team relied on desk research to identify funding sources for the global case studies. Therefore, it was difficult to determine the funding challenges, but it was clear that the projects analysed relied heavily on funding from development banks and other donors.

For example, the Chaglla Hydropower Plant relied on funding from a combination of donor agencies, private sector loans from international organisations and a loan from a government bank, all of which could be applicable to the EAC. Further, a special approach for tariffs on renewables is now included in the 2008 Renewable Energy Decree to encourage investment in hydropower, which may attract more investors. Similarly, the M-IWRMP primarily received donor agency and government financing; thus, that project did not need to rely on establishing PPPs or other financing mechanisms.

5.1.3 Regional Green Growth-supportive Conditions and Application to Projects in the EAC

By synthesising the case studies and stakeholder input, the study team developed a set of supportive conditions that underpin the development of regional infrastructure projects supporting green growth. In the context of this report, we define supportive conditions as the conditions that make green activities attractive opportunities for investors and businesses. The output of this assessment is presented in the text box entitled **Regional Green Growth Supportive Conditions**.

To better understand the extent to which green growth-supportive conditions are present in the EAC, the study team developed three EAC case study projects and then evaluated them based on the green growth supportive conditions (see **Table 3**).

Case Study 6. Kenya Water Security and Climate Resilience Project (KWSCR)

Kenya has experienced increasingly unpredictable water resource availability over the past decade, threatening certain sectors of the economy. This prompted the government to intervene by designing a project that would employ appropriate measures to contain the negative impact on the country's short- and long-term economic growth plan, as defined by Vision 2030.

KWSCR aims to develop and deploy technology and infrastructure to support water resources planning and management, promote efficient water use, generate clean energy through hydropower, better align land use practices to respond to emerging climate change impacts and increase irrigation uptake to support food security. The project's long-term goal is increased water quantity and quality across Kenya and in the transboundary basins between Kenya and its neighbouring countries of Tanzania and Uganda.

By design, the KWSCR advances green growth agenda through improved water resources planning and management, efficient water use across different economic sectors, improved water storage and clean energy production. The project aligns with the provisions of the Water

Regional Green Growth Supportive Conditions

Financing

- ☐ Diversity of financing options
- ☐ Investor leadership

National conditions

- ☐ National government leadership
- ☐ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
- ☐ Improved enforcement of the national-level policies and regulations
- ☐ Completion of a needs assessment (institutional, policies, strategies and development plans)

Outreach and capacity building

- ☐ Inclusive stakeholder engagement to build project support
- ☐ Institutional capacity building and development of knowledge products

Proof-of-concept

- ☐ Existing project(s) of similar scope
- ☐ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

- ☐ Regional strategy for green growth
- ☐ Mechanisms to foster collaboration among countries
- ☐ Completion of a regional baseline assessment, pre-feasibility study and feasibility study

Social and Environmental

- ☐ Beneficiaries
- ☐ Resource efficiency
- ☐ Minimal risks and impacts
- ☐ Increased resilience
- ☐ Poverty alleviation
- ☐ Job creation
- ☐ Minimal resettlement and cultural impacts
- ☐ Inclusivity across different groups of society

Act 2002, now transitioned to Water Act 2016, which explicitly require that water allocation planning, including surface and ground, be done in an equitable manner and keep with the Green Water Defense principle, which aims to protect ecosystem preservation and functioning.

This project has regional implications because of the shared ecosystems and the connected, transboundary basins between Kenya, Uganda and Tanzania. For instance, flood and drought early warning systems deployed along the Sio-Malaba-Malakisi river basin between Kenya and Uganda, to a large extent, directly influence the land use patterns across the two countries along this expansive basin. Similarly, the hydrometrology network and surface water flow simulation model deployed along the Mara River basin between Kenya and Tanzania impact water abstraction plans across the two countries with regard to the Mara River and its tributaries.

The supportive conditions that led to the successful development and implementation of this case study include

- an existing regional institution (the Lake Victoria Basin Commission [LVBC]);
- the complementary arrangement between existing regional and national development policies and plans;
- reliable data and decision-support tools related to hydropower and IWRM;
- the demonstration of the potential for green benefits during project scoping and
- strong stakeholder buy-in and political support.

Case Study 7. Lake Turkana Wind Power Project (LTWPP)

Wind turbines deliver clean energy that supports the global fight against climate change. The LTWPP wind farm covers 40,000 acres (162 km²). This wind farm aims to provide 310 MW of reliable, low-cost wind power to Kenya's national grid, equivalent to approximately 18% of the country's current installed electricity generating capacity. On completion, the project will comprise 365 wind turbines, each with a capacity of 850 kilowatts (kW); the associated overhead electric grid collection system and a high-voltage substation that will be connected to the national grid. The power produced will be bought at a fixed price by Kenya Power and Lighting Company Ltd (KPLC) over a 20-year period in accordance with a power purchase agreement (PPA) signed between LTWPP and KPLC.

Because of its clean production magnitude, the project is the first major wind power investment of its kind in EA and the first major attempt by the private sector to invest in clean energy production under the independent power producer (IPP) framework. Through the Eastern Africa Power Pool, Rwanda, Burundi and Tanzania have signed PPAs with Kenya. Therefore, this project contributes to the larger power bank in the region through the national grid and qualifies as a regional infrastructure project.

LTWPP was developed as a result of the Government of Kenya's (GOK's) efforts to reverse the country's heavy dependence on non-renewable energy sources by 2030 through the promotion of private sector investments in clean energy. The major objective of the project is to sell up to 310 MW of electric energy to the national distribution network. Also worth noting is that Rwanda,

Burundi and Tanzania have signed PPAs with Kenya under the regional power pool framework, which the LTWPP will contribute to.

The supportive conditions that led to the development of this project included

- a strong stakeholder engagement plan, including 15 community liaison officers from local tribes;
- private investor collaboration and championship of the project;
- existing policy and regulatory environment that fosters renewables, an IPP framework (under the 2010 IPP Policy) and private sector investment;
- an existing regional institution (EABC) that promotes cross-border trade and investments and
- reliable market availability for electric power supply.

Case Study 8. Kenya Standard Gauge Railway (SGR) Project

The Kenya SGR is envisioned to be a 609-km railway track between the port city of Mombasa and the capital Nairobi.

Construction of the SGR's 120-km second phase to the agricultural town of Naivasha is expected to be complete by June 2018. To date, SGR has shortened the journey between Mombasa and Nairobi from 12 hours to 5 hours. If and when it is completed, the EA Railway Masterplan, under the umbrella of the EAC, will link Mombasa with other major East African cities and countries, such as Kampala, Uganda, Juba and South Sudan (Figure 6). This will have multiple, significant benefits, including reduced emissions along the Great North Corridor resulting from a decline in cargo truck movement and passenger vehicles.

Figure 6. Proposed Eastern Africa Railway Network



Map Source:

<https://www.google.co.za/search?q=Nairobi+Mombasa+standard+gauge+railway&dc=0&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwixXuXGxKnXAhVNFMAKHQ9HD5oQiR4IhwE&biw=1366&bih=644#imgrc=w4nPIG7ioGfDmM:&spf=1509957125340>

The Kenya SGR's impact is already permeating other EAC states. In addition to improving the ease of transnational trade across the region through faster and easy connectivity, SGR was also developed to help reduce the use of fossil fuel in the transportation of cargo and passengers given that rail transport uses far less energy per passenger/km than road travel. The Kenya SGR, therefore, qualifies as green infrastructure because it partly aims to address the high emissions arising from the thousands of cargo trucks active across the EAC region.

In the project's environmental management and emissions reduction plan, passenger trains are designed to record no fewer than 70,000 travellers each month between Nairobi and Mombasa. This would drastically reduce the number of buses required to transport the same number of passengers between the two cities. The emissions of CO₂ per passenger/km are, on average, approximately half those of travel by car. Therefore, it is estimated that the SGR will reduce emissions by several tonnes each year.

Based on the information collected during this study, the supportive conditions that led to the development of the project included

- strong political support from surrounding countries in the form of memoranda of understanding (MOUs) from Uganda and Rwanda;
- a larger transport master plan that includes the SGR as a flagship project under the Kenya Vision 2030 development agenda;
- the construction of complementary railway projects (e.g. the Mombasa-Malaba SGR) to increase connectivity and
- the high costs of cargo transport by road and of road maintenance, which require that a cheaper alternative be used to increase gross domestic product (GDP).

It should be noted, however, that the project experienced some risks, mainly because of the fluctuating foreign exchange rate:

- The high cost of foreign lending
- The rising inflation rate, which lowered the Kenya shilling against the USD, leading to increased loan interest rates

Table 3. Summary of EAC case studies and supportive conditions

Case Study Name and Anticipated Impact	Region (Countries)	Sector	Project Duration and Cost	Public/Private Finance Option	Supportive Conditions
<p>6. KWSCRIP</p> <p><u>Impact:</u></p> <ul style="list-style-type: none"> -Increased water use efficiency in Kenya -Improved water availability, quality and quantity -Improved data to support transboundary water resources management between Kenya, Tanzania and Uganda 	EAC (Kenya, Uganda and Tanzania)	Water	<p>2015–2022</p> <p>328 million USD</p>	International banks	<ul style="list-style-type: none"> • Existing regional institution (LVBC) • Complementary arrangement between existing regional and national development policies and plans • Ability to provide reliable data and decision-support tools related to hydropower and IWRM • Demonstration of the potential for green benefits during project scoping • Strong stakeholder buy-in and political support

Case Study Name and Anticipated Impact	Region (Countries)	Sector	Project Duration and Cost	Public/Private Finance Option	Supportive Conditions
<p>7. LTWPP</p> <p><u>Impact:</u></p> <p>-Reliable, low-cost energy to Kenya's national grid and surrounding countries through PPAs</p> <p>-Reduced overreliance on unsustainable energy sources, leading to reduced emissions</p>	EAC (Kenya, Rwanda, Burundi and Tanzania)	Energy	<p>2014–2017</p> <p>700 million USD</p>	Local and international private sector investors	<ul style="list-style-type: none"> • Strong stakeholder engagement plan, including 15 community liaison officers from local tribes • Private investor collaboration and championship of the project • Existing policy and regulatory environment that foster renewables, an IPP framework (under the 2010 IPP Policy) and private sector investment • Existing regional institution (EAC Business Council) that promotes cross-border trade and investment • Reliable market availability for electric power supply
<p>8. Mombasa-Nairobi SGR Project</p> <p><u>Impact:</u> Affordable cargo and passenger transport, reduced road maintenance costs and reduced vehicle emissions</p>	EAC (Kenya, Rwanda, Uganda, Tanzania and South Sudan)	Transport	<p>2014–2017</p> <p>13.8 billion USD</p>	International banks	<ul style="list-style-type: none"> • Strong political support from surrounding countries in the form of MOUs from Uganda and Rwanda • Larger transport master plan that includes the SGR as a flagship project under the Kenya Vision 2030 development agenda • Construction of complementary railway projects (e.g. the Mombasa-Malaba SGR) to increase connectedness • High costs of cargo transport by road and of road maintenance, which require that a cheaper alternative be used to increase GDP

Note: KWSCR = Kenya Water Security and Climate Resilience Project; LTWPP = Lake Turkana Wind Power Project; SGR = Standard Gauge Railway.

In addition to the EAC case studies, we asked stakeholders to identify projects that they believe are best positioned to promote green growth if governments and development partners follow

the recommendations in the national green economy strategies of Kenya and Rwanda and the draft green economy strategy for Uganda.⁸ The projects identified included the LAPSET Corridor project, Bugesera International Airport, Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania and Holili-Taveta-Mwatate-Voi Road (see **Annex F**). These projects were initially designed to fast-track or catalyse national and regional economic growth to create more job opportunities and wealth whilst reducing poverty. The study team evaluated these projects across the following factors: compliance with national environmental regulations, PPPs, regional inclusion and the promotion of green growth at the national level. With some exceptions (e.g. the SGR), regional projects in the EAC are bilateral (i.e. limited to only two countries).

5.1.5 Additional Lessons Learnt and Application to the EAC

Policies Underlying Green Growth

The study team assessed national and regional policies to better understand their effect on the development of regional infrastructure projects and found that green growth policies can shape the design of infrastructure projects, but sector-based policies may also help countries meet green growth objectives, even in the absence of formalised green growth policies or strategies. Although national policies and strategies can facilitate the development of infrastructure that supports green growth, they do not *always* underlie the development of green growth.

- The Peruvian Green Growth Strategy was released in 2014, three years after the Chaglla Hydropower Project began. This project was conceptualised to promote green growth in the region, but based on the literature reviewed, this project does not appear to have been conceptualised in response to a green growth strategy for Peru or Brazil.
- In Gambia, the interconnector project was not designed as part of a comprehensive green growth strategy, but there is widespread recognition by the government of the role and impact of energy consumption on its achievement. More specifically, as part of the due diligence activities for the project, a GHG accounting analysis was conducted and estimated that the net emissions reduction will be 392 ktCO₂e. The social value of the GHG emission reductions was estimated to be valued at USD 5.1 million using a base value of USD 30 per tonne of carbon emissions avoided in 2015 and is expected to increase to USD 80 by 2050. Overall, these benefits had a negligible impact on the total project economic rate of return, which is valued at USD 899 million in net present value.
- The M-IWRMP was conceptualised to promote more sustainable river basin management with the knowledge that the river shapes the economic prospects of the populations of the six countries the Mekong flows through. Economic growth strategies were in place for Vietnam and Lao PDR (i.e., Vietnam's 2011–2020 Socio-Economic Development Strategy and Lao PDR's National Growth and Poverty Eradication Strategy [2003]), although neither strategy specifically calls out green growth. Green growth strategies were formalised for several countries after the start of this project (i.e., Vietnam, 2011–2015; Cambodia, 2013–2030; and Lao PDR, in progress). Additionally, two national laws in Cambodia were promulgated during the conceptualisation period: the National Law on Water Resources Management (2007) and the National Law on

⁸ Tanzania does not have a stand-alone green growth strategy but does have a climate change strategy. Uganda has a draft green growth strategy that is ready for parliamentary review.

Fisheries (2006). These laws are described in further detail in **Annex B** and, essentially, establish a framework for the sustainable management of the water resources for socio-economic benefits. The existence of these two laws in Cambodia most likely guided how the project was conceptualised and implemented.

Stakeholder Processes

The study team also found that multi-stakeholder processes in which locals were consulted early and often in the planning process contributed to the success of regional infrastructure projects supporting green growth. Building a strong stakeholder network is important for many reasons and has been agreed upon by many as the most effective way forward, considering the competing priorities at the local, municipal, city, national and regional levels (Green Growth Solutions Asia, 2017; OECD, 2013). The success factors for stakeholder engagement identified through the case studies include

- engaging local stakeholders early in the process, even if this engagement simply consists of informing them of a project, and continue engaging with them until project completion (multiple touches increase transparency and goodwill);
- developing an environmental and social strategy and management plan before the infrastructure plans are finalised; and
- including social equity and poverty reduction aspects in the project (e.g., compensate relocated or significantly impacted locals fairly and train locals to work on the construction site or in project operations).

Additionally, in any stakeholder engagement process, it is important to strategically select who to engage, be clear about roles and expectations, facilitate contestation between stakeholders, employ an iterative approach coupled with extended group discussion and use expert work groups and facilitated group discussions (GGBP, 2014).

One case study example to highlight is the development of the Chaglla Hydropower Plant in Peru. The public participation and community intervention processes employed were supportive factors. To make way for the plant, several families in this agriculturally productive region had to be resettled. In general, relocating indigenous farming families increases the risks impacting successful implementation and community buy-in for all hydropower projects in the region. However, 33 families were resettled with minimal complaints received.

The resettlement tactics employed provide important lessons learnt for future hydropower projects in the region. First, this project included a highly engaged stakeholder process with the impacted community and local groups during the environmental impact and social impact assessment stages. The project proponents engaged the Cooperativa Naranjillo to gain insights regarding community relations during the planning process and inform the more than 6,000 villagers living near the plant site. In addition to the impacted community, representatives from a local university (the University of Tingo Maria) and Tingo Maria National Park were also engaged to better understand the local environment. These engagements resulted in a resettlement action plan, assessments of fish and ecology, water quality modelling, downstream flow modelling and an analysis of the project's carbon footprint (IDB, 2011). Second, new social services, an agricultural services extension centre and a recycling centre were identified as community needs and subsequently established. Third, 800 local people were trained to work

on the project to promote economic growth opportunities for the immediate region (Siegel, 2017).

5.2. Opportunities for Regional Infrastructure to Promote the Transition to Green Economic Growth in the EAC: Research Objective 2

In this section, we present findings from the field work to answer the research questions related to **Research Objective 2: Scope the opportunities for the role of regional infrastructure to promote the transition to green economic growth in the EAC with respect to energy, transport, and water-related infrastructure**. Eighteen research questions are included under Research Objective 2. Because some of the responses to these questions overlap and apply to different research steps (as presented in **Annex A**), the findings are grouped into the following categories:

- Coherence of existing EAC policies, strategies and plans intended to encourage regional green economies: In general, there is limited policy coherence across the EA countries as each country has a different vision, timeline and targets for achieving their National Visions and MTPs.
- Institutional arrangements, actors and organisations and their roles in designing and implementing policies: The institutional arrangement assessment identified the existence of actors across the countries and a framework that could be strengthened to improve knowledge-sharing platforms and stakeholder engagement.
- Existing power relations affecting green economy policies: Formalizing green growth systems and activities (e.g., BRT in Tanzania) may result in low public support when changes in human behaviour are required, particularly with the informal sector and those who are politically connected.
- Value of regionally integrated green economy legislation and policies: The legislation and policies across the sectors were, and still are being developed at the country level. Working towards regional harmonization of legislation, policies and plans may alleviate the burden some national economies take on (e.g., Kenya will be overburdened by the SGR, which was originally designed to extend to Rwanda for the tariff base).

5.2.1 Coherence of existing EAC policies, strategies and plans intended to encourage regional green economies

Conversations with stakeholders and findings from the literature review were used to answer the research questions related to policies and institutional arrangements (as presented in the text box to the right).

The existing policies, strategies and plans at the EAC level identified by the study team aimed at building green economy infrastructure (as presented in **Section 4** of this report) have the potential to enable EA countries to transition towards lower-middle income and climate-resilient economies. Each country has a National Vision for the next 20 to 30 years and shorter MTPs to achieve the larger vision. Some countries have dedicated green growth strategies, including Kenya (e.g., GESIP) and Rwanda (e.g., the Rwanda Green Growth and Climate Resilience

National Strategy). Uganda has a draft GGDS,⁹ and Tanzania is yet to develop a stand-alone green economy strategy but has integrated environmental concerns and climate resilience through compliance with existing environmental regulations and climate change strategies.

In general, there is limited policy coherence across EA countries in terms of their individual National Visions and MTPs. The countries have different visions, timelines and targets for achieving their National Visions and MTPs. Incoherent policies are generally inefficient at achieving the larger goal—in this case, regional green growth—and can undermine progress made in simultaneously promoting green growth and sustainable development across the EAC.

Although the Secretariat is directly linked to the member states through their respective Ministry of EAC Affairs, Council of Ministers and the EAC Summit, all stakeholders interviewed perceived that EAC member states do not provide sufficient political support for regional integration. The member states have pursued some successful cross-border initiatives, primarily through bilateral and tripartite agreements, but not with the involvement of all EAC member states. For example, a tripartite agreement was signed by the governments of Kenya, Uganda and Rwanda in August 2013 to fast track the development of the SGR to their respective capital cities. However, EAC member states lack sufficient financial resources to meet their development targets, and therefore, most projects require large donor contributions.

The EAC member states have worked to integrate economic development by developing policies and legislation to facilitate an integrated approach to design, plan, implement, monitor and evaluate the infrastructure at the national level, but more effort is needed at the EAC Secretariat level to encourage policy coherence and regional green economy infrastructure. For example, although the EAC countries have harmonised their transport laws and developed the EAC Vehicle Load Control Act, 2013, EA Railway Master Plan and Climate Change Strategy and Plan, a wide gap remains in the regional-level harmonisation of national sector policies to support the design and implementation of conventional and green infrastructure that will support green economies in the region. This is evident through the limited number of regional infrastructure projects identified by the study team.

5.2.2 Institutional arrangements, actors and organisations and their roles in designing and implementing policies

⁹ Uganda National Planning Authority. (2017). *Uganda green growth development strategy*. Retrieved from <http://npa.ug/about-npa/uganda-green-growth-development-strategy/>.

Research Questions on Policies and Institutional Arrangements under Research Objective 2

#2.1: What are the existing policies and investments aimed at building green economy infrastructure in the EAC?

#2.2: What are the institutional arrangements, including actors/organisations and their roles in designing and implementing these policies?

#2.3: Which narratives are reported in the policies, and which actor networks align to particular narratives?

#2.6: What power relations exist in the construction of the green economy policies, and how do they shape who benefits and who loses?

#2.7: What is the policy coherence between regional strategies and national strategies (vertical) and across the sectors (horizontal)?

#2.8: What are the implications of coherence/non-coherence for the EAC's sustainable development agenda?

#2.13: What is the value of regionally integrated green economic strategies vis-à-vis nationally designed strategies?

Note: all research questions are presented in Annex A.

The EAC Secretariat in Arusha, Tanzania is the executive branch of the EAC, whose member States include Burundi, Kenya, Rwanda, Tanzania, South Sudan and Uganda.¹⁰ The government heads of the partner states give strategic direction within their respective countries to meet the goals and objectives of the EAC, while the ministries in the respective states guide the implementation of the national and regional policies at the national and sub-national levels. Sector working groups established by the EAC Secretariat provide linkages across national ministries, thereby enabling the technical teams to share data and information. However, according to stakeholders interviewed, these working groups are limited by weak knowledge-sharing platforms that hinder the sharing of lessons learnt that could inform policy-making and implementation at all levels across the EA member states.

UN agencies and local CSOs are at the forefront of advocating for green infrastructure and inclusive policy and legislation, whilst the governments are shaping a level playing field by providing a conducive environment through policy and legislation to attract investment opportunities, especially from the private sector and international community. Two examples where UN agencies have advocated for inclusive policy- and legislation-making in the EA member states include UNEP support in Kenya to develop the Green Economy Assessment Report 2014 and UNDP support in Uganda for the drafting of the GGDS, which is awaiting parliamentary approval. Local communities also play a fundamental role in shaping policies and legislation because they must be consulted by the technical team leading the policy and legislation formulation process.

At the project level, stakeholder engagement is a component of both the EIA and strategic environmental assessment (SEA) processes. Stakeholders, including NGOs, local communities, universities and the private sector, can all influence the design and implementation of policies and legislation. EIAs and/or SEAs are mandatory in most EA countries, including Kenya (through the EIA and Audit Regulations of 2002 and amended in 2007 and 2009), Rwanda (through the Organic Law of 2005), Tanzania (through the Environmental Management Act of 2004) and Uganda (through the National Environment Statute of 1995, now Act Cap 153).

Despite the existence of these institutional arrangements, there is room for improvement. In Tanzania, some non-governmental actors indicated that the policies on transport, energy and water do not provide sufficient mechanisms to require the engagement of civil society actors in infrastructure development. For example, interviewees mentioned a lack of stakeholder outreach during the assessment, design, plan and construction of the government-led BRT in Dar es Salaam. In fact, interviewees noted that stakeholder engagement may have prevented construction in flood-prone areas. As discussed earlier, inclusive stakeholder engagement can result in strong stakeholder support and the eventual promotion of green economy infrastructure. According to the CSOs and other stakeholders consulted, including local communities and other infrastructure development stakeholders (e.g., government and development partners involving local communities in site/location identification, creating designs and performing assessments or audit work such as EIAs, which is included under 'development' rather than in its own section) may facilitate ownership of the infrastructure by the local communities and these stakeholders, provide benefits at the household and local community levels and build the capacity of local communities to utilise the infrastructure in delivering other goods and services.

¹⁰ This study is based on the findings from fieldwork in Kenya, Rwanda, Tanzania and Uganda only.

5.2.3 Existing power relations affecting green economy policies

Transport systems in the EAC can be used to illustrate the power dynamics vis-à-vis infrastructure development across the sectors. In the EAC, national governments have provided partial funding for, constructed, and regulated transport infrastructure, while donors have also provided funding and technical support. However, transport infrastructure remains inadequate, and the informal sector has, therefore, filled some of the gaps. For example, the transport system in the four countries studied includes buses, minibuses, taxis, tuk-tuks and motorcycles, which are informal, uncoordinated and poorly

Lessons Learned from BRT in Tanzania

In Tanzania, the BRT system is being implemented in phases, with Phase 1 complete and its operation placed under Dar es Salaam Rapid Transit (DART) and the Usafiri Dar es Salaam Rapid Transit (UDA-RT). According to the local commuter bus operators, who are known as Daladala in Tanzania, Phase 1 of BRT has reduced the number of customers they serve, resulting in job losses. In 2015, DART signed a contract with UDA-RT for the provision of interim services of the DART system. UDA-RT is a special purpose company formed by UDA and two Daladala Associations—the Dar es Salaam Commuter Bus Owners Association (DARCOBOA) and the Association of Transporters in Dar es Salaam (UWADAR)—for the provision of interim services designed to provide training to future operators and build local capacity in the transport sector. This agreement was made possible by factors such as awareness building among the public and the local commuter bus operators and transporters and DARCOBOA and UWADAR appreciating and pledging support for the BRT and signing a cooperation agreement with Simon Group Limited (SGL) in preparation to compete with other transport companies to operate the BRT system in Dar es Salaam. The GOT and SGL are both major BRT shareholders in Dar es Salaam.

BRT in Nairobi

The BRT model was piloted in Nairobi, Kenya with a single bus but has not been fully implemented. According to the stakeholders who drive passenger vehicles, such as private buses and mini-vans, and who are known locally as the 'matatu' industry, BRT has not yet been successful because of

- ♦ a lack of dedicated lanes;
- ♦ the provision of insufficient information about BRT by the government; and
- ♦ a lack of inclusive dialogue among national and county governments and the informal sector players to address perceived job losses, explain opportunities for them to invest in BRT and address the welfare concerns of matatu staff.

Among the matatu staff's fears is that BRT will not need conductors because the drivers will use microphones and because fare payment will occur off-board or be prepaid, which will result in job losses. The matatu industry in Kenya is represented by the Matatu Owners Association (MOA), which aims to promote the interests of matatu owners through effective lobbying and advocacy, and the Public Transport Operators Union (PUTON), which was created to represent the interests of the informal transport workers in Kenya. Both MOA and PUTON are formally registered in Kenya. PUTON is advocating for policy that accounts for the interests of informal transport workers, including loss of their jobs if the government, MOA and development partners support the introduction of BRT in Kenya. MOA acknowledges that BRT could help reduce the heavy traffic congestion and jams for which the city of Nairobi is famous and, thereby, reduce the costs of doing business in the city, which should help attract more economic activity.

MOA, along with partners, including the University of Nairobi, government ministries and the transport sector across East African member states, has organised a series of East African Transport Conferences to share experiences and lessons and to advocate for the harmonisation of transport policies within the EAC to facilitate transportation infrastructure expansion.

managed. The EAC member states have recognised the need to improve the public transport system by formalising it and ensuring that it conforms to environmental, safety and other relevant standards and policies. The introduction of clean, environmentally friendly and formal transport systems, such as BRT in Tanzania, has been challenging. For example, informal transport systems are familiar to the public, and the operators of these systems have political connections. As a result, public support for formalised transport systems has been low and the number of dedicated lanes inadequate.

The adoption of green economy policies could limit the power of informal stakeholders who have

historically hiked fees, evaded taxes and been under reduced government scrutiny.

Informal sector stakeholders are concerned that infrastructure projects funded by national governments and donors that formalise and expand public sector transportation will reduce their business and, subsequently, their incomes. Therefore, stakeholders in the informal transportation sector, such as taxi drivers, have formed networks and associations that mobilise their members to lobby and advocate for inclusive policies.

The national governments have included informal sector stakeholders in infrastructure development processes, particularly in Tanzania, where they are part of the interim services. However, the informal sector players in Kenya do not yet fully support BRT in Nairobi, although they have participated in high-level stakeholder consultations.

The implementation of green economy policies and the resultant development of transportation infrastructure are creating new opportunities for both formal and informal sector stakeholders. However, greater awareness and training about the benefits and trade-offs of infrastructure development are needed, as are inclusive decision-making processes, mobilisation of the workforce to implement projects and a diverse funding approach.

5.2.4 Stakeholder Engagement in Regional and Green Infrastructure Projects

Although all infrastructure projects can benefit from stakeholder engagement, involving stakeholders in the design and implementation of regional and green infrastructure can help overcome the power relations, political obstacles and implementation challenges that are unique to regional and green infrastructure projects.

Through stakeholder engagements across the region, the study team found that there is a shared belief that local communities have not been sufficiently involved in the development of infrastructure. For example, in Tanzania, some non-governmental actors indicated that the policies on energy, transport and water do not provide sufficient mechanisms to require the engagement of civil society actors in infrastructure development. Interviewees mentioned a lack of stakeholder outreach during the assessment, design, plan and construction of the government-led BRT in Dar es Salaam. In fact, interviewees noted that stakeholder engagement may have prevented construction in flood-prone areas. Inclusive stakeholder engagement can result in strong stakeholder support and the eventual promotion of green economy infrastructure. In Kenya, some of the local community members protested the extension of the SGR project through their land without their involvement. As a result, the construction of the SGR from Mombasa and Nairobi included the employment of local community members, which helped mitigate previous community tensions about its construction through their lands.

Although the government of Uganda is putting in place flood mitigation measures in the flood-prone eastern part of the SGR, it is expected that local communities will continue to incur losses, not only because of unprecedented floods but also insufficient involvement of farmers in the flood mitigation planning and preparation.

CSO stakeholders recommended that the local and national governments, development partners and other stakeholders in the energy, water and transport sectors should involve local communities in the design of projects, including site selection; the assessment phase (e.g.,

EIAs); and the implementation and operation of the infrastructure, including monitoring and evaluation (M&E).

Involving communities during the inception phase of a project can elicit the buy-in needed to help support implementation success. Additionally, community members can derive benefits, such as skills development and job creation opportunities, particularly for youth.

5.2.5 Value of regionally integrated green economy legislation and policies

Based on the experts consulted in the transport sector, regionally integrated strategies help EAC member states mobilise resources, achieve timely implementation, develop concrete cases and share lessons learnt to inform future policy review and expansion of infrastructure, such as the SGR. The SGR is anticipated to reach Kigali and Juba to open the East African market and attract international and local investors to cost effectively support expansion and new infrastructure.

The development of key regional legislation, such as the 2013 EAC Vehicle Load Control Act, and the EA Railway Master Plan and Climate Change Strategy and Plan, will help EA countries build synergy in resource utilisation, including financial resources. Indeed, the EAC Vehicle Load Control Act has already achieved visible results, including reduced road damage through a series of weighbridges at strategic locations from Mombasa's port to Kigali.

However, the lack of harmonised legislation, policies and plans in other sectors has a severe impact on the national economies. For example, the lack of political support and a harmonised investment plan in the region will leave Kenya overburdened by the SGR investment, which was initially designed to reach Kigali, Rwanda, and was intended to reduce tariffs and attract large private sector investments.

Table 4. Factors for comparing national and regional green infrastructure approaches

Factors	National Approach/Nationally Designed Strategies	Regional Approach/Regionally Integrated Green Economic Strategies
Generation of ideas, decision making and implementation	The multi-stakeholder approach adopted by the national governments has yielded innovative ideas, such as the integration of non-state actors in the national climate change council in Kenya, which is led by the President. Additionally, Kenya was among the first nations in Africa to enact climate change legislation that includes intergenerational responsibility. Innovation is also fostered, partly because each EAC member state has a clear national vision and development agenda. For example, the Government of Tanzania (GOT) is implementing a BRT system in Dar es Salaam, and the national government elicited support from stakeholders for this project, including informal transport sector stakeholders who did not originally support the project because of perceptions about job losses. Nationally generated ideas are more likely to be fast tracked for implementation than regional approaches because of buy-in at the national level. Despite the advantages of national approaches, however, their impact can be limited if they are not part of a broader, regional strategy.	The generation of ideas at the regional level is richer than at the national level. However, decision-making can be slightly delayed at the regional level because of key factors, such as economic, social and political disparities. An integrated regional level can potentially be achieved if the EAC Secretariat and its member states hold regular meetings as per the EAC events calendar. A regional strategy should support member states to leverage recommendations at the national level. However, holding the EAC summit, at which top-level decisions are made, must be delayed until after national-based stakeholder consultations and EAC and national sector council meetings.

Factors	National Approach/Nationally Designed Strategies	Regional Approach/Regionally Integrated Green Economic Strategies
Mobilisation of resources	Mobilising national finances is driven by the national development agendas of each country. Although infrastructure investments may be part of a regional approach, each country has different priorities, which can make it difficult to harmonise fundraising approaches. Consequently, the implementation timelines for infrastructure projects across countries may not match. For example, the county and national governments of Kenya have a strong appetite to attract investments to complete infrastructure projects, such as the SGR, which the EAC member states agreed to complete in phases. However, although Kenya is seeking funds to complete the SGR, not all EAC countries implementing the SGR are fundraising at the same rate.	A regional approach builds on the strengths of the EAC member states. For example, EAC countries can collectively fill skilled labour and financial gaps. Regional infrastructure, such as the SGR, has attracted international development partners and local investors because of its expected economic development impact in each country and in the region as a whole. Therefore, investors can take advantage of economies of scale and benefit from a timelier return on investment.
Socio-economic and environmental impact	Based on this study, national strategies relating to energy, transport and water are better understood at the local level than the regional strategies. However, they have still not translated into green infrastructure that empowers local communities socially and economically. The high national and regional poverty levels are attributed to the weak implementation of the national and regional strategies, plans, legislations and policies, which has resulted in insufficient support for transforming infrastructure implementation in the energy, transport and water sectors. Compliance with the environmental standards and policies, green growth strategies and climate change action plans, strategies and policies remain weak, but enforcement of the related legislations is progressing.	Regional green growth strategies and infrastructure development may have spill-over effects that are not yet recognised because EAC members, such as Rwanda and Kenya, have only recently launched their green growth strategies. The EAC integration has brought together member states to fast track the development and implementation of climate-resilient infrastructure, which has the potential to catalyse green infrastructure development.

5.3 Capacity Gaps at the EAC and National Levels

The capacity gaps and needs at the EAC and national levels in the three sectors are significant according to the experts consulted. Department-level staff in these countries have limited technical skills to design, implement and promote infrastructure that supports green growth. For example, one energy expert shared that the slow extension of rural, urban and industrial electricity connectivity at the national level in all EAC member states can be attributed to the insufficient number of skilled personnel, such as electricians, available to install wiring and maintain the electrical infrastructure. Additionally, the driver training for locomotives running on the SGR had to be conducted in China because the Railway Training Institute in Nairobi was unable to provide acceptable training. The GOR is receiving technical support from the GGGI to help ensure that the development of Bugesera International Airport aligns with the National Green Growth and Climate Resilient Strategy. With this assistance, the GOR has identified strategies to reduce resource consumption at the airport. For example, there is a target to reduce energy consumption by 10% to 20%, whilst water system optimisation strategies seek to achieve a 30% water use reduction target.

The capacity of sector-based technical teams in the ministries is low, and they have limited input into policy formulation at the EAC Secretariat. The influence of the EAC Secretariat's thematic

working groups ends once they submit briefs to the Council of Ministers and the EAC Summit, the body that brings together the top leadership of the EAC member states. The technical teams interviewed indicated that there is no follow-up to integrate key findings and lessons learnt into policy-making unless they rely on civil society groups with the flexibility to advocate for policy changes. However, the influence of the civil society at the EAC regional level is low because it lacks sufficient coordination to effectively advocate at the EAC Summit. There is also significant staff turn-over at the EAC Secretariat, and although EAC members have seconded sector experts to the EAC Secretariat, technical capacity remains insufficient.

Civil society, academic institutions and the private sector in EA countries can help provide the necessary educationally focused investments and technical support to national governments to craft more inclusive policies and train future leaders. For example, Makerere University in Uganda, the University of Nairobi in Kenya, the University of Dar es Salaam and the University of Rwanda are training, conducting research and working to ensure that graduating students and technical personnel are prepared to assume roles in infrastructure development. The consulted lecturers believed that curricula must be reviewed to ensure that they align with and address the national needs captured in the national green economic strategies.

5.3.1 Infrastructure Projects

Conversations with stakeholders and findings from the literature review were used to answer the research questions related to infrastructure projects (as presented in the text box to the right).

Availability of green infrastructure investments

The green investment opportunities and benefits at the national level have been explicitly captured in the national green economy strategies, and the opportunities for green investment have been designed to attract investment. For example, the development of green cities in Rwanda started with four pilot green cities and four green villages and will benefit the region through job creation, environmental sustainability, a steady transition to green economy and efforts to address national and regional political instability, which is attributed to poverty, corruption and lack of transparency.

Except for Kenya, EAC member states are least-developed countries and have difficulty raising sufficient public funds for infrastructure development and leveraging public exchequer funds to attract large private sector investments to support national or regional infrastructure projects.

Value and opportunities of regional integration

There is an opportunity to design green regional/multi-national regional infrastructure because the EAC member states are currently putting policy frameworks into place. Indeed, Kenya and Rwanda are in the process of operationalising their existing green growth strategies, while Uganda is at the finalisation stage of its green growth strategy, which is awaiting Parliament and

Research Questions on Infrastructure Projects

#2.9: What are the typology and quantity of green investments and benefits available in urban areas, rural areas and multi-national regions?

#2.10: What opportunities exist to create a more coherent, inclusive, equitable, effective and sustainable green economy across sectors and regionally?

#2.11: What opportunities exist for sectoral linkages across the EAC and for regionally integrated infrastructure?

#2.12: What opportunities exist in regionally integrated infrastructure?

#2.13: What is the value of regionally integrated green economic strategies vis-à-vis nationally designed strategies?

#2.14: What capacity/skills are needed to support regionally integrated green economic strategies?

Note: all research questions are presented in Annex A.

Executive approval. Tanzania does not have a green growth strategy but does have a Climate Change Action plan and environmental regulations that support green growth.

There are also platforms, such as the EAC Secretariat, that bring together member states to dialogue and push for reforms in policy and legislation in the region. Additionally, the EABC mobilises private sector stakeholders to support the implementation of PPP policy and legislation at the national and regional levels. This mobilisation could, potentially, build on the development of a regional green economy policy, strategy or legislation

Through civil society consultations, the study team learned that NGOs and local communities operate in different networks. Indeed, several networks operate at the national and regional levels in the EAC countries, but there is no strong EAC civil society or NGO network to advocate for broader policy changes at the regional level. Private sector and academic stakeholders shared that the private sector and academia have regional networks, such as the EABC and Inter-University Council for East Africa (IUCEA). IUCEA aims to foster collaboration between universities in Kenya, Tanzania and Uganda, but according to the academic representatives interviewed, there is still a weak link with the EAC states and process, which does not allow them to sufficiently influence decision-making in the process of implementing green economy strategies.

To help bridge the funding gap, the EAC member states developed PPP policies, legislation and frameworks. However, per the private sector representatives consulted, the private sector in the EAC lacks the technical expertise to engage in PPPs. Thus, large companies from outside the EAC benefit from the PPP policies and are awarded contracts to construct infrastructure, at the expense of the local private sector and local economies.

Opportunities for sectoral linkages

The stakeholders in EAC member states are optimistic that sector linkages at the regional level are being enhanced by what is happening at the national level, where countries have developed multi-stakeholder and multi-sector platforms to facilitate cross-learning and the cross-fertilisation of ideas. The thematic working groups of the EAC Secretariat constitute a potential linkage that could enhance a multi-sector and multi-stakeholder platform. Per the EAC experts interviewed, weak links exist between and among sectors because most of the Secretariat's development activities are project and donor based. Interviewees further shared that these weak links can be bridged by developing regional sector policies that encourage or emphasise major support from domestic resources.

Energy: According EAC and UNECA experts, a draft EAC Energy Security Policy Framework has been developed through national consultations with EAC member states and at the regional level. The draft policy is awaiting finalisation through the EAC Secretariat, but the high staff turnover and resulting lack of expertise might delay its finalisation. This draft policy will guide the implementation of the Power Master Plan (2011) and Regional Strategy on Scaling up Access to Modern Energy Services in EAC (2006) in the region. The EAC member states have initiated ambitious energy plans to support the development of a national energy mix to support infrastructure development, as reflected in their respective National Visions and development plans. The Rwandan and Kenyan green economy strategies emphasise power generation using renewable energy sources, such as solar, wind, geothermal and nuclear, to meet future energy demand. The power generation and electricity connectivity at the national level in Tanzania, Kenya and Rwanda are guided by national energy policies. All the countries studied are aspiring

to be self-sufficient and export surplus energy, but there is a regional political agreement to have other countries import their energy from Ethiopia and Kenya as these two countries are planning to generate approximately 6,000 MW and 5,000 MW, respectively, to support mega-infrastructure, such as the recently completed Ethiopian electric train and Kenyan SGR. The national energy targets are also boosted by regional energy targets, such as Sustainable Energy for All, which is coordinated by UNEP.

Transport: The EAC operates four modes of transport systems: roads, rail, maritime and air transport. The transport system in Tanzania and Kenya, in addition to supporting national economic development, acts as a vital transit network for the neighbouring landlocked countries of the Lake Victoria Basin region (i.e., Uganda, Rwanda, Burundi, Ethiopia, South Sudan and the Democratic Republic of Congo).

The EAC member states have formalised their joint approach to developing regional infrastructure, primarily through bilateral or tripartite agreements. For example, a number of tripartite agreements have been reached in infrastructure fields, including road transport and inland waterway transport, which aimed to provide a facilitative instrument to regulate inland waterways transport, particularly across Lake Victoria. The construction of the Holili-Taveta-Voi road was delivered via a bilateral agreement, whilst the Mombasa-Kampala-Kigali SGR was based on a tripartite agreement, despite the existence of an EAC proposal to develop the SGR from Mombasa-Kigali to Lamu-Juba, to Moyale-Mandera-Addis Ababa, to Dar es Salaam-Kigali-Kinshasa and to Kigali-Bujumbura. The East African Railways Master Plan, 2009 is guiding the joint regional implementation of the railway system in the EAC.

Stakeholders in the transport sector indicated that an intermodal approach linking rail, road, air and maritime transport in the region could improve efficiencies, reduce traffic jams and the associated delays of goods and passengers and decrease road damage and subsequent costs for repairs. Although some policy and political support exists, it is insufficient to attract investment on the scale needed for

Financing the SGR

The SGR segment in Kenya was based on a bilateral partnership with China rather than a collective bargaining agreement with other countries. This resulted in a single bidding, where the China Road and Bridge Corporation (CRBC) was awarded the tender to construct the SGR. The Chinese Exim Bank provided 90% of the project cost, with the rest coming from the GOK, largely through the Railway Development Fund (RDF). Through the RDF, the government mobilises finance by charging 1% of the value of goods imported by importers and exporters. According to the transport experts interviewed, this model is not financially sufficient when compared to the SGR's costs for construction and maintenance.

The SGR implementation agreement stipulates that CRBC will use 40% of local private sector labour that meets quality standards and delivers on time. However, the public transport providers, particularly those who operate public service vehicles ('matatu') and transport lorries in the informal sector, indicated that they feel locked out of the rail development because of the lack of explicit policy support, a vibrant public-private information sharing platform and financial incentives, especially a guarantee from national governments for the private sector investment/invested capital.

Part of the land acquired for SGR construction was acquired through compulsory acquisition, which led to the compensation of farmers and companies; this further contributed to the SGR's already high costs. Although the East African Railway Master Plan exists, there is no regional EA transport policy to build synergy with the EAC Chamber of Commerce, Industry and Agriculture's PPP PAUN to facilitate investments from the private sector in EA.

Interviewees contend that the completion of the SGR in Kenya alone will not lower tariffs far enough below roadway tariffs to attract investors and traders to use the SGR to transport cargo. Instead, EAC countries will also need to leverage PPP policies and legislation and harmonise and lower tariffs in the region to induce more companies to use the SGR. The transport experts interviewed recommended that regional and national transport policies for rail transport could provide regulations and incentives for the private sector, particularly larger, well-established manufacturing companies, such as cement manufacturers in Kenya, to transport raw materials by rail. Such incentives could, in turn, generate more revenue and increased demand for rail, which could then provide an incentive for the operator to expand the system by adding additional tracks.

regional infrastructure development. The absence of a regional transport or PPP policy to help guide and direct investments from the private sector was cited by stakeholders as a barrier.

The lack of regional transport policies also creates challenges for project implementation. For example, the implementation of the SGR in Kenya started in October 2014 and was completed by 1 June 2017. However, this construction momentum has not carried through the system to Kigali. The project implementation towards Naivasha was launched on 30 May 2017, and the segment of work between Nairobi and Mombasa is expected to be completed in January 2018.

Once the entire SGR system is complete, it will generate economic benefits for the region. However, some transport experts consulted indicated that project delays and disjointed construction of the Mombasa-Nairobi-Kampala-Kigali segment are increasing costs for Kenya to manage the completed section from Mombasa to Nairobi. The GOK and China Road and Bridge Corporation (CRBC) have, jointly, invested USD 13 billion to date.

Although Kenya mostly stayed on schedule during the SGR's construction, Rwanda, South Sudan and Uganda have not. Their inability to adhere to the agreed timeline is attributed to weak political support combined with a lack of sufficient financial support from the international community and investors. Unfortunately, although the complete rail system is projected to provide increased transportation efficiencies and cost savings compared to road transport, because only certain segments in Kenya are near completion, the costs for loan repayment and on-going maintenance are overburdening the country's economy. This situation is compounded by the political instability and civil conflict in South Sudan, which are affecting this country's contribution to the extension of the LAPSET infrastructure, including the SGR to Juba.

The transport experts interviewed expressed the concern that the national governments in the region do not have sufficient capacity to negotiate contract terms for infrastructure projects. The transport stakeholders interviewed in Rwanda indicated that the GOR was successful in its negotiations for the construction of the Bugesera International Airport because it sought the assistance of an external consultant who negotiated on its behalf. The stakeholders recommended that EAC member states need to hire competent consultants to help them negotiate while building the internal capacity of technical teams and policy-makers so that they are empowered to negotiate effectively and efficiently with potential contractors and financiers rather than rely on external support that increases project costs. Additionally, including multinational institutions, such as MDBs, in the negotiation process can also reduce the risk ineffective contract negotiations.

Water:

Marine Transport

The responsible use of cross-border rivers and lakes, such as Lake Victoria, the Indian Ocean and Lake Kivu, for maritime transport is nascent, despite references to utilising these regional bodies in the EAC member states' green economy strategies and National Visions. The EAC member states, through the EAC Summit, have raised the political support needed to fast track the development of regional integrated and intermodal infrastructure in the transport sector to ease the pressure on roads and reduce the cost of repair. However, by consulting transport and water experts, the study team learned that cross-border water bodies used for maritime transport, such as Lake Victoria, which is shared by Uganda, Tanzania and Kenya, are underutilised because of insufficient regional planning tools. Similarly, the Indian Ocean between

Kenya and Tanzania and Lake Kivu, which is shared by Rwanda, Burundi and the Democratic Republic of Congo, are also not being optimised for transport.

The resource management of Lake Victoria is guided by the SAP for the Lake Victoria Basin, March 2007 and Protocol on Sustainable Development of Lake Victoria Basin (2003). A 2013 European Union (EU)-approved study, 'Lake Victoria Regional Transport', recommended rehabilitating three to six ports on Lake Victoria and introducing a fleet of modern and purpose-built freight vessels to be owned and operated by private sector investors and operators. The three main ports are Kisumu in Kenya, Mwanza in Tanzania and a to-be-determined port in Uganda. Per transport experts, marine transport on Lake Victoria could reduce transport distance, time and costs and facilitate a seamless regional transport system.

Hydropower

Kenya is shifting its focus to geothermal and wind energy sources because installed hydropower systems have been impacted regularly by drought and low rainfall. Rwanda has opened a public-private sector investment in hydropower generation; according to a Rwanda Development Board (RDB) expert, all open opportunities in the sector had been filled by the time the study team visited Rwanda. Rwanda is also planning, in partnership with the Democratic Republic of Congo, to extract natural gas from Lake Kivu. Note that Rwanda and Uganda have more waterfalls and sufficient water systems to generate power generation, which makes hydropower a good option for energy production. Similar to Rwanda, Tanzania is planning to invest more in hydro and geothermal opportunities to generate more clean energy.

5.3.2 Financing for Projects in the EAC

Conversations with stakeholders were used to answer the research questions related to project financing. The full investment required for both large conventional infrastructure and green infrastructure remains beyond the capacity of EA countries because they are still growing economies. Included below are lessons learnt on financing infrastructure in the EAC.

Harmonising Policies to Support Financing

The member states are using the existing institutions, frameworks, policies and legislations to guide finance mobilisation. However, the member state governments need to facilitate the harmonisation of the National Visions (Ugandan Vision 2040, Rwandan Vision 2035, Kenyan Vision 2030 and Tanzanian Vision 2025) with the EAC Vision 2050 and green growth strategies to build on the development of a regional green growth strategy. The stakeholders consulted agreed that to achieve green economic growth, the EAC member states require enhanced capacity to streamline and harmonise policies to be better positioned to attract financing from private sector investment, including local sources.

Capacity-Building to Access Finance Opportunities

Customised capacity building programmes for each country are needed to support integrated, multi-agency approaches to develop investment-ready regional infrastructure projects. Challenges are being encountered at the national and regional levels, including limited capacities in developing proposals and managing finance and accounts for the GCF and

Research Questions on Financing

#2.15: What are the existing investment and funding sources for EAC green economy strategies?

#2.16: How well prepared are governments in the region to apply for and attract funding?

#2.17: What are the barriers and opportunities to scale up existing investments in regional infrastructure at regional and national levels?

Note: all research questions are presented in Annex A.

Adaptation Fund (AF) and in mobilising resources for national or regional climate-proof infrastructure, which would provide enhanced subsidies and guarantees to attract more and enhanced private sector investments.

Development partners, the private sector and NGOs are assisting ministries and departments to develop fundable proposals and improve their financial management skills. In December 2016, ACTS, CARE International, the National Environment Management Authority-Kenya, the Ministry of Finance (Treasury) and the National Environment Trust Fund-Kenya started to provide executive courses on the GCF and climate change targeting EAC experts in preparation for applications to the GCF and other emerging climate funds.

Leveraging Climate Change Financing

Although climate change is a threat to infrastructure, stakeholders were optimistic that climate change could catalyse more investment in regional infrastructure through the AF and GCF. Additionally, stakeholders indicated that climate change provides an opportunity for the private sector to create new products and services to support climate change mitigation and adaptation.

The EAC member states have submitted their Intended Nationally Determined Contributions (INDCs) as per the Paris Agreement, whilst Kenya, Rwanda and Uganda have signed and ratified the Paris Agreement, which makes it legally binding at the national level and transforms the INDC to NDCs. Member states already have institutions at the national level that are designated as National Designated Authorities (NDAs) for the GCF and National Implementing Entities (NIEs) for the AF. Rwanda has developed the National Climate and Environment Fund (FONERWA), which is built on the newly adopted Green Growth and Climate Resilience Strategy. FONERWA's purpose is to ensure that sustainable financing is accessible to support environmental sustainability, resilience to climate change and green growth in Rwanda. Likewise, in Kenya, through the recently enacted Climate Change Act, 2016, the country will establish a national climate change fund.

Green Financing to Support Infrastructure Development

The green bond market is still very young in developing countries but has great potential to generate financing for green infrastructure and businesses. In 2017, the Kenya Bankers Association, Climate Bonds Initiative, Nairobi Security Exchange and Financial Sector Deepening, with support from the Dutch Development Bank and the International Finance Corporation (IFC), launched the Kenya Green Bond Programme to help build green bond capability in Kenya and EA. The challenges faced by the EAC member states in establishing green bonds to support green infrastructure include the stringent guideline requiring that sustainability principles be considered, which most developing countries find difficult to meet to access funds.

The green bond principles recognise some sectors and sub-sectors, such as mass transit systems and renewable energy, which are priorities for Africa to mitigate and adapt to climate change. Another challenge is that the financial institutions in EA have yet to integrate environment and social factors into their financial systems to qualify for the green bond market.

Momentum for Green Finance

In 2017, there was increased momentum among the banks, development partners and governments focused on access to green finance for green economic growth. In June 2017, Kenya hosted a Green Finance conference co-organised by the African Guarantee Fund, International Trade Centre and Nordic Development Fund. The conference brought together representatives from financial institutions, including micro and macro banks, policy makers and development partners, such as donors, researchers, academicians, media and local communities. The conference's main aim was to deliberate on access to green finance for the green growth of climate-resilient small- and medium-sized enterprises in Africa.

PPPs at the National Level

Each of the EAC member countries has developed a private sector development strategy to attract private sector investment. The

transport experts interviewed attributed the success of the Bugesera International Airport (Rwanda), SGR (Kenya) and Dar es Salaam Rapid Transit (DART) BRT System (Tanzania) to these policies (see the text box to the right). However, examples of regional infrastructure projects are scarce, and stakeholders suggested that the EAC Secretariat could develop a regional EAC PPP strategy, law and implementation plan to facilitate the harmonised mobilisation of public and private sector funds to support the design and implementation of regional infrastructure. Stakeholders in Kenya and Tanzania indicated that the implementation of regional infrastructure is limited by financing and

a lack of political will, despite the existence of green strategies and policies. The private sector and foreign investors usually provide more capital than national governments, and insufficient subsidies and guarantees to private sector investors remain a concern. Kenya, Rwanda and Tanzania have shown an increased level of preparedness, which led to public-private sector investment in key national mega-infrastructure projects.

Leveraging Public Financing

The study team found that the EAC member states studied have made efforts to mobilise finances at the national, regional and international levels, including venturing into bilateral, tripartite and multilateral agreements to fund infrastructure from specific sources. However, opportunities remain for EAC member states to scale up their mobilisation of public finances, such as through taxation. For example, the GOR is contributing up to 50% of the total financial support for the construction of the Bugesera International Airport, which is the largest public investment in a mega-infrastructure project provided by the national government among the EAC cases assessed.

The willingness of external and internal investors to support the implementation of the Bugesera Airport, SGR and BRT demonstrates that there is potential to increase public and private sector financing and operations in the design and implementation of the mega-national and regional infrastructure that will promote green economies in the EA region.

Civil society, academia and development partners can call for transparency and accountability in the utilisation of public and private finance invested in the infrastructure and can also publicly support green growth investments over conventional investments.

Examples of Successful PPPs in the EAC

- ♦ In Rwanda, the Bugesera International Airport is equally funded by the national government and private sector and development partners, including the EU.
- ♦ The GOK's PPP Act is a legislative framework being used to incentivise and attract private sector actors in SGR construction. In Kenya, the Mombasa-Nairobi phase of the SGR project is estimated to cost \$3.8 billion. China Exim Bank will provide 90% of the financing, whilst the remaining 10% will be contributed by the GOK. Although local private companies supplied materials for the SGR's construction, according to the private sector and transport experts interviewed, a key challenge is that the PPP Act has not adequately incentivised small private sector stakeholders to compete with large private sector competitors.
- ♦ According to the experts interviewed, the DART BRT System in Tanzania is a successful infrastructure project being implemented through Tanzania's PPP Act. The Act guides and facilitates partnerships and mobilises resources, including financing and building synergy between the public and private sectors. The DART BRT scheme is being implemented in six phases to allow time for the government to mobilise more funds from government sources and external investors. The first phase was primarily funded by the World Bank (\$325 million) and the Tanzanian Government (\$221.4 million).

5.3.3 Equity and Inclusion

Conversations with stakeholders and findings from the literature review were used to answer the research questions related to equity and inclusion (as presented in the text box to the right).

Variations in exposure to and understanding of the definition of green growth affect stakeholders' perceptions of how they can participate in, benefit from and be impacted by green growth. The study team found that stakeholders, particularly government representatives, believe that green growth is more inclusive than 'typical' development, which has historically marginalised segments of the population (e.g., women, the poor, youth and people with disabilities) in the EAC member states. Most stakeholders believed that women, youth, children, people with disabilities and poor communities have been historically disenfranchised because of the approaches used for policy, plan, strategy and infrastructure development.

Constitutional and Policy Provisions on Gender, Inclusion and Equity

Under Kenya's new constitution, there is a one-to-three gender rule, which provides women, youth, people with disabilities, the poor and marginalised communities with an opportunity for representation in policy process, planning, politics and development. This provision, in addition to the provision on public participation, is being cascaded down to national and county government sector policies and elective positions. Stakeholders interviewed in Kenya remarked that public participation has been enhanced by constitutional provisions and laws, such as the devolution in the 2010 constitution and the addition of PPP legislation and sector policies.

Kenya also has a National Gender and Equality Commission, which is fully independent and mandated by the constitution to promote and protect gender equality and equity. For example, the construction of the SGR in Kenya integrated women into engineering positions, including as train drivers. An eight-woman team trained in China will be part of the 65 SGR train drivers. Although this is a step in a positive direction, the stakeholders interviewed believed that more effort is needed to ensure that marginalised groups are part of policy design and that policies provide a clear framework on how benefits from goods and services generated by green growth will be shared with marginalised groups, such as youth who are facing an increased lack of jobs.

In Rwanda, sector policies have highlighted provisions for women, youth, poor and local communities in implementation activities that support green growth, such as tree planting, water catchment conservation, conservation agriculture and regular community activities. Similarly, Uganda and Tanzania have integrated women, youth, poor and local communities into their respective constitutions and policies. The stakeholders in the region agreed that women, youth, poor and marginalised local communities play key roles in the green growth process because they are potential suppliers of local materials and human resources to support the implementation of green infrastructure. The national governments acknowledge that 'typical' development lacks gender inclusion; indeed, it is insufficient, and to date, bottlenecks in gender integration policies have hindered 'typical' development. However, the interviewees felt that gender inclusion may be easier to accomplish in green growth development. Therefore, the

Research Questions on Equity and Inclusion

#2.4: Which narratives are more powerful and dominant in the policies, and which ones are silenced? How do these relate to the various social groups, including governments, local vulnerable groups, women and youth?

#2.5: To what extent can or does green growth support social equity, particularly for women? What role can women play in the green growth transition?

#2.18: What are the benefits of the policies to different social groups, and how do the wider policy politics shape the benefits provided by different actors (e.g., the private sector, governments and local vulnerable communities)?

Note: all research questions are presented in Annex A.

harmonisation of national sector policies and national green growth economies strategies in the EAC region can provide an opportunity for enforceable legislation and policy provisions that address gender, poverty and marginalised groups.

Interviewees also indicated political support for the role that civil society can play to shape the infrastructure agenda. Many CSOs have expertise in research, policy analysis and capacity building. They can also offer insight on an inclusive, government-run process to engage other CSOs, which could result in infrastructure that is more resilient to climate stressors. For example, the Rwandan government has used policies, strategies and institutions for stakeholders to engage in infrastructure investment and development. This includes the PPP Law (2006), which was designed to provide opportunities to invest in Rwandan infrastructure to both local and international private sector investors and development partners. Further, the Green Growth and Climate Resilience Strategy 2011–2050 guides green growth, whilst the RDB provides a streamlined, ‘one-stop shop’ to accelerate and reduce barriers to investments in the country’s projects.

Additionally, policies in Rwanda have provided stakeholders a way to enhance knowledge sharing and contribute to the ongoing design and development of green cities, industrial parks and green villages. Some interviewees were concerned that although Rwanda includes stakeholders in government-led projects, its decision-making is biased towards a top-down approach. Considering this, interviewees raised the need for enhanced inclusion of non-state actors in the decision-making process.

Overall, the stakeholders in the member states were concerned that the environmental legislation and policies in their countries have not explicitly addressed how different stakeholders will conduct M&E reporting, which will be subjected to wider public scrutiny. Although stakeholders in Uganda noted improvement in policy support, research and policy analyses are not being optimised in the design of new policies and infrastructure projects. Ugandan interviewees were optimistic, however, because the top government leadership recently acknowledged climate change as a key development issue that must be addressed and encouraged parliament to finalise its approval of Uganda’s GGDS draft so that it can be sent to the president for his approval.

Inclusivity in Infrastructure Investments

Another concern shared by local private sector representatives and confirmed by CSOs was that the governments in the EAC favour international investors, leaving local stakeholders to face stiff competition because of the scale of investment, limited access to loans from large banks, limited government funding and the high risks of investment.


Although communities are consulted, stakeholders expressed concerns that the most vulnerable communities are not being conferred with and that they are not adequately prepared to negotiate for proper compensation. Stakeholders, especially non-state actors at the national and regional levels, believed that state-led policies are more state friendly than policies for local communities, which are heavily taxed to service loans borrowed for infrastructure construction. Interviewees shared that the policies are explicit about how the state benefits but vague on how local communities should benefit from the income and revenue accrued from the new infrastructure. Interviewees attributed this gap to weak advocacy by the CSOs in the region against the state-funded policy formulation process. CSOs expressed the need to harmonise sector policies and streamline the processes for community engagement.

5.4 Screening Considerations to Assess the Feasibility of Regional Infrastructure to Promote Green Economies in the EAC

Regional (transboundary) infrastructure can complement national infrastructure and enhance the potential for economic growth through cross-border trade, job creation, GDP growth, rural electrification and industrialisation. Closely tied to these potential benefits is poverty alleviation in rural and urban settings. Research shows that national infrastructure to promote green economies has many benefits and that the potential exists for these same benefits to be extrapolated to regional infrastructure projects. However, households, businesses, cities and countries are not equal, and there may be winners and losers during the transition to green growth (OECD, 2011a, 2011b). Specific evidence linking regional infrastructure that promotes green growth is lacking, and no assessment of the potential country winners and losers in the East African context exists. Therefore, the study team developed a list of considerations and screening indicators to evaluate the feasibility of options for regional infrastructure to promote green economies.

5.4.1 Considerations and Screening Indicators

Identifying and prioritising infrastructure projects comprise the most difficult and politically sensitive part of any planning and programming process. Many factors need to be assessed to determine what is needed and why (e.g., development goals, policy objectives and political agendas), what can be done given available financing (and budget and fiscal constraints), where to build, the feasibility of the infrastructure project and whether the product will promote a green economy and alleviate poverty. Three major stages are proposed for use in selecting appropriate regional infrastructure options and scoping the feasibility of those options to promote green economies in the EAC.

 The first stage in selecting options for regional infrastructure requires an investigation into the existing and planned infrastructure in each country, regardless of whether the infrastructure is regional, to determine infrastructure gaps and needs. This first step is a large undertaking and consists of the following activities:

- Compile a list of all existing infrastructure (by country) and its regional implications
- Compile a list of all planned infrastructure (by country), its regional implications and when it will be implemented (e.g., near term or long term)
- Conduct an infrastructure gap analysis, categorised by near-term and long-term infrastructure needs (by country)


 The second stage in determining options for regional infrastructure is to identify where regional infrastructure is needed. Several geographical indicators can help assess this need (**Table 5**).

Table 5. Geographical screening indicators for regional infrastructure

Geographical Indicators	Rational for Consideration
Landlocked country	In general, landlocked countries need more transnational transport infrastructure and are a positive option for energy and transport projects.

Geographical Indicators	Rational for Consideration
Land border as a share of the total border	A larger share of land border suggests the need to build more road and rail links across borders; coastal borders have easy access to shipping and ports.
Number of border countries	The greater the number of border countries, the more opportunities exist to connect with other countries, increasing the need for regional infrastructure.
Land area	Smaller countries may need more regional infrastructure and tend to rely more heavily on cross-border trade (impacts transport infrastructure) and cross-border water resources and energy networks.
Surface water resources, with further classification on whether the country is upstream or downstream	Countries with few surface freshwater resources tend to rely on groundwater, desalination in coastal areas or piped networks originating from other countries; this indicator is challenging to quantify because of river basins and upstream/downstream users. Additionally, the decisions upstream countries make directly impact downstream countries.

Note: adapted from World Economic Forum (2014).

At this stage, the types of regional infrastructure projects needed and the potential locations of those projects will be known. The feasibility of these options then needs to be assessed.



During the third stage, an assessment of the policy framework, institutional arrangements and financial and economic situation should be conducted to determine whether green growth-supportive conditions (as presented in **Section 5.2**) are present in the specific countries or region. If the supportive conditions are present, the project has high potential to promote a green economy.

In addition to the green growth-supportive conditions, several financial-economic indicators and social and environmental indicators must also be considered. These indicators will help rank and prioritise the infrastructure options against the investment required, the economic gains and the likely effects on poverty, job creation and climate resilience (**Table 6**).

Table 6. Additional indicators for regional infrastructure prioritisation

Financial-Economic Indicators	Social and Environmental Indicators
<ul style="list-style-type: none"> Cost-benefit ratio (partial cost-benefit analysis) Multiplier effects Externalities (e.g., costs avoided) Implementation risks 	<ul style="list-style-type: none"> Beneficiaries Environmental risks and impacts Poverty alleviation Job creation Resettlement and cultural impacts

5.4.2 Illustrative Example

Table 7 illustrates how the EAC countries compare against the geographical indicators when considering regional infrastructure projects for the energy, transport and water sectors. Uganda may be a good choice when considering regional transport infrastructure because it is landlocked, has a relatively large land border area and shares a border with five countries. Kenya appears to be an ideal candidate for regional water infrastructure given the number and type of water resources.

Additional indicators may also need to be considered when thinking about unintended consequences and environmental risks of a project. For example, infrastructure projects with the potential to use large amounts of surface water could prompt communities to use more groundwater resources; in this case, transboundary aquifers should be considered.

Table 7. Geographical screening indicators for regional infrastructure in EAC countries

Indicator	Kenya	Rwanda	Uganda	Tanzania
Landlocked	No	Yes	Yes	No
Coastal/Maritime	Yes	No	No	Yes
Land border as a share of the total	Land border = 3,457 km Coastline = 536 km	Land border = 930 km	Land border = 2,719 km	Land border = 4,161 km Coastline = ~800 km
Number of border countries	5	4	5	8
Land area (km ²)	580,367	26,338	241,040	943,087*
Number and type of surface water resources**	5 major basins: Lake Victoria basin, Rift Valley basin, Athi River basin, Tana River basin and Ewaso Ng'iro River basin 4 major lakes: Lake Turkana, Lake Baringo, Lake Naivasha and Lake Natron	2 major basins: Nile (E) and Congo (W); several smaller catchments within these basins 1 major lake: Lake Kivu (W)	1 major basin: Nile (C) 4 major lakes: Lake Victoria (SE), Lake Albert (W), Lake George (W) and Lake Edward (W)	4 main basins: Gombe, Pangani (N), Wami (central) and Rufiji (S) 3 major lakes: Lake Victoria (NW), Lake Tanganyika (W) and Lake Malawi (S)

* Does not include the land area of Zanzibar (2,000 km²)

Source: Data by country were extracted from Index Mundi (www.indexmundi.com); surface water data were extracted from Earthwise (by country).

Table 8 presents a high-level overview of the presence of green growth-supportive conditions for three regional projects in the EAC that are largely based in Kenya. The EAC policy and institutional framework (as presented in **Section 4** of this report) factors into this assessment. Nearly all the green growth-supportive conditions for these projects were met.

Table 8. High-level overview of the presence of green growth supportive conditions in EAC countries

Green Growth-supportive Condition		KWSCR	LTWPP (Kenya)	Mombasa-Nairobi SGR Project (Kenya)
Financing	Diversity of financing options	No	Yes, private sector investment and the IPP framework were key contributors.	No
	Investor leadership	No	Yes, private investors championed this project.	No

Green Growth-supportive Condition		KWSCR	LTWPP (Kenya)	Mombasa-Nairobi SGR Project (Kenya)
National	National government leadership	Yes	Yes	Yes
	National policies, laws, regulations, strategies and/or plans that support regional collaboration	Yes	Yes	Yes
	Improved enforcement of national-level policies and regulations	Improvements are in progress.	Not applicable	Not applicable
Outreach and capacity building	Inclusive stakeholder engagement to build project support	Yes	Yes, a strong stakeholder engagement plan was developed, and 15 community liaison officers from local tribes were included as part of the stakeholder management team.	Not enough information to assess
	Institutional capacity building and development of knowledge products	Yes	Not applicable	Not enough information to assess
Proof of Concept	Existing project(s) of similar scope	Yes	No, this was the first project of its kind.	Yes
	Quantification of benefits and trade-offs using accepted methods, such as social impact assessments, SEAs and/or EIAs	Unsure	Yes	Yes
Regional	Regional strategy for green growth	No	No	No
	Mechanisms to foster collaboration among countries	Yes	Yes	Yes

Section 6. Recommendations

This section relates to **Research Objective 3: Recommendations on effective policy and implementation approaches for regional infrastructure to support more sustainable growth.**

The recommendations presented in this section are primarily those identified by the stakeholders interviewed through targeted conversations on the research questions and obvious gaps in the EAC policy landscape with respect to the integration and harmonisation of existing policies. The research questions were not asked in a survey format; thus, not every stakeholder provided a response to every research question to facilitate a comparative analysis. Many of the discussions with stakeholders focused on reaching a common understanding of green growth, which limited the time available to discuss each of the 24 research questions. Most of the information and knowledge base focus on green growth in a single country, which is further divided into defined land areas (e.g., cities or urban areas). The links between **Section 5** and **Section 6** are illustrated in **Figure 7**.

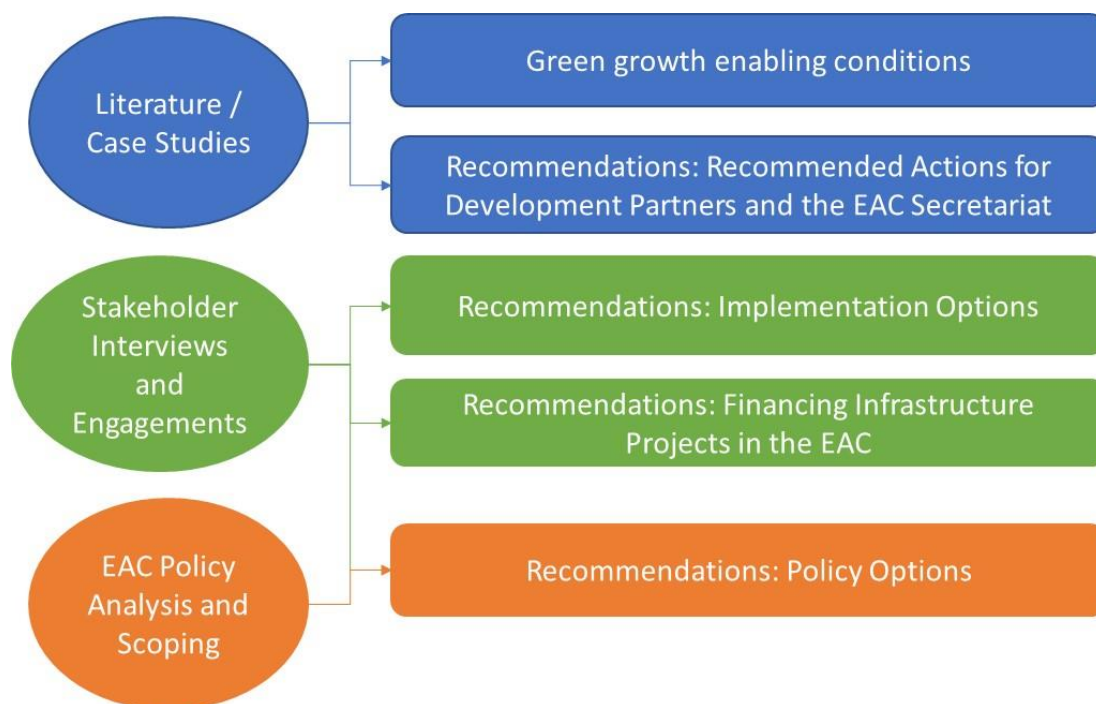
Research Questions on Recommendations

#3.1: What best actor networks, approaches, policy processes, investments and strategies should be applied in building an integrated, effective, equitable and sustainable regional infrastructure to achieve a smooth transition to a green economy in the EAC?

Note: all research questions are presented in Annex A.

Section 6.1 describes the policy and implementation activities that could help drive green economic growth in the EAC. **Section 6.2** provides three recommended action items for the development partners and EAC Secretariat to consider in their efforts to use regional infrastructure to promote green economies. **Section 6.3** presents the priority evidence and data gaps, including in policy formation, infrastructure project preparation and implementation and financing.

Figure 7. Analytical process for developing recommendations



6.1 Policy and Implementation Options

The study team has identified a set of policy and implementation options and approaches to plan for and invest in regional infrastructure by 2030. These policies and implementation options

are intended to help support the transition to green economies, reduce poverty and enhance climate resilience in the EAC.

6.1.1 Policy Options



Develop A Regional Green Growth Strategy

The EAC has room for improvement when considering the challenges associated with regional infrastructure projects and the best practice framework for managing regional infrastructure programmes. Several regional organisations that influence regional infrastructure development, each with their own strategy and regional priorities, exist in EA, including the EAC, Intergovernmental Authority on Development and Common Market for Eastern and Southern Africa (COMESA). Sector-specific regional organisations also exist, including river basin organisations (e.g., the LVBC, Lake Victoria Fisheries Organization and Nile Basin Initiative), energy partnerships (e.g., the Eastern Africa Power Pool and Power Africa) and transport initiatives (e.g., the Mombasa-Kampala-Kigali SGR segment tripartite agreement). Despite the breadth of these regional organisations, there is no regionally integrated green growth strategy.

The EAC Secretariat has approached green growth through different sectoral policies and strategies. Because Rwanda and Kenya have developed stand-alone green growth strategies, whilst Uganda is finalising its draft green growth strategy, developing a harmonised regional approach is timely.



Harmonise Policies to Support Investment in Regional Infrastructure

Stakeholders emphasised the need to harmonise the National Visions; existing and future sector policies, legislation and plans; green growth strategies; and PPP legislation and strategies of member states (e.g., the EAC Private Sector Development Strategy [2006]). Harmonising these policies could increase international collaboration through multilateral environmental agreements and policies on development, resource management and trade. Also, such harmonisation could help the EAC member states attract investments from the private sector and development partners in a sustained manner whilst sharing the risk of infrastructure projects. For example, harmonising member states' water legislations and the Nile Treaty could enable the development of an integrated maritime transport system linked to road and rail networks. Stakeholders in the transport sector indicated that an intermodal approach linking rail, road, air and maritime transport in the region could improve efficiencies, reduce traffic jams and the associated delays of goods and passengers, and decrease road damage and subsequent costs for repairs. Although there is some policy and political support, it is insufficient to attract investment on the scale needed for regional infrastructure development. The absence of a regional transport policy or PPP policy to help guide and direct investments from the private sector was cited by stakeholders as a barrier. Although the EAC Secretariat may be best positioned to take on this role, current capacity is low and would need to be enhanced.

The harmonisation of PPP policies and legislation could be achieved through the existing CDF, which was established by the EAC Secretariat to engage with the private sector through PPP PAUN, which is tasked with strengthening the capacity of the private sector across EA to participate in infrastructure projects.

The stakeholders interviewed, particularly the private sector representatives, indicated that national governments in the EAC have not provided a sufficiently level platform to allow small, local private sector players to compete with larger, international private sector players on infrastructure project tenders. The private sector network representatives in the EAC emphasised that proposed regional PPP legislation should require the inclusion of local private sector players.



Harmonise Water Legislation

The EAC Secretariat has in place an SAP for the Lake Victoria Basin (March 2007) and a Protocol on Sustainable Development of Lake Victoria Basin (2003). However, according to several water and transport experts interviewed in the region, these policy instruments are insufficient, and as a result, Lake Victoria is underutilised for regional maritime transport. The EAC Secretariat can lead the process of harmonising member states' water legislations and the Nile Treaty to enable the development of an integrated seamless maritime transport system linked to road and rail networks.



Implement Regional Climate Change Approaches

Although member states have climate legislation, there are no climate change strategies at the EAC regional level. Regional climate change legislation could help the EAC region reduce carbon-intensive development, which will facilitate the implementation of NDCs per the Paris Agreement and help countries prepare for the impacts of climate change. However, the study team acknowledges that regional legislation could be complicated to develop; a regional compact or agreement to reduce GHG emissions could be put into place as a first step in a longer process to develop climate change legislation. For example, the Durban Adaptation Charter (DAC) commits local governments to climate action to help them respond to and cope with the impacts of climate change. The DAC is Africa based and led, and the majority of its signatories are from developing countries and cities. A regional compact for climate action in the EAC could enable the enforcement of national climate change legislation in member states and foster regional collaboration to implement GHG reduction and adaptation strategies. In turn, this could lead to more cost-effective approaches because of economies of scale.

6.1.2 Implementation Options



Increase Expert Negotiator Expertise in the EAC Member States

The experts interviewed indicated that the national ministries in the EAC member states need to hire competent consultants to help them negotiate while they build the internal capacity of technical teams and policy-makers. By building this capacity internally, member states can be empowered to negotiate effectively and efficiently with potential contractors and financiers rather than relying on external support, which increases project costs.



Build Capacity and Share Knowledge

Through stakeholder interviews, the study team learned that knowledge sharing of regional infrastructure project development is very limited. Strengthening the technical and thematic working groups at the EAC Secretariat can guide national policy-makers, and will help coordinate infrastructure investments across the region and foster cross-sector integration of regional policies. The energy experts in the EAC have already requested resources to

support the establishment of a sustainable working group on energy to facilitate regional discussion on developing clean and reliable energy sources.

Mechanisms to share information about planned and ongoing infrastructure projects could help foster regional planning for infrastructure investments. For example, a web-accessible database or portal to share information could complement the thematic working groups and provide a platform to share individual country plans and data related to infrastructure development. Another need identified by the workshop participants included a national knowledge platform on climate technology needs and opportunities. There are existing, online sources for climate technology needs and opportunities that could be presented in a succinct and user-friendly method, or an EA-specific compendium of resources could be developed.



Leverage Academic Institutions to Address the Skills Gap

The technical teams in the EAC Secretariat and the member country ministries require capacity building for the design, installation and maintenance of infrastructure projects, whilst the policy-makers require skills training on how to formulate a regional green economy strategy, policy and legislation. Communities also have a role to play by contributing to environmental impact assessments.

Academic institutions provide consultancy services to design, plan and assess project infrastructure and build government capacity. Additionally, many universities are developing and revising curricula to help ensure that graduating students can fill labour and skill gaps associated with the construction and implementation of infrastructure projects. For example, Makerere University in Uganda, University of Nairobi in Kenya, University of Dar es Salaam and University of Rwanda have economics, geography, natural resources, engineering and environment departments that teach students the skills necessary to integrate environmental concerns and policies into infrastructure project design. It is worth noting that, although these departments offer this general education, the study team was not able to identify any university programmes with a stand-alone course or degree programme on green economy and green infrastructure, and the experts interviewed agreed that curricula need to be updated to align with national green growth strategies

6.1.3 Financing Infrastructure Projects in the EAC



Attract Private Sector Investments by Identifying Bankable and Investment-ready Projects and Innovative Financing Mechanisms

We recommend developing a strategy, by sector, that lays out the infrastructure needs. Screening and infrastructure prioritisation information (see recommendations in **Section 6.2**) would be used to develop the infrastructure strategy. As part of the strategy development process, attention should be paid to identifying bankable and investment-ready projects. Attracting private sector finance may be more straightforward if projects are prioritised and their bankability assessed prior to engaging with them.

We learned from the Lake Turkana Wind project that as a financing mechanism, private sector pool funding in support of infrastructure development should be explored by respective governments as a viable financing option. Pooling funds can reduce risks absorbed by any one funder. This is best done by national and regional authorities through a targeted promotion of viable green investment opportunities to the private sector associations across the EAC block.

The private sector stakeholders interviewed raised concerns about weak policy and legislative support to locally-based private investors. As mentioned above, strengthening the technical and thematic working groups at the EAC Secretariat can help national policy-makers interact more effectively with the private sector.



Harness Climate Change Financing

Financing opportunities, such as the GCF and AF, can benefit developing countries substantially. EAC member states need to capitalise on GCF and AF by jointly developing regional proposals through their respective NDAs and NIEs. These funds are designed to support building the resilience of infrastructure and livelihoods to climate change and reducing GHG emissions.



Coordinate Donor Financing for Regional Infrastructure Development

The infrastructure experts consulted in the EAC highlighted that conditionality attached to market loans for infrastructure can delay the completion of infrastructure, as was the case for LAPSET. Some stakeholders recommended that donors and investors interested in supporting infrastructure in the EAC collaborate and pool their resources to harmonise regional infrastructure development in the EAC.

For example, in 2007, the European Commission and EU member states established the EU-Africa Infrastructure Trust Fund, which is designed to promote infrastructure projects with regional impact in sub-Saharan Africa.¹¹ Additionally, China, which is now one of the largest infrastructure investors in the EAC through the China-Africa Development Fund, and other potential investors must be approached jointly.

Coordinating donor investments will not only mitigate the high cost of investing in infrastructure in the region but will also establish a pool of resources for fast tracking integrated infrastructure development that aligns with the EAC and National Visions.

Because private sector and foreign investors provide the majority of financing for regional infrastructure projects, there is a clear role for institutions such as the AfDB or World Bank to provide financial support across multiple countries.

6.2 Recommended Actions for Development Partners and the EAC Secretariat

This section presents three recommended action items for the development partners and EAC Secretariat to consider in their efforts to use regional infrastructure to promote green economies. These recommendations were based on the findings from the literature review and the EAC scoping and policy analysis; no comprehensive review of the current activities and strategies of the development partners and the EAC Secretariat was completed.



Participate in the Global Infrastructure Forum and Work to Achieve the Forum's Objectives

The inaugural Global Infrastructure Forum 2016 brought together for the first time the leaders of nine MDBs and development partners and representatives of the G20, G24 and G77 to

¹¹ <http://www.itf-gis.net/>

enhance multilateral collaborative mechanisms to improve infrastructure delivery globally. The MDBs included the AfDB, ADB, Asian Infrastructure Investment Bank, European Bank for Reconstruction and Development, European Investment Bank, IDB Group, Islamic Development Bank, New Development Bank and World Bank Group.

During this forum, 21 action items under four main categories were developed,¹² all of which are relevant to regional infrastructure and the promotion of green economies (**Table 9**).

Table 9. Global Infrastructure Forum Action Items (UN, 2017)

Action Item Category	Action Items
1. Improving data and information on infrastructure	<p>1.1 Improve metrics on catalysation of private investment</p> <p>1.2 Define “infrastructure gap”—actual infrastructure spending versus spending required to meet development goals, meet standards on asset quality and service and foster disclosure and transparency</p> <p>1.3 Assess what constitutes a sound supportive environment to attract increased investment for infrastructure</p> <p>1.4 Clarify role of private operators in the delivery of infrastructure services and the mobilisation of long-term finance from investors, both domestic and international</p>
2. Promoting compatible, efficient approaches, building consensus on PPP standards for policies and projects	<p>2.1 Promote global PPP capacity standards</p> <p>2.2 Support the planning and development of PPPs in infrastructure in the context of NDCs to the UNFCCC</p> <p>2.3 Support early stage project preparation when appropriate</p> <p>2.4 Standardise risk management principles and mechanisms for:</p> <ul style="list-style-type: none"> • Risk allocation in different sectors and markets and associated contractual clauses • Planning investment under uncertainty to build more resilient assets, notably taking into account climate change and disaster risks <p>2.5 Develop tools for assessing:</p> <ul style="list-style-type: none"> • Fiscal implications of public investment versus PPPs • Risks of implementation of projects as PPPs or as a public option • Approaches for improving transparency of infrastructure contracts and projects <p>2.6 Strengthen the capacity of economic regulators to ensure that efficiency gains obtained throughout the lifecycle of infrastructure projects are shared fairly between service providers and users</p> <p>2.7 Continue to develop environmental, social and governance standards, including through the work of the Multilateral Financial Institutions Working Group on Environmental and Social Standards</p> <p>2.8 Continue to foster coordination on climate finance methods, tools and approaches for improving the effectiveness of these resources, including</p>

¹² The Global Infrastructure Forum 2016 action items and progress update as of January 2017 can be found at http://www.un.org/esa/ffd/wp-content/uploads/2017/01/mdb_action_progress.pdf.

Action Item Category	Action Items
	mobilisation of new sources of capital for investment in low-carbon and climate-resilient infrastructure services
3. Strengthening project preparation	3.1 Support existing and planned project preparation facilities and related databases to support countries to prioritise and prepare bankable pipelines of infrastructure projects
4. Promoting financing for infrastructure [Enhancing private sector financing in infrastructure]	4.1 Achieve higher levels of private sector participation in infrastructure 4.2 Promote cooperation between new and existing MDBs, with a particular focus on opening up co-financing opportunities 4.3 Pursue new innovative approaches to collaboration among providers of concessional sources of climate finance, donors, private foundations and institutional investors 4.4 Foster the secondary market for infrastructure equity and debt 4.5 Identify opportunities to support viability gap funding arrangements to help PPP projects meet bankability and affordability criteria 4.6 Further increase MDBs' financial capacity through the use of risk sharing instruments 4.7 Develop new tools to leverage MDB balance sheets and bring in new private sector capital, including from the insurance market and institutional investors 4.8 Further strengthen domestic financial systems in client countries to support sustainable infrastructure financing



Screen Infrastructure Projects Prior to Funding to Assess their Potential to Promote Green Economies

For the global case studies analysed, the study team found that, overwhelmingly, financing was provided by MDBs. Therefore, because national governments rely on this source of funding, lenders could require green growth screening of projects at the design phase. Lenders should create a screening tool (or adapt an existing tool) to evaluate and prioritise proposed regional infrastructure projects in terms of their potential to promote green economies. The use of such a tool would facilitate prioritising those projects with the highest potential to improve climate resiliency and green growth in the region, whilst also helping to familiarise stakeholders with important concepts relating to how regional infrastructure development promotes green growth.

Existing screening tools could be adapted for this purpose. For example, the GCF, which is the world's largest fund dedicated to the fight against

Selecting and scoping regional infrastructure: A 3-step process

1. Investigate the existing and planned infrastructure in each country to identify infrastructure gaps and needs.
2. Determine where regional infrastructure is needed using geographical indicators.
3. Assess the policy framework, institutional arrangements and financial and economic situation to determine whether green growth-supportive conditions are present in the country or region being considered.

climate change, developed an online self-assessment screening tool¹³ that outlines the minimum requirements an institution must meet before it can be accredited to receive funding from the GCF. Although such a tool does not guarantee a decision to fund, it does provide an early assessment to determine the organisation's readiness to start the accreditation process and eventually receive funding from the GCF.

Developing a similar screening tool to the GCF tool or a means to evaluate the green growth potential of a regional infrastructure project could aid in the identification and prioritisation of more climate-resilient and green projects and could socialise stakeholders to the concept of regional infrastructure development to achieve green growth. The study team acknowledges that the implementation of such screening tools or multi-criteria decision analysis tools may require policy changes within AfDB, the World Bank and other institutions providing loans.



Quantify the Benefits and Externalities Associated with Regional Infrastructure Projects using Prioritisation Tools, and then Assess their Bankability

The business case for the Regional Infrastructure Project for Africa¹⁴ indicates that substantial analysis of regional infrastructure opportunities is needed to identify the potential benefits, costs and risks for the parties involved and ways to address asymmetries prior to delving into the details of a project. However, depending on the methods used, these evaluations may not always be accurate. In a renewable energy project in South Africa, for example, local job creation was identified as a driver for a decision to fund, but anecdotal evidence indicates that foreign companies flew in their workforce (Pahle, Pachauri, & Steinbacher, 2016), which negated the initial impetus to fund the project.

Infrastructure prioritisation tools help governments and lenders to develop a pipeline of projects to be implemented and use evidence-based decision-making to prioritise which projects to move forward with in the near term. The World Bank's Infrastructure Prioritization Framework (IPF) is a multi-criteria decision support tool that considers project outcomes along two dimensions: social-environmental and financial-economic (shown as indicators in **Section 5.3**). Results can be assessed against the government's budget for comparison. The IPF is structured to accommodate multiple policy objectives, attend to social and environmental factors and take advantage of available data whilst promoting capacity building and data collection for more sophisticated appraisal methods and selection frameworks (Macelo et al., 2016). Clean Development Initiative in Asia (CDIA) uses their City Infrastructure Investment Programming and Prioritization (CIIPP) Toolkit to help city governments in Asia undertake the task of programming and prioritising strategic urban investments (CDIA, 2014). While neither the IPF nor the CIIPP have a regional focus, they could be applied to a regional project. Other prioritisation tools exist that incorporate geographic information system (GIS) layers but tend to be focused on a localised area (e.g., the Pima Association of Governments in Arizona developed a GIS-based prioritisation tool for Arizona, USA).

Regardless of the method selected, the criteria used to assess and prioritise projects should be developed in advance of the assessment and should be made fully transparent for public review and comment. Working with stakeholders (e.g., development banks, private investors, designers of projects, national governments and civil society) to understand and create criteria to

13 GCF Self-Assessment Screening Tool: <http://www.greenclimate.fund/how-we-work/getting-accredited/self-assessment-tool>.

14 RIPA business case: <https://devtracker.dfid.gov.uk/projects/GB-1-202579/documents>

maximise the green and socio-economic benefits of regional infrastructure projects could lead to infrastructure investments in support of green growth.

Additionally, quantifying the benefits of green infrastructure in the short and medium terms rather than just the long term (Pahle et al., 2016) can boost the political salience for a project. For example, although cost savings from a renewable energy project may not manifest until the medium or long term, quantifying the more immediate cost savings experienced at the household level and sharing the findings with politicians could bolster political acceptance of a project, particularly if the beneficiaries are made to understand the links between their savings and the project.

6.3 Priority Evidence and Data Gaps

Although both national-level studies about green growth and literature on regional infrastructure exist, the study team found limited evidence and data on the role of regional infrastructure in promoting green economies specific to the EAC. This study contributes to the evidence-base in this area and we present additional research questions to address priority evidence and data gaps that are beyond the scope of this study. The research questions are organised by policy formulation, infrastructure project preparation and implementation and financing.

Additional needs identified by the participants of the EAC workshop that require additional consideration include the following:

- a) establishing a needs-based focus for international climate technology initiatives in-country, including mainstreaming women, youth and other marginalised groups and
- b) de-risking innovation.

6.3.1 Policy Formulation

Further study is needed to determine how to harmonise national and regional policies to support regional cooperation for infrastructure development in the EAC and promote public participation in policy-making.

Through the case study analysis, the study team found that inclusive engagement of stakeholders in regional infrastructure projects contributed to successful project implementation. In Kenya, non-state actors have more influence because of constitutional provisions that require sufficient consultation of stakeholders before a bill or policy is sent for parliamentary and executive approval. Further study of the Kenya model (see the text box below) could help ensure that stakeholders are represented in policy formulation in other EAC countries and at the regional level. A policy gap and Strengths, Weaknesses, Opportunities and Threats analysis by sector and by country could provide the basis upon which to harmonise the various legislation.

Additional Policy Formulation Research Questions

- ◆ What are the barriers and opportunities for developing a regional green growth strategy in the EAC?
- ◆ What would be the challenges to implementation of a regional EAC green growth strategy?
- ◆ What are the barriers and opportunities for implementing regional sector-based strategies (e.g., energy, transport, and water)?
- ◆ What lessons learnt from the Kenyan constitutional model to promote public participation in policy-making could be transferable to other countries in the EAC?

Kenya: Enhancing evidence for decision-making for regional infrastructure development

Under Kenya's devolved system of governance, as outlined in the Constitution of Kenya (2010) and relevant legislations, including the County Governments Act, 2012, the country is governed through a national government and county governments. Both government levels are autonomous and county governments are mandated to sub-legislate and formulate policies that not only mirror and/or support the national policies but also consider the local context. The Council of Governors represents the county governments and liaises with the national government to exchange information, co-ordinate policies and administration and enhance capacity. The function of the county government is to implement legislations, strategies, plans and policies at the grassroots level. Unlike in the other EAC member states, Kenya does not have districts and sub-districts that are controlled by the national government. Therefore, the construction of infrastructure within and passing through Kenya must be endorsed by the national and county governments. If a project fails to meet the constitutional threshold of participation and compliance with the national and county legislations, policies and constitutional provisions, then it will be challenged in courts by aggrieved citizens, stakeholders or counties.

The sensitisation of the importance and benefits of the EAC integration is jointly spearheaded by the Members of the EALA and the ministries and departments of East African Affairs integration. In Kenya, county governments play a fundamental role in EAC integration sensitisation among Kenyans. They receive financial allocation annually from the national government and employ human resources that independently serve different ministries and departments at the county level. The Ministry of EAC Affairs established Regional Integration Centres (RICs) at major border points to act as outreach offices or information empowerment centres. The mandate of the RICs is to augment and support the Department of EAC Integration as it endeavours to inform the public, in real time, about all aspects of regional integration.

Kenya participates in the EAC discussions and negotiations through co-ordination by the Ministry of EAC Affairs, Commerce and Tourism whose mandate it is to mobilise the contributions from the sectors, departments and other ministries, as per the EAC calendar. In Kenya, the citizen input is integrated up through national- and EAC-level discussions and negotiations via a system that includes independent institutions that represent the citizens within the counties and the country. At the EAC Council of Ministers and EAC Full Council and Summit, concerns from both citizens and county governments, including the impact of the regional infrastructure on their livelihoods and lifestyle, are integrated. Further, these sessions allow citizens and government to solicit support for regional infrastructure from a wider base of EAC citizens. Therefore, through its constitution, the GOK provides opportunities to inform citizens about the benefits of EAC integration, gain citizens' buy-in and solicit their support for regional infrastructure, and then allocate the appropriate level of funding for regional infrastructure.

6.3.2 Infrastructure Project Preparation and Implementation

Capacity limitations and a lack of regional coordination for the development of infrastructure projects remain challenges in the EAC. Recommendations provided in Section 6.2, specifically the screening and prioritisation tools, will likely require capacity building and training. The green growth supportive conditions developed by the study team could be piloted by the EAC Secretariat to help enhance the design of these tools and collaboration for regional infrastructure projects.

Additional Infrastructure Implementation Research Questions

- ◆ What are global examples of Web-based or other platforms to share information about infrastructure investments across regions?
- ◆ How can the design and preparation of infrastructure projects be enhanced to attract a more diverse set of investors, including investors from the private sector?
- ◆ To what extent can the green growth supportive conditions developed by the study team support the development of regional infrastructure projects in the EAC?

6.3.3 Financing

More research on innovative ways to raise public resources for infrastructure projects is needed, such as ways to raise the gap funding needed to help make PPP arrangements financially solvent. The member states have in place the necessary policy instruments to facilitate the formation of national climate or green growth funds and a regional climate fund or green growth fund. Such funds could be used for capacity building, to support green and climate-resilient projects in emerging research areas or to pilot climate-resilient and green infrastructure projects that could be scaled up regionally.

Additional Financing Research Questions

- ◆ How do the economic and financial rates of return vary between investments with 'green' benefits and 'non-green' investments?
- ◆ How do the participation, financial commitments and levels of risk-taking vary in the private sector for capital expenditures in support of initial development of infrastructure compared to operational expenditures for maintenance and cost recovery of commissioned infrastructure facilities?
- ◆ What are existing examples of regional climate financing funds and to what extent are they applicable to the EAC?
- ◆ What are some examples of innovative mechanisms to foster collaboration among MDBs to support investments in regional infrastructure?

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Annexes

Annex A. Research Methodology Summary

The key questions to be pursued under each objective/component of the study will be informed by the conceptual framework and the analytical framework to be developed during the Inception Phase. However, tentatively, the questions included below will be considered.

Annex A-1. Research Methodology Summary: Objective 1

Research Objectives	Main Research Questions	Proposed Research Methods to Address the Research Questions	Research Steps	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
1. Understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy	1.1 Which regional contexts have similar socio-political settings with the East African Community (EAC)? The study team will seek global examples.	1.1 Literature review/archival research	<ul style="list-style-type: none"> Define 'success' criteria Define scope Comprehensive search Analyse results 	Not applicable
	1.2. Amongst the regions defined in question 1 above, what are the examples of successful regional infrastructure approaches that support green growth? If such approaches are not available, what are the examples of successful regional infrastructure in general? 1.3. How were these successes achieved, i.e. what processes, investments, actors and policy processes were employed? 1.4. As national governments work to mobilise finance (e.g. public investment, private sector capital, blended finance and public-private	1.2. Stakeholder interviews with national and regional bodies in Africa and Middle East	<ul style="list-style-type: none"> Identify stakeholders to interview Develop research questions Conduct interviews 	We estimate conducting at least 10 semi-structured interviews with regional stakeholders from throughout the region to include development finance institutions, private sector investors, policy makers and others.

Research Objectives	Main Research Questions	Proposed Research Methods to Address the Research Questions	Research Steps	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
	<p>partnerships [PPPs]), what can be learned from global experiences that can be applied to the EAC? What are challenges for raising funding and what are the synergies across funding sources, if any?</p> <p>1.5. How can lessons learned by applied across the EAC?</p>			

Addressing Objective 2 will comprise a major part of the research work. It will involve a combination of several data collections and analytical approaches, some of which are overlapping. To take a systematic approach to the analysis, we shall undertake the data collection and analysis in **four key steps**, each with specific methods and questions.

Annex A-2. Research Methodology Summary: Objective 2

Objective	Main Research Questions	Research Steps	Proposed Research Methods to Address the Research Questions	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
2. Scope the opportunities for the role of regional infrastructure to promote the transition to green economic growth in the EAC with respect to energy, transport and water-related	<p>2.1. What are the existing policies and investments aimed at building green economy infrastructure in the EAC?</p> <p>2.2. What are the institutional arrangements, including actors/organisations and their</p>	2.1 Map the EAC Green Economy Landscape	1. Archival research to identify EAC policies, strategies and investments	
			2. Snowball interviews to identify relevant policies, actors and organisations	
			3. Participant and non-participant observations in relevant events and actions	

Objective	Main Research Questions	Research Steps	Proposed Research Methods to Address the Research Questions	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
infrastructure (Component 2 EAC policy analysis)	roles in designing and implementing these policies?		4. Coding and grounded theory analysis of the data	
	2.3. Which narratives (i.e., the key claims about green economic growth) are reported in the policies and which actor networks align to particular narratives?	2.2 Analysis of actors' narratives and interest in the various green economy infrastructure	1. Stakeholder analysis	We estimate conducting snowball interviews with 10 selected regional bodies (e.g., Common Market for Eastern and Southern Africa [COMESA]) and national stakeholders (e.g., government officials, political leaders, academia, non-governmental organisations and civil society actors) to identify existing green economy infrastructure. We will also conduct participant and non-participant observations to identify policies, actors and organisations.
	2.4. Which narratives are more powerful and dominant in the policies and which ones are silenced? How do these relate to the various social groups including governments, local vulnerable groups, women and youth?		2. Semi-structured interviews with key stakeholders (e.g., policy makers, private sector, civil society, local communities, women and youth groups)	
	2.5. To what extent can or does green growth support social equity, particularly for women? What role can women play in the green growth transition?		3. Ethnographic interviews with key informants in the EAC green economy setting	
	2.6. What power relations exist in the construction of the green economy policies, and how does this shape who benefits and who loses?		4. Iterative content analysis of key policy, strategy and/or investment documents	
	2.7. What is the policy coherence between regional strategies and national strategies (vertical) and across the sectors (horizontal)?	2.3 Analysis of the interplay between green economy infrastructures and associated benefits	1. Policy content analysis	We will conduct 10–15 semi-structured interviews with key stakeholders (i.e., policy makers, private sector, civil society, local communities, women and youth groups) to unpack roles and
			2. In-depth, semi-structured interviews	
			3. Expert interview/panel interviews	

Objective	Main Research Questions	Research Steps	Proposed Research Methods to Address the Research Questions	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
	<p>2.8. What is the implication of coherence/non-coherence on the EAC's sustainable development agenda?</p> <p>2.9. What is the typology and quantity of green investments and benefits available in urban areas, rural areas and multi-national regions?</p> <p>2.10. What opportunities exist to create a more coherent, inclusive, equitable, effective and sustainable green economy infrastructure across sectors and regionally?</p> <p>2.11. What opportunities exist for sectoral linkages across the EAC?</p> <p>2.12. What opportunities exist in regionally integrated infrastructure?</p> <p>2.13. What is the value of regionally integrated green economic strategies vis-à-vis nationally designed strategies?</p> <p>2.14. What capacity/skills are needed to support regionally integrated green economic strategies?</p>		<p>4. Participant and non-participant observations of key EAC green economy events and actions</p> <p>5. Additional literature review, as needed</p>	<p>interests of actors, their networks and associated narratives the different actor networks align with.</p> <p>We will conduct 10–15 ethnographic interviews and document reviews to identify the following: (1) which narratives and actor networks are more influential in policy implementation at the regional and national scales and (2) the interests of these networks.</p> <p>Additional ethnographic interviews (key informants) will be conducted to identify suppressed narratives and associated actor networks, such as those whose opinions are muted by the dominant (powerful networks) and do not have a voice in policy decision-making.</p>
	2.15. What are the existing investment and funding sources for the EAC green economy strategies?	2.4 Analyse the green economy implementation process, challenges and key opportunities	<p>1. Empirical case study analysis</p> <p>2. Ethnographic and participatory approaches (e.g. transect walks, focus group discussions [FGDs],</p>	We estimate 10 expert interviews and 5 in-depth, semi-structured interviews with key stakeholders, complemented by participant and non-participant observations of

Objective	Main Research Questions	Research Steps	Proposed Research Methods to Address the Research Questions	Research Participants for Each Method (includes estimate of numbers and characteristics of participants for each proposed method)
	2.16. How well prepared are governments in the region to apply for and attract funding? 2.17. What are the barriers and opportunities to scale-up existing investments in regional infrastructure at regional and national levels?		informal chats, key informants and observations)	key EAC green economy events and actions. To better understand the financing and investment landscape, we will engage development finance institutions, such as the Infrastructure Consortium for Africa, the African Development Bank, World Bank and International Finance
	2.18. What are the benefits of the policies to different social groups and how do the wider policy politics shape the benefits from different actors, (i.e., the private sector, governments and local vulnerable communities)?			Corporations and private sector investors

Annex A-3. Research Methodology Summary: Objective 3

Objective	Main Research Questions	Proposed Research Methods to Address the Research Questions	Research Steps	Research Participants for Each Method (include estimate of numbers and characteristics of participants for each proposed method)
3. Make recommendations on effective policy and implementation approaches for regional infrastructure to support more sustainable growth	3.1 What best actor networks, approaches, policy processes, investments and strategies should be applied in building an integrated, effective, equitable and sustainable regional infrastructure to achieve a	3.1 Synthesis of findings under Objectives 1 and 2	Not applicable	Regional bodies and specific EAC countries, such as government staff, non-governmental organisations, civil society and private-sector actors. To better understand the financing and investment landscape, we will engage development finance
		3.2 Expert consultations		

Objective	Main Research Questions	Proposed Research Methods to Address the Research Questions	Research Steps	Research Participants for Each Method (include estimate of numbers and characteristics of participants for each proposed method)
patterns, reduce poverty and enhance climate resilience, within the political context of the EAC	smooth transition to a green economy in the EAC?	3.3 Policy discussions and engagement events		institutions, such as the Infrastructure Consortium for Africa, African Development Bank, World Bank and International Finance Corporation, as well as private sector investors

Annex B. Case Studies

Global Case Studies

Table B-1. Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Programme

Project Summary	
Project Name	Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Program
Location (countries, watersheds, etc.)	China, Kazakhstan, Kyrgyz Republic and Russia
Duration	2011–2014
Funder and funding amount (currency)	<p>Total project cost: US dollars (USD) 1.48 billion Total project debt: USD 1.26 billion</p> <ul style="list-style-type: none"> Asian Development Bank (ADB) loan: USD 700 million Islamic Development Bank loan: USD 414 million Japan International Cooperation Agency (JICA) loan: USD 150 million Government of Kazakhstan general budget: USD 216 million
Sector (energy, transport, water)	Transport
Major Objectives/Goals	<p>Contribute to sustainable economic growth by spurring transit traffic, promoting trade and strengthening regional cooperation</p> <ul style="list-style-type: none"> Component 1: Road construction from Taraz to Korday (480 km) Component 2: Road operations and maintenance Component 3: Recurrent maintenance costs
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>The project was not conceptualised to support green growth in the region but to support international trade and economic growth more generally. In particular, reducing the transport costs for freight transiting through the corridor from 10% to 5% of cargo value.</p> <p>However, the project did have some green growth benefits in the form of emissions reductions, on a per vehicle basis, as travel time on the corridor between Taraz and Korday was reduced from 10 hours to 6 hours, and the number of hours of engine usage decreased because of road enhancements. Nonetheless, these benefits have not been quantified and were not mentioned in any of the strategic planning or lending documents as justification for the project.</p> <p>Separately, the overall impact of the project led to a net increase in energy consumption and emissions as it created an inducted growth in traffic volume: from 4,000 to 7,000 vehicles per day transiting through the corridor. The emissions from this additional vehicular traffic is likely to exceed the per vehicle emissions reduction benefits found by increased travel speeds and reducing travel time through the corridor.</p>
Regional Importance of the CAREC Transport Corridor 1	

Project Summary

Project Name

Central Asia Regional Economic Cooperation (CAREC)
Transport Corridor 1 Investment Program

Kazakhstan is situated in Central Asia, deep in the Eurasian continent. Its territory measures 2,724,900 square kilometres (sq km) or 1,049,150 square miles. Based on its size, it is the second largest among the Commonwealth of Independent States countries and the ninth largest country in the world.

The transportation system plays a vital role in Kazakhstan's economy in view of its vast territory, landlocked position, uneven spatial distribution of population clusters and natural resources. The transportation component of the economy is also one of the largest in the world. Currently, the transportation infrastructure does not meet the country's needs and its climatic extremes put considerable stress on the transportation structure and make the situation worse. Because of its geographical location between Europe and Asia, the Central Asian Republics have great transit potential, especially as there are no alternative routes for Asian countries to link with Russia or Europe. However, critical repairs and expansion have been neglected or delayed.

According to the International Monetary Fund, cargo transit between the European Union (EU) and Asia is worth more than USD 600 billion annually and Kazakhstan can attract a significant part of it. Kazakhstan is geographically located to provide a bridge between Europe and Asia, South Asia and the Russian Federation.

However, the transportation system

has an obsolete infrastructure and technology and its fixed assets are in poor condition. Most national roads are considered to be of Class III quality, having no more than two lanes with bituminous treatment. Therefore, upgrading the road network is essential to encourage the use of Kazakhstan as an international transit-shipment corridor.

CAREC Transport Corridor 1



Map Source: <http://slideplayer.com/slide/710085/>

Stakeholder Influence on Regional Infrastructure Projects

The primary stakeholders financing road transport in the region are the national governments and multilateral development banks. The national governments typically borrow from the development banks and other donors to fund most of the construction costs and repay the interest and principal payments using taxpayer and non-tax contributions generated from the general national budget. Usually, only 10%–20% of the total constructions costs are funded directly from the general national budget. In contrast, most road maintenance costs are funded directly from the general national budget.

Government regulators of the roads sector includes the Kazakhstan Ministry of Transport and Communications and the Transportation Committee of the Ministry for Investment and Development. Government regulators of the trade sector include the Ministry of National Economy and the Customs Control Committee of the Ministry of Finance.

Major business advocates include the international freight companies who are involved in the transnational shipping and transit between Europe and China; they are the primary users of the road corridor.

There are limited local civic stakeholders as very little traffic is generated by domestic travellers. Therefore, the main civic stakeholders are the villages located in the corridor or civil society organisations who are concerned about environmental protection.

Project Summary			
Project Name		Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Program	
Financial institutions are very comfortable lending to the Government of Kazakhstan as this country has one of the lowest debt-to-gross domestic product (GDP) ratios in the world (i.e. 21%), which is aided by its low population size and high energy exports.			
Major Stakeholders			
Stakeholder	Role	How were they impacted by this project?	Additional comments
Ministry of Transport and Communications	Loan executing agency Oversees implementation and performance of the project. Liaises with ADB. Established a team to manage the project	Not applicable	
Transportation Committee of the Ministry for Investment and Development	Loan implementing agency. Manages and implements the project; resolves issues that would compromise results, quality, costs or completion time of the project and ensures compliance, legal conformity and sound financial management	Not applicable	
Ministry of National Economy	Organises national strategies for economic growth and international trade	Not applicable	
Customs Control Committee of the Ministry of Finance	Responsible for collection of fees related to international trade	Increased tariff revenues	
International freight companies	Primary users of the roads	Reduced travel times	
Environmental non-governmental organisations (NGOs)	Minimal influence on this project	No significant impacts identified	
Local residents (357,000 total)	Minimal influence on this project	No significant impacts identified	
Re-settled households (99 total)	Minimal influence on this project	These households had to be re-settled and were compensated based on Government of Kazakhstan and ADB regulations.	
Situational Analysis of Regional and National Policies, Regulations and Institutions			
<p>CAREC is a regional institution that was established in 1997 with support from ADB to encourage economic co-operation among countries in the Central Asian region, specifically, ADB member states Afghanistan, Azerbaijan, People's Republic of China, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Turkmenistan, Tajikistan and Uzbekistan.</p> <p>CAREC is focused, to date, on financing infrastructure projects and improving the region's policy environment in the priority areas of transport (especially road transport), energy (including the water-energy nexus), trade policy and trade facilitation (especially customs co-operation). As of 2016, 176 CAREC-related projects worth approximately USD 29.4 billion have been implemented.</p>			

Project Summary

Project Name

Central Asia Regional Economic Cooperation (CAREC)
Transport Corridor 1 Investment Program

CAREC has prepared a series of regional development plans, which significantly influenced the contents of the national development plans and policies of Kazakhstan, the location of this investment and the ADB-Kazakhstan country partnership and lending strategy of ADB.

The regulations of the transport sector had minimal impact on the design of this investment project. However, efforts are being undertaken to reduce burdensome customs procedures and unfavourable customs levies and laws to maximise the attractiveness of the transit corridor to international freight companies.

The transport sector institutions have long-standing operational and management bottlenecks, including (1) poor maintenance of the road network; (2) frequent truck overloading, which cuts into the economic life of road assets; (3) revenues from transit are low, affecting cost recovery and reinvestment capabilities; (4) inefficient cross-border procedures that increase the burden on trade and traders and raise the cost of doing business; (5) weak road sector planning, which affects sound investment sequencing and (6) project development and project management shortcomings that create inefficiencies, high costs and bad governance. These gaps translate into higher-than-average transport costs, hamper regional co-operation and integration opportunities and, ultimately, hurt the country's competitiveness. In recognition of these challenges, the government has identified the transport deficiencies and is planning to increase the budget for the road sector. In 2008, road funding represented 1% of the GDP with projections aiming to increase it to 2%. Developed countries without road funds spend, on average, approximately 1% of GDP on their roads. As expected, countries with road funds spend more – an average of roughly 1.6% of GDP, of which approximately 0.3% is spent on road maintenance. The current road maintenance budget of about 0.1% of GDP is clearly inadequate.

In terms of green growth policies, whilst this project was not designed as part of a comprehensive strategy, there is widespread recognition by the government of the role and impact of transport on green growth outcomes. In particular, the government prepared a Green Growth Strategy in 2013 that prioritised energy efficiency through energy-saving transportation technologies. However, it does not mandate any higher energy efficiency standards for vehicles than what was already committed by international treaties and standards.

Brief descriptions of the relevant regional and national policies and regulations are provided below.

- **Strategy for Kazakhstan 2030 (1997) and Strategy for Kazakhstan 2050 (2012).** Outlined a national development plan, including priorities for (1) reviving the New Silk Road (another title for the CAREC Program) between Western China and Western Europe; (2) developing railway networks to the Gulf, Middle East and Western China; and (3) enhancing logistics and customs facilities. Together, these initiatives are intended to support a 10-fold increase in transnational freight and cargo transit.
- **Kazakhstan Transport Strategy 2006–2014 (2006).** Outlined transport sector policies and key strategic directions. The main policy objective is to achieve (1) an accessible and affordable transport system, (2) a safe and environmentally friendly transport system, (3) an integrated transport system, (4) self-recovery investment and operation and (5) private sector-driven transport service provision.
- **Transport Corridor Europe Caucasus Asia Multi-Lateral Agreement on International Transport for Development of the Europe-Caucasus-Asia Corridor (2007).** Regional co-operation agreements between five Central Asian republics, three Caucasian republics and the EU.
- **CAREC Transport and Trade Facilitation Partnership for Prosperity (2009) and CAREC 2020: A Strategic Framework for the Central Asia Regional Economic Cooperation Program 2011–2020 (2012).** Strategic development plans developed by 10 Central Asia countries in collaboration with ADB. Gives high priority to the improvement of the Western Europe-Western People's Republic of China (PRC) International Transit Corridor running from Khorgos at the border with the PRC, through Almaty and Shymkent, to the western border with the Russian Federation.
- **Government of Kazakhstan Green Growth Strategy (2013).** Established a concept for the transition to a green economy, focusing on resource productivity (water, land and biodiversity); reducing the environmental footprint and increased national security, such as water supply. In terms of transport, the concept prioritises energy efficiency through energy-saving transportation technologies.
- **ADB and World Bank Country Assistance/Partnership Strategies for Central Asian Republics (2012).** A strategic investment plan that outlines the multi-year lending strategy, including prioritisation of CAREC Corridor 1. Does not reference green growth and only prioritises energy efficiency for the power generation and electricity consumption sector.

Project Summary

Project Name	Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Program
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Supportive Conditions and Impacts to the Economy Growth Pathway

The supportive conditions for this project were the establishment of regional institutions, such as CAREC, that were able to develop a sound investment strategy for the 10-country region and co-ordinate with international financial sources who could provide the debt mechanisms to support projects of this size. The regional institutions were also key to the preparation of quality due diligence documentation, which is critical to meet the requirements of the lending international financial institutions. They also supported co-ordination with national governments to organise implementation and risk mitigation mechanisms, as required by the international financing institutions.

Substantial implementation risks were identified and included concerns about a lack of direct cost recovery mechanisms or operational revenues generated by capital investment, which limited the internal project financial rate of return and attractiveness for private sector investments. The project does not utilise tolling strategies, which is the typical source of operation revenue for transport projects. Therefore, financial cost recovery is based on external economic and financial rates of return, such as tax and non-tax collection from increased economic activity generated by the project, such as petrol consumption and customs fees from increased trade between Europe and East Asia and amongst regional countries. The economic rate of return of the project (calculated to be 18%) is primarily based on reductions in vehicle operating costs and travel time savings.

Other substantial risks identified from this project include the following:

- Rising construction costs
- Poor quality of construction reduces vehicle operating costs benefits
- Poor asset maintenance shortens lifespan of the investment
- No reduction in border crossing processing times reduces induced trade benefits

Being able to obtain financing from a variety of sources was also a supportive factor for this project, particularly given the size of the investment. Typically, lenders are concerned about committing more than 50% of the investment risks of the project. Therefore, financing was obtained from a combination of international banks. ADB was the senior debt lender, whilst the Islamic Development Bank and JICA were junior lenders. The funding breakdown is provided in the table below.

Debt Provider	Type	Local/International	Amount (USD \$ million)
ADB	Multilateral	International	700
Islamic Development Bank	Multilateral	International	414
JICA	Bilateral	International	150

The economic impact or indicator for the project was GDP growth of 68% from the 2010 baseline, including increased GDPs for Kazakhstan's economic partners. Specifically, GDPs for Central Asian countries were to increase by 43%, 4% for the Russian Federation, 6% for the PRC and 4% for the EU. Another impact indicator was increased values of external trade, as reflected in the expansion of exports (32%) and imports (33%). Exports to other Central Asian countries were expected to increase by 50%, to the Russian Federation by 25%, the PRC by 36% and the EU by 28%. Conversely, imports from other Central Asian countries were to increase by 48%, from the Russian Federation by 27%, the PRC by 37% and the EU by 30%. The last performance target was increased outputs of the transport sector by 79% and the distribution sector by 77%. All impact indicators are expected to be achieved by 2020.

Project Summary	
Project Name	Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Investment Program
Discussion and Relevancy to the East African Context	
<p>The approaches to advancing green growth at the transnational level that were most effective in the transport sector were</p> <ul style="list-style-type: none"> • Multinational regional institutions that helped identify a common approach to development • Leadership from financing sources, such as the development banks, who promoted the creation of regional institutions and the preparation for regional strategies as part of their lending and business development cycle 	

CAREC Transport Corridor 1 Investment Programme

Financing

☒ Diversity of financing options
☒ Investor leadership

National conditions

☒ National government leadership
☐ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
☐ Improved enforcement of the national-level policies and regulations

Outreach and capacity building

☒ Inclusive stakeholder engagement to build project support
☐ Institutional capacity building and development of knowledge products

Proof-of-concept

☐ Existing project(s) of similar scope
☐ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

☐ Regional strategy for green growth
☒ Mechanisms to foster collaboration among countries

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Table B-2. Chaglla Hydropower Plant (Peru)

Project Summary: Chaglla Hydropower Plant	
Project Name	Chaglla Hydropower Plant
Location (countries, watersheds, etc.)	Peru, specifically the districts of Chinchao, Chaglla and Umari Huallaga River (tributary of the Marañon River, part of the Amazon basin)
Duration	May 2011 to September 2016
Funder and funding amount (currency)	Inter-American Development Bank (IDB) <ul style="list-style-type: none"> ◆ Total project cost: USD 1,170.81 million ◆ IDB loan: USD 146.28 million ◆ Commercial bank loans: USD 750.95 million ◆ Borrower: Empresade Generacion Huallaga SA (a subsidiary of Odebrecht Energia SA, which is a Brazilian conglomerate)
Sector (energy, transport, water)	Water, energy
Major objectives/goals	<ul style="list-style-type: none"> ◆ Build a large (406 megawatt [MW]), greenfield run-of-the-river hydropower plant on the Huallaga River in the Huanuco region of Peru ◆ Transmit electricity to the Peruvian national grid
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>The Peruvian Green Growth Strategy was released in 2014, three years after this project began. This project was conceptualised to promote green growth in the region, but it does not appear, based on the literature reviewed, that this project was conceptualised in response to a green growth strategy for Peru or Brazil. The Nature Conservancy noted that significant potential exists for projects of all sizes in the upper Amazon basin, including the Huallaga (Hartmann, Harrison, Opperman, & Gill 2013). The green components of this project include</p> <ul style="list-style-type: none"> ◆ increased access to social services, new services and markets and jobs due to improved or new roads; ◆ a renewable source of energy and an approximate reduction of 467,000 carbon dioxide (CO₂) equivalents/year in greenhouse gas (GHG) emissions (from offsetting non-renewable energy sources) and ◆ construction of a greenhouse that hosts a collection of ~9,000 orchids, plus upstream and downstream monitoring of the biodiversity. <p>The International Hydropower Association recently assessed the Chaglla project using the Hydropower Sustainability Assessment Protocol – a reference framework that enables the development of a full sustainability profile of a hydropower project. The Chaglla and 33 other case studies are documented in the book, <i>Better hydro: Compendium of case studies 2017</i>.[*] The assessment findings note that the Chaglla project was ‘an example of thorough environmental and social risk assessment. A highly-engaged stakeholder process resulted in assessments on fish and ecology, water quality modelling, downstream flow modelling, a resettlement action plan and analysis of the project’s carbon footprint. Additional outcomes included the establishment of a new social services and agricultural services extension centre, 800 local people trained to work on the project, a recycling centre set up, the discovery of several new species and the establishment of an important bird area in the region, which will help protect the biodiverse forest’ (Siegel, 2017).</p> <p>[*] This book was not purchased to review the Chaglla case study in-depth.</p>

Project Summary: Chaglla Hydropower Plant

Project Name

Chaglla Hydropower Plant

Regional Importance of the Huallaga River in Peru

Peru is among the top 10 countries with the most freshwater available per capita, but it is among the top 30 countries suffering from water stress and scarcity due to poor management and underutilisation of available water resources (World Bank, 2015). Many of the Amazon River's most important tributaries originate in the Peruvian Andes, including the Huallaga (highlighted in pink in Figure 1). The Huallaga River and its tributaries form a hydrographical system that drains the region's territory. The Huallaga River basin has a catchment area of 7,150 km². Upstream from the dam, there are more than 500 lakes, mostly small and of glacial origin, and 15 snow-covered peaks (IDB, 2011a). The Huallaga, Marañón and Amazon waterways, as well as the Paita-Yurimaguas road are the transportation backbones of this micro-region connecting Peru to Brazil and the world.

In general, the terrain is challenging, with a large canyon formed by the Huallaga River, mountains, large expanses of forest and heavy rainfall. The infrastructure (e.g. transportation, energy and drinking water) is poor.

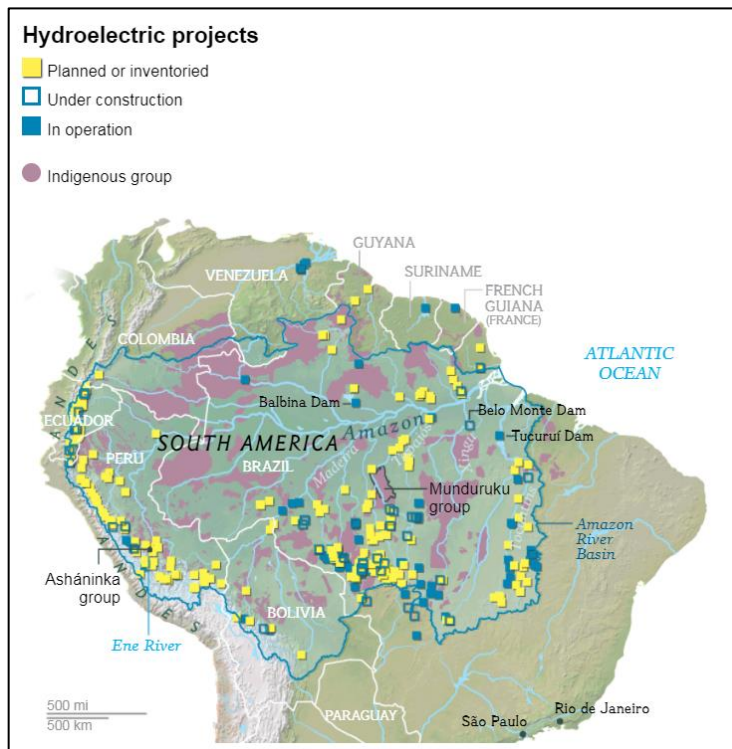
The principal resources in San Martín, where the Huallaga River lies, include coffee, rice, yucca, coca, cocoa, tobacco and cebu cattle. Inhabitants near the Huallaga River engage in cattle and agriculture, relying on the River's water for agricultural irrigation. The upper Huallaga River valley is a major coca growing region. In 2011, the US Central Intelligence Agency (CIA) noted signs of land clearing in this area, which indicates that Peru's drug traffickers are expanding their operations beyond primary coca production to include cocaine processing and distribution outside Peru (CIA, 1985). The region's dependence on coca production is predicted to remain due to the economic underdevelopment (CIA, 1985).

The Hidroeléctrica de Chaglla project is the country's second largest hydropower facility, representing about 13% of the country's installed hydropower capacity. Although the infrastructure for the Chaglla Hydropower Plant is limited to Peru, the project itself had regional implications. The Huallaga River is part of the Amazon basin headwaters. The Chaglla Plant opens a remote region of Peru to roads, increased trade and other services. This new infrastructure is likely to pave the way for more infrastructure around the plant and in western Brazil, contributing to further deforestation and fragmenting of the Amazon. As major infrastructure projects, such as the interoceanic highways linking Brazil and Peru, open the

Figure 1. Map of the Amazon River drainage basin, with the Huallaga River highlighted in pink. (Source: Wikipedia, 2017)



Figure 2. Inventory of hydroelectric projects in the Amazon basin. (Source: Fraser, 2015; originally created by International Rivers; Fundación Proteger; Ecoa; Red Amazónica de Información Socioambiental Georreferenciada)



Project Summary: Chaglla Hydropower Plant

Project Name	Chaglla Hydropower Plant
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Amazon up to development, it is likely that smaller projects, such as the Chaglla Hydropower Plant, will be proposed to support small communities along the highway, further contributing to deforestation.

Additionally, a dam was built for the Chaglla Plant, and it is one of many existing or proposed dams in the Andean-Amazon headwaters (50 already exist, and approximately 150 are planned over the next two decades) as shown in **Figure 2** (Fraser, 2015). Many of the proposed dams will export energy to Brazil, which is the largest consumer of hydroelectricity in the region and a large proponent of dams in the Amazon. In the mountains, dams have smaller footprints because large reservoirs are not needed due to the gradient compared to dams in the Amazonian lowlands of Brazil where large reservoirs are needed. However, the dams in the headwaters (e.g. Peru) increase sedimentation at the dams, which reduces natural sediment and nutrient flows to the floodplains downstream.

Regional governments are prioritising hydroelectric dams as the centrepiece of their long-term energy plans, but the current level of planning lacks adequate regional- and basin-scale assessments of potential ecological impacts. The Chaglla Plant is one recent example where regional- and basin-scale assessments were performed. The project also received good press with respect to the family resettlement and environmental impact mitigation (e.g. the biodiversity survey, construction of a greenhouse for orchids and other flora, consideration of GHG emissions/reductions and submission of the project to the Clean Development Mechanism [CDM]). This project was selected as a case study because components of it can inform best practices for sustainable hydropower, and because the financing mechanisms may be applicable to the East African Community (EAC).

Stakeholder Influence on Regional Infrastructure Projects

The primary stakeholders investing in hydropower in the region include the Peruvian Government, businesses and banks. Government regulators include the *Ministerio de Energía y Minas* (Ministry of Energy and Mines; MINEM) and the *Ministerio del Ambiente* (Ministry of Environment; MINAM). Business advocates include the Peruvian Renewable Energy Association; Peruvian Solar Energy Association; the National Society of Mining, Petroleum and Energy and the Association of Intensive Energy Users. Government financiers include *Corporación Financiera de Desarrollo S.A.* (COFIDE), a second-tier government bank, and the National Fund for the Environment. Other financiers include the International Finance Corporation (IFC), BBVA Bank, Scotiabank, *Banco Interamericano de Finanzas* and *Banco Nacional de Desenvolvimento Econômico e Social* (BNDES).

In general, financial institutions are resistant to assessing renewable energy projects because of a lack of experience in the area and tend to have inadequate technical knowledge of the environmental benefits of hydropower projects. There is a need for tools to assist financial institutions in making technical and environmental assessments. Private financing could be applicable to the EAC with supporting tools and technical information.

Major Stakeholders

Stakeholder	Role	How were they impacted by this project?	Additional comments
MINEM	Main project advocator; approved the Environmental Impact Assessment (EIA) for the project	Increase energy capacity	In charge of energy policy and planning for Peru
MINAM	Minimal role on project design; responsible for compliance with EIA	Not applicable	
National Institute for Natural Resources	Provides authorisation to carry out studies. Authorisation is necessary to obtain water use licensing for power generation	Not applicable	
The Nature Conservancy	Minimal influence on this project	No impacts identified	Funding source for water-related projects in the Latin America and Caribbean (LAC) region (but did

Project Summary: Chaglla Hydropower Plant			
Project Name		Chaglla Hydropower Plant	
			not provide funds for this project). Promotes a system-scale approach to hydropower development
Maranon Water Keeper	Minimal influence on this project	No impacts identified	Monitors projects that impact the Maranon River (the Hualla River is a tributary to the Maranon, which is a tributary to the Amazon River)
Local villagers (6,000+)	Impacted community; involved in stakeholder engagement process	33 families were resettled during the project with no legal cases; minimal complaints received	
The University of Tingo Maria	Consulted with during the EIA and community relations planning process	No impacts identified	
The Cooperativa Naranjillo	Consulted with during the EIA and community relations planning process	No impacts identified	
Tinga Maria National Park	Consulted with during the EIA and community relations planning process	Potential environmental and ecological impacts	This is the closest protected area to the project (approximately 20 km away)
The Coordinator of the Indigenous Organization of the Amazonian Basin (COICA)	No information was obtained as to whether COICA was involved in stakeholder engagement.	Potential impacts to the indigenous peoples	COICA is a macro-regional organisation that brings together the indigenous organisations of Brazil, Venezuela, Guyana, Suriname, French Guiana, Peru, Bolivia, Ecuador and Colombia. COICA conducts consultative and lobbying activities with its member organisations on the organisational aspects of economic development, indigenous peoples' lands, the environment, natural resources, biodiversity and the human rights of the indigenous peoples.
Science for Nature and People Partnership (SNAPP) Working Group on Amazon Waters	No information was obtained as to whether SNAPP was involved in stakeholder engagement.	Unknown. We assume this project will be included in data analysis to develop scenarios for integrated water resources management (IWRM) in the region.	SNAPP is a partnership between The Nature Conservancy, Wildlife Conservation Society and the National Center for Ecological Analysis and Synthesis. SNAPP delivers evidence-based, scalable solutions to global challenges at the intersection of nature conservation, sustainable development and human well-being.
Situational Analysis of Regional and National Policies, Regulations and Institutions			

Project Summary: Chaglla Hydropower Plant

Project Name	Chaglla Hydropower Plant
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The Electricity Concession Law DL 25844 of 1992, complemented by Law 28832 of 2006 and their main regulations, is the basic legal framework for all activities in the Peruvian electricity sector. Additional regulations are applicable for hydropower, including those concerning water resources management and protection of the indigenous peoples and their heritage. The Electricity Law applies to systems with demand/capacity of 500 kilowatts (kW) or more; smaller projects are subject to different sector regulations and requirements from regional or local authorities (e.g. permits and authorisations), which are usually not standardised (World Bank, 2010). Many agencies must review and approve hydro projects, including the National Institute of Natural Resources under the Ministry of Agriculture and the National Institute of Culture under the Ministry of Education. A review of the regulatory environment for hydropower in 2010 mentioned that some 15 separate approvals were needed for hydropower projects.

In 2010, the World Bank published an analysis on options to facilitate hydropower development, which identified the following barriers:

- ◆ lack of a comprehensive energy strategy and long-term planning for hydropower;
- ◆ low costs of competing natural gas development;
- ◆ lack of hydrological monitoring capacity to produce basic hydrological data;
- ◆ high capital costs and limited access to long-term financing and
- ◆ licensing procedures, which are excessively complex, unstable and have gaps in legislation.

The World Bank study also addressed weaknesses in the consultation and EIA processes, noting, 'Given the fragility of the ecosystems in the Amazon basins and the vulnerability of social groups that can be affected, it is imperative to ensure the legitimacy and openness of consultation processes for these projects' (World Bank, 2010, p. 117). The Nature Conservancy's 2013 report notes that a more strategic approach to planning is needed to ensure that sector plans are compatible with each other.

Brief descriptions of the relevant national policies and regulations are provided below.

- ◆ **Ley de Concesiones Eléctricas (Electric Concessions Law) (Law 25844), 1993.** Provides the legal framework for the electric sector in Peru. Established a system of authorisations and temporary and definitive concessions. Concessions are needed to use public property (water and potentially land) or the need to expropriate privately owned land for an extended period. Two types of concessions are required for hydropower projects: temporary and definitive.
- ◆ **Rules for Environmental Protection in Electricity Activities (Supreme Decree 029-94-EM) 1994 and Maximum Emission Limits for Electricity Activities (Directorial Resolution 008-97-EM) 1997.** Both require environmental studies for hydropower plants: either an environmental impact study or an environmental impact declaration, depending on the plant's capacity.
- ◆ **The Environmental Impact Assessment System Law 27446, 2001.** Establishes three categories that govern environmental assessment requirements. This project is categorised as Category III, those projects whose characteristics, scope and/or relocation are likely to produce negative environmental impacts, quantitatively and qualitatively, significantly requiring a deep analysis to mitigate the impacts and propose a management strategy.
- ◆ **Fondo de Electrificación Rural y Urbano Marginal (Rural Electrification Fund), 2002.** This fund involves rotating funds for rural electrification, based on a surcharge applied to electrical energy company's profits and, eventually, contributions from co-operation agencies, which finance projects using renewable energy.
- ◆ **Law for the Promotion of Energy Efficiency (Law No. 27345), 2007.** Declared support for the efficient use of energy to be in the national interest.
- ◆ **Law to Promote Investment in Electricity Generation with Renewable Resources (LRER), (Legislative Decree 1002, Supreme Decree 050-2008-EM) 2008.** Promotes renewable energy as a national priority (i.e. biomass, wind, geothermal, solar, tidal and hydropower). Set a non-binding target of up to 5% renewables during 2008–2013; new target is 60% of national energy consumption by 2025.
- ◆ **Executive Decrees 1081 and 1083, 2008.** Creates the National System of Water Resources, an integrated and multisector organ that includes the new National Water Authority (NWA) within MINAM; creates basin councils.
- ◆ **Ley de Recursos Hídricos (Water Law), 2009.** Replaces the old water law. Declares water a public good, maintains non-transferable water rights and the possibility of revoking water rights if tariffs are not paid. Establishes the NWA, better defines tariffs and gives users wider participation in the Autoridad Nacional del

Project Summary: Chaglla Hydropower Plant

Project Name	Chaglla Hydropower Plant
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Agua through river basin councils and water users associations. Other water laws exist that have tried to simplify and clarify procedures for hydropower (e.g. footnote on page 73 of World Bank, 2010).

- ♦ **Regulations for the Generation of Electricity from Renewable Energies (012-2011-EM), 2011.** Regulates the provisions of the LRER and establishes the administrative procedure for renewable energy resource tenders and for the award of concessions for LRER electricity generation.
- ♦ **National Green Growth Strategy, 2014.** Promotes environmental sustainability.
- ♦ **National Energy Plan 2014–2025, 2014.** States that 60% of the energy matrix must come from renewable resources, including traditional hydropower.

Select regional policies and agreements are described below. None of these regional policies or agreements were mentioned in the documents reviewed in the preparation of this case study. Therefore, they are assumed to have an indirect influence on the approval of the Chaglla Hydropower Plant.

- ♦ **Amazon Cooperation Treaty, Adopted in Brazil on 3 July 1978.** The treaty is primarily designed to foster the sustainable development of the Amazon River.
- ♦ **Amendment Protocol to the Amazon Cooperation Treaty, Adopted on 14 December 1998.** Created the Amazon Cooperation Treaty Organization (ACTO). ACTO member states include Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela. The member states agreed to undertake joint actions and efforts to promote the harmonious development of their respective Amazonian territories in such a way that these actions product equitable and mutually beneficial results and preserve the environment and conserve and rationally use the natural resources of those territories.
- ♦ **Memorandum of Understanding (MOU) ACTO and the Andean Community, 29 September 2004.**
- ♦ **MOU between ACTO and COICA, 25 October 2004.**
- ♦ **Agreement initiated in July 2005 between ACTO and the IDB to strengthen the joint regional capacity for the sustainable use of Amazonian biodiversity (LEGIII/RG-563338-05).**
- ♦ **Andean Committee of Environmental Authorities.** Establishes that member state (Peru, Colombia, Ecuador and Bolivia) will develop joint actions to allow for further exploitation of their natural resources, both renewable and non-renewable, and for the preservation and improvement of the environment. This committee was created by the Andean Community of Nations, which is an intergovernmental organisation created by Bolivia, Peru, Venezuela, Colombia and Ecuador.

Supportive Conditions and Impacts to the Economy Growth Pathway

The Chaglla plant contributes to Peru's green growth strategy and helps meet the renewables target as outlined in the National Energy Plan 2014–2025, which states that 60% of the energy matrix must come from renewable resources. Chaglla contributes to the sustainable development at local and regional levels in the following ways:

- ♦ generates clean energy and strengthens the renewable energy sector in response to growing energy demand,
- ♦ displaces electricity generation (and emissions) from thermal power plants,
- ♦ creates employment opportunities in a rural area (from construction to operation),
- ♦ garners stakeholder support during formal consultation processes (33 families were relocated) and
- ♦ promotes biodiversity conservation (orchid greenhouse housing ~9000 orchids and an inventory of biodiversity in the region).

Although no challenges related to the construction of this project were identified in the literature reviewed, in general, there are several barriers to investment in hydropower in Peru, including tariff structure, number of project approvals required and transmission infrastructure. An adequate tariff structure is important for the success of a renewable energy programme, but the low tariff for natural gas creates a barrier to investment in hydropower in general, especially for smaller hydropower projects. A special approach for tariffs on renewables is now included in the 2008 Renewable Energy Decree to mitigate this barrier. As noted in the Situational Analysis, as many as 15 separate approvals are required for a hydropower project, which can lead to project delays and adherence to guidelines that are more applicable to the oil and gas sector versus renewable energy projects. The third barrier is the lack of concomitant transmission infrastructure to nationally distribute electricity generated from renewable energy in the Amazon and Andes regions.

Project Summary: Chaglla Hydropower Plant

Project Name Chaglla Hydropower Plant

Being able to obtain financing from a variety of sources was also a supportive factor for this project. Financing was obtained from a combination of a donor agency, private sector loans from international banks and a loan from a government bank. The funding breakdown is provided in the table below.

Debt Provider	Type	Local/International	Amount (million USD)
BNDES	Bilateral	International	340
IDB	Multilateral	International	150
Other commercial bank	Commercial	International	184
Other state-owned bank, COFIDE	Public	Local	100

The public participation and community intervention processes employed by the project proponent was also a supportive factor. Relocating indigenous farming families increases the risks of successful implementation and community buy-in for all hydropower projects in the region. In total, 33 families were resettled with minimal complaints received. The resettlement tactics employed provides important lessons learnt to future hydropower projects in the region.

Project Summary: Chaglla Hydropower Plant

Project Name | Chaglla Hydropower Plant

Discussion and Relevancy to the East African Context

The approaches to advancing green growth at the transnational level that were most effective at achieving co-ordination and ambition across the key players included:

- ◆ Regulations and strategies that promote investment in renewables,
- ◆ Water availability and
- ◆ Financing from the private sector (private banks) with supporting technical information and examples of successful hydropower cases across the LAC region.

No risks aside from running over budget were identified.

It appears that the EIA review process and IDB requirement for an Environmental and Social Strategy were important factors for success because they required the project proponent to consider many risk factors. The Environmental and Social Strategy document (IDB, 2011a) noted that additional studies were conducted after EIA approval in 2009 to refine the engineering design and hydrologic analysis associated with the proposed project. A specialised hydropower consulting company, Danish Hydraulic Institute, reviewed the design and suggested that the dam be moved 28 km downstream to optimise project design, reduce hydrologic risks and shorten the length of river that would be affected by the diversion of water. The new location also has a higher rainfall pattern providing better conditions for flow augmentation via lateral runoff and tributary conditions.

Based on recommendations from the Environment and Social Strategy, the proponent offered land-for-land options to compensate the taking of land for this project. Additionally, a culturally appropriate communication strategy was developed.

Chaglla Hydropower Plant (Peru)

Financing

- ☒ Diversity of financing options
- ☐ Investor leadership

National conditions

- ☐ National government leadership
- ☒ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
- ☐ Improved enforcement of the national-level policies and regulations

Outreach and capacity building

- ☒ Inclusive stakeholder engagement to build project support
- ☐ Institutional capacity building and development of knowledge products

Proof-of-concept

- ☐ Existing project(s) of similar scope
- ☒ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

- ☐ Regional strategy for green growth
- ☐ Mechanisms to foster collaboration among countries

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Table B-3. Gambia River Basin Development Organisation (OMVG) Interconnection Project

Project Summary:	
Project name	Gambia River Basin Development Organisation (OMVG) Interconnection Project
Location (countries, watersheds, etc.)	West Africa (Gambia, Guinea, Guinea-Bissau and Senegal)
Duration	2015–2022
Funder and funding amount (currency)	<p>Total project cost: USD 696 million Total project debt: USD 711 million</p> <ul style="list-style-type: none"> ◆ World Bank loan: USD 200 million ◆ African Development Bank loan: USD 134 million ◆ European Investment Bank loan: USD 106 million ◆ Agence Française de Développement loan: USD 51.8 million ◆ Islamic Development Bank loan: USD 93.7 million ◆ West African Development Bank loan: USD 53.6 million ◆ Kreditanstalt für Wiederaufbau (KfW, Germany) loan: USD 32 million ◆ Kuwait Fund for Arab Economic Development loan: USD 23.9 million
Sector (energy, transport, water)	Energy
Major objectives/goals	<ul style="list-style-type: none"> ◆ Enable electricity trade between countries ◆ Component 1.1: Construction of 1,677 kilometres (km) of transmission lines ◆ Component 1.2: Construction of 15 225/30 kilovolt substations ◆ Component 2.1: Implementation support ◆ Component 2.2: Operations and maintenance support to OMVG Transmission Company
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>The project was not conceptualised to support green growth in the region but to support international trade and economic growth more generally. However, the project does have significant and direct green growth benefits in the form of emission reduction, which provide a secondary justification of the project.</p> <p>More specifically, as part of the due diligence activities for the project, a greenhouse gas (GHG) accounting analysis conducted for the interconnection project estimates that net emissions reduction is estimated to be 392 ktCO₂e. The social value of the GHG emission reductions was estimated to be valued at USD 5.1 million, using a base value of USD 30 per ton of carbon emissions avoided in 2015 and increasing to USD 80 by 2050. Overall, these benefits had a negligible impact on the total project economic rate of return estimated to be valued at USD 899 million in net present value terms.</p> <p>The GHG accounting analysis did not consider any impacts from changes to the power generation sources electrifying the interconnection project, such as a transition from primarily fossil fuels to hydropower.</p> <p>Per the World Bank Climate Finance Tracking systems rules, the project has 100% climate change adaptation co-benefits.</p>

Project Summary:

Project name

Gambia River Basin Development Organisation (OMVG)
Interconnection Project

Regional Importance of the West African Power Pool and OMVG Interconnection

Regional integration is critical to greater shared prosperity and ending poverty in the 15-member states of the Economic Community of West African States (ECOWAS). The ECOWAS states occupy about five million square kilometres and are home to about 300 million people. The states had an average economic growth of 6% per year during 2008–2012. Average per capita income is approximately USD 2,000 per year (current gross domestic product [GDP] per capita) and half the population lives in poverty, as defined by those living on USD 2 per day. A substantial reduction of poverty will require sustained economic growth rates. In turn, this will require massive investments to make up for current deficits in infrastructure. To date, the high cost of infrastructure and services has been a significant barrier to development.

Despite abundant energy resources, West African countries continue to have low rates of electricity access. Energy resources in West Africa are concentrated in a few countries and 170 million people in ECOWAS countries lack access to electricity. ECOWAS countries are also among the lowest consumers of electricity in the world at approximately 160 kilowatt hours (kWh) per capita. Power outages are frequent in many countries, leading the private sector to invest widely in backstop generation or absorb serious sales losses.

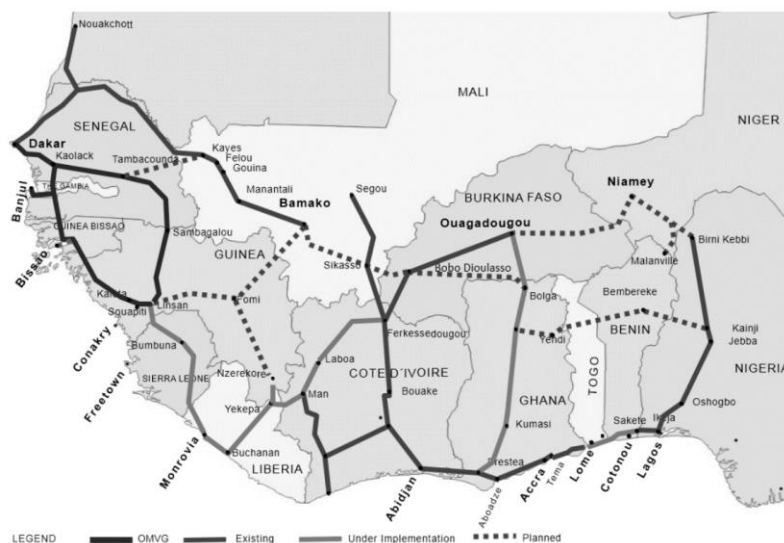
Given the small size of most West African nations, the regional power trade is even more important than elsewhere on the continent. Eleven out of 15 countries have a GDP less than USD 5 billion and do not have enough demand to develop at scale to achieve lower cost generation capacity. The cost of electricity generation is very high because of the region's high dependence on expensive oil-based thermal generation. This means that high tariffs of USD 0.20–0.30 per kWh are still not sufficient to cover the cost of supply.

Completion of the OMVG represents a critical step of interconnection of the West African Power Pool (WAPP) network from Nigeria to Senegal. It will connect the existing OMVG network to the north and the Côte d'Ivoire, Liberia, Sierra Leone and Guinea interconnector network to the east. The OMVG grid will allow for the transfer of surplus generation from the country with lower future generation costs, to the country with the higher generation costs. The Gambia, Guinea-Bissau and Senegal are highly dependent on expensive liquid fuel thermal generation, whilst Guinea has a large hydropower potential. Aggregating demand from OMVG countries will enable the development of competitively priced power supply capacity through economies of scale. Regional integration of the power systems in ECOWAS will facilitate large-scale development of the region's cost-effective and clean hydropower and natural gas resources. Guinea's 6,000 megawatts (MW) of hydropower potential could be a source of sustainable power supply in West Africa.

In the pessimistic scenario, with low economic growth and significant delays to surplus energy being developed, the economic benefits of the project will be USD 255 million. In the optimistic scenario, the economic benefits increase to USD 1.5 billion.

Figure 1. WAPP Network by 2010. Source: The World Bank

<http://documents.worldbank.org/curated/en/442701468194079362/pdf/895940PAD0P146010Box391424B00OU0090.pdf>



Stakeholder Influence on Regional Infrastructure Projects

The primary stakeholders financing energy projects in the region are national governments, state-owned enterprises, private independent power producers, multi-lateral development banks and commercial banks. The national governments and state-owned enterprises typically borrow from the development and commercial banks to fund most the construction costs and repay the interest and principal payments using taxpayer and non-tax contributions generated from the general national budget. Usually, only 10%–20% of the total constructions costs are funded

Project Summary:

Project name

Gambia River Basin Development Organisation (OMVG)
Interconnection Project

directly from the general national budget. However, in contrast, most maintenance costs for roads are funded directly from the general national budget or revenues.

Government regulators of the energy sector include the ECOWAS Regional Electricity Regulatory Authority, which sets the tariff for electric transmission services, and the West African Power Pool, which sets the rules, principles, requirements, standards, criteria and procedures to be observed for the smooth operation of the pool. The operations of the interconnection lines must also comply with all national regulations and regulators for the electricity sector, such as benchmarks and specific targets to be achieved for loss reduction, bill collection and energy efficiency.

Major business advocates include power producers of fossil and clean energy who will be able to increase the size of their markets, as this project will aggregate demand and enable larger and more economical generation plants, such as the development of the 6,000 MW hydropower potential of Guinea through both public and private investors.

There are also numerous civic stakeholders (e.g. residents and businesses located within the corridor catchment) who are interested in reducing the high electricity expenditures that are between USD 0.20–0.30 per kWh or who are seeking improved service quality and consistency and reduced blackouts. More than 6 million residents are expected to be directly impacted by the project, while the numbers of businesses to be impacted is unknown but would be close to 1 million, if not greater. Within the larger ECOWAS catchment, there are more than 170 million people who lack access to electricity. In aggregate, these individuals have significant voting power at the local and national government levels and, therefore, can influence their government's investment activities and priorities.

Financial institutions involved with the project are generally hesitant to support these types of projects because of their historically low levels of cost recovery and frequency of construction cost overruns and because the utilities buying the power from the transmission company have high levels of debt and commercial losses. The sponsoring national governments have also had historical high debt-to-GDP ratios (although in recent years these figures have been substantially reduced to between 25%–50%), which concerns private investors. As a result, the development banks who provide longer repayment periods and concessional interest rates are critical to delivery of this project. Their technical assistance in terms of project design and institutional structuring is also crucial to prepare an investment that has a high probability of success.

Major Stakeholders

Stakeholder	Role	How were they impacted by this project?	Additional comments
OMVG Council of Ministers	Implementation agency. Contracts with construction companies to build interconnection lines and supporting infrastructure. Owns and operates the interconnection lines under a special purpose regional transmission company	Not applicable	
National Energy Directorates	Sits on Monitoring and Advisory Committee that oversees the project	Not applicable	
National Ministries of Finance	Signs loan and sits on Monitoring and Advisory Committee that oversees the project	Not applicable	
West African Power Pool	Prepared the investment master plan and coordinates with financial sources.	Increased supply to manage on transnational power market exchange	

Project Summary:			
Project name		Gambia River Basin Development Organisation (OMVG) Interconnection Project	
	Manages power market exchange and transnational power sales		
ECOWAS	Oversees regional economic integration	Increased economic integration	
Independent power producers	Sell base electricity loads that are transferred through interconnection lines	Increased access to market demand and diversification of consumers	
National power utilities	Purchase electricity from interconnection lines and distribute and sell electricity to end consumers	Decreased expenditures on electricity and improving ability to balance power demands and reduce blackouts	
Local businesses	Purchase electricity from national power utilities	Decreased expenditures on electricity and reduce blackouts	
Local residents (6,684,25)	Purchase electricity from national power utilities	Decreased expenditures on electricity and reduce blackouts	
Resettled Households	Minimal influence on this project	Minimal influence on this project	
Situational Analysis of Regional and National Policies, Regulations and Institutions			
<p>This project has been driven by two regional institutions: OMVG and ECOWAS.</p> <p>OMVG was established in 1978 by Gambia and Senegal with the aim to develop the Gambia River as a natural resource plain. It focuses on the co-ordination and financing infrastructure of projects and on improving the region's policy environment in the priority areas of transport and energy. The original two-member states have expanded to four and now include Gambia, Guinea, Guinea-Bissau and Senegal. The OMVG Interconnection Project involves investments in all four member states.</p> <p>ECOWAS was created in a regional economic union of 15 countries that was established in 1975. The goal of the organisation's is to achieve collective self-sufficiency for its member states by creating a single large trading block by focusing on economic and infrastructure integration. One of the lead initiatives was the establishment of the West African Power Pool (WAPP) in 1999 to promote and develop power generation and transmission infrastructures and co-ordinate power exchange. This directive later led to the creation of a multi-national state enterprise in 2006 with the mission of organising resources for construction of an integrated transnational power grid to facilitate a unified power market.</p> <p>The regulations of the energy sector had a significant impact on the design and delivery of this investment project. Without the adoption of a common electricity management, monitoring and exchange framework, this project would not be possible. The evolution of this framework took decades to organise with substantial support and advisory through grants and technical co-operation programmes funded by bilateral and multilateral donors.</p> <p>In terms of green growth policies, this project was not designed as part of a comprehensive strategy. However, there is widespread recognition in the government of the role and impact that energy consumption has on its achievement. In particular, one of the secondary benefits evaluated as part of the investment due diligence was emissions reduction, which was projected to be valued at USD 62.5 million, if valued at USD 20 per ton.</p> <p>Brief descriptions of the relevant regional and national policies and regulations are provided below.</p> <ul style="list-style-type: none"> ♦ Establishment of WAPP (1999). A regional co-operation agreement between ECOWAS member states prioritising efforts to jointly develop abundant energy resources within the region. This was to be done through the establishment of a regional co-ordination body focused on the identification and facilitation of investment projects and financing arrangements for energy production facilities and transnational interconnections. 			

Project Summary:

Project name	Gambia River Basin Development Organisation (OMVG) Interconnection Project
<ul style="list-style-type: none"> ♦ ECOWAS Master Plan for the Generation and Transmission of Electrical Energy (2004 and 2011). Regional development plan for the energy sector including priority investment projects in energy production and transnational interconnection, such as the OMVG Interconnection Project. ♦ WAPP Business Plan 2012–2015 (2012). Strategic investment plan that outlines the multi-year financing strategy including prioritisation of the OMVG Interconnection Project. ♦ National Development Plans and Energy Policies for West African Countries (multiple years). Outlines a national development plan, including priorities for the energy sector. The plan has limited references to green growth or energy efficiency and, where mentioned, it is primarily focused on agricultural development or solar energy for small and medium enterprises. ♦ World Bank and African Development Bank Country Partnership Strategies for West African Countries (multiple years). Strategic investment plan that outlines the multi-year lending strategy, including prioritisation of the OMVG Interconnection Project. Does not reference green growth or energy efficiency. ♦ United Nations Environment Programme (UNEP) Green Economy Assessment Study for West African Countries (multiple years). Provides summary of macroeconomic situation and recommendations for policy makers on green growth investments. Suggests that there are abundant clean energy sources that could be developed in the region, creating employment and economic growth opportunities in addition to reducing per capita emissions. 	

Supportive Conditions and Impacts to the Economy Growth Pathway

The OMVG Interconnection Project was originally conceived in the 1990s and several efforts have been made to implement it. Previous efforts have failed because of various factors, including political instability in the sub-region, lack of political consensus and lack of financing. Through coordination efforts of ECOWAS and WAPP, most of these issues have been resolved, supporting the timing to proceed with the OMVG interconnection. There is now strong political support for the project and a sustainable financing plan that includes sufficient financing from eight donors. Several new power generation projects are also currently being constructed in the region to ensure that the interconnection line does not risk becoming a stranded asset but rather increases the demands from business advocates for its development. In consultation with independent power producers and energy investors, it is believed the project will increase private sector investment in power generation investments by aggregating demand to enable larger and more economical generation plants. This includes the development of the 6,000 MW hydropower potential of Guinea that currently does not have access to a large enough market to make the investment financial viable.

Other keys factors that have provided a supportive environment for the interconnection project was the establishment of power sharing agreements, power purchase agreements, transmission services agreements and commitments to hold private and state-owned utilities accountable to pay for their external expenses and liabilities to international parties. These policies and regulations were essential to solicit a high-quality private operator to manage operations and management (O&M) for the interconnection line, as well as support a privately financed independent power producer market. The four nations involved in the OMVG and WAPP have also already established an independent trust account to cover O&M costs and have been making annual payments into the account to demonstrate their commitment and financial capacity to support the future cash outlays, as required by project's business model. Finally, the OMVG member states also formed a written agreement to export a portion of the electricity generated by the first two hydropower plants, which will ensure a minimum amount of continuous usage by the interconnection line even when there is a lack of excess power in any one country.

Other substantial risks identified from this project include

- ♦ Rising construction costs,
- ♦ Ability to attract a qualified private sector operator to manage O&M of the interconnection line,
- ♦ Lack of financial capacity of the power off-takers, or consumers, leading to potential tariff non-payment and
- ♦ Delays in power generation source coming on-line.

Being able to obtain financing from a variety of sources was also a supportive factor for this project, particularly given the size of the investment. Typically, lenders are concerned about committing more than 50% of the investment risks of the project. Therefore, financing was obtained from a combination of international banks. The World Bank is the senior debt lender and there are seven junior lenders. The funding breakdown is provided in the table below.

Project Summary:

Project name

Gambia River Basin Development Organisation (OMVG)
Interconnection Project

Debt Provider	Type	Local/International	Amount (USD million)
World Bank	Multilateral	International	200
African Development Bank	Multilateral	International	134
European Investment Bank	Multilateral	International	106
<i>Agence Française de Développement</i>	Bilateral	International	51.8
Islamic Development Bank	Multilateral	International	93.7
West African Development Bank	Multilateral	International	53.6
KFW	Bilateral	International	32
Kuwait Fund for Arab Economic Development	Bilateral	International	23.9

The economic impact or indicator for the project is primarily electricity trade (export and import) between countries in terms of kilovolt-amps, which will lead to reduced operating costs for utilities and increased investment and competition in the power generation markets, particularly in hydropower plants that have very low electricity production costs. Together these forces will lead to reduced electricity costs for consumers, as well as increased service quality, consistency and (potentially) power consumption, which is a key indicator of economic growth. Other economic benefits will also increase employment in the power production market.

Project Summary:	
Project name	Gambia River Basin Development Organisation (OMVG) Interconnection Project
Discussion and Relevancy to the East African Context	
<p>The approaches to advancing green growth at the transnational level that were most effective in the energy sector were</p> <ul style="list-style-type: none"> ◆ Multinational regional institutions that helped identify a common approach to development ◆ Leadership from financing sources, such as the development banks, who promoted the creation of regional institutions and the preparation for regional strategies as part of their lending and business development cycle ◆ Formation of an institutional structure that protected investors to ensure a minimum level of cost recovery for capital and operational expenditures ◆ Standardisation of regulatory policies and regulatory mechanisms to support uniformity and integration of services across multiple diverse markets <p>Another key lesson from this project is an improved understanding of the benefits of supply chain investments, such as transmission interconnection lines, which support the aggregation of demand markets leading to an increase in the viability and scale of green growth and emissions reducing investments, such as hydropower or other clean energy services.</p>	

Gambia River Basin Development Organization (OMVG) Interconnection Project

Financing

- ☒ Diversity of financing options
- ☐ Investor leadership

National conditions

- ☒ National government leadership
- ☒ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
- ☐ Improved enforcement of the national-level policies and regulations

Outreach and capacity building

- ☐ Inclusive stakeholder engagement to build project support
- ☐ Institutional capacity building and development of knowledge products

Proof-of-concept

- ☒ Existing project(s) of similar scope
- ☒ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

- ☐ Regional strategy for green growth
- ☒ Mechanisms to foster collaboration among countries

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Table B-4. Mekong Integrated Water Resources Management Project

Project Summary: Mekong Integrated Water Resources Management Project	
Project name	Mekong Integrated Water Resources Management Project
Location (countries, watersheds, etc.)	Southeast Asia: Lao People's Democratic Republic (PDR), Cambodia, Vietnam Mekong River Delta
Duration	Phase I: 8 March 2012 to 31 March 2018 Phase II: 27 November 2013 to 30 April 2019 Phase III: 19 May 2016 to 1 June 2021
Funder and funding amount (currency)	<ul style="list-style-type: none"> ◆ World Bank (Project Identifications [IDs]: P104806P124942, P148647) ◆ Borrowers: Thailand, Vietnam, Cambodia, Lao PDR ◆ Implementing Agencies: Mekong River Commission, Ministry of Natural Resources and Environment, Cambodia Ministry of Economy and Finance (Phase III) ◆ Funding Amount: <ul style="list-style-type: none"> – Phase I commitment amount = USD 26 million; total project cost = USD 26.59 million – Phase II commitment amount = USD 25 million; total project cost = USD 27.5 million – Phase III commitment amount = USD 15 million; total project cost = USD 16.5 million ◆ Donor agency and government financing was used for this project. Thus, the project did not need to rely on establishing public-private partnerships (PPPs) or other financing mechanisms.
Sector (energy, transport, water)	Water The percentage of funding allocated across the project phases differs. However, most of the funding went towards water resource management, biodiversity and natural disaster management.
Major objectives/goals	<p>The Programme Development Objective (PDO) for the overall series of projects under the Mekong Integrated Water Resources Management Project (M-IWRMP) is to establish key examples of integrated water resources management (IWRM) practices in the Lower Mekong basin at the regional, national and sub-national levels, thus contributing to more sustainable river basin development in the Lower Mekong.</p> <ul style="list-style-type: none"> ◆ The PDO for M-IWRMP-Phase I is to establish key examples of IWRM practices in the lower Mekong basin at regional, national and sub-national levels, thus contributing to more sustainable river basin development in the lower Mekong (World Bank, 2016, January). ◆ The PDO for M-IWRMP-Phase II is to develop the capacity of the Ministry of Natural Resources and Environment, Vietnam National Mekong Committee and relevant agencies to manage transboundary water resources and climate risks through river basin approaches and improved water resources data collection, analysis and exchange (World Bank, 2016 May). ◆ The PDO for M-IWRMP-Phase III is to establish the foundation for effective water resource and fisheries management in the project areas in the northeast of Cambodia (World Bank, 2015). <p>The broader M-IWRMP provides parallel investment and technical support across Cambodia, Vietnam and Lao PDR (three of the four lower Mekong basin countries) and supports the Mekong Regional Commission in facilitating technical co-operation on water resources management.</p> <p>The figure below illustrates the structure and outputs of three interlinked components (regional, transboundary and national) of the M-IWRMP. The project consists of 3 outcomes, 61 outputs, 222 activities, many milestones and tasks and about 92 indicators as shown in Figure 1.</p>

Project Summary: Mekong Integrated Water Resources Management Project

Project name	Mekong Integrated Water Resources Management Project
	<p>Figure 1. Structure, Components and Outputs of the M-IWRMP (MRC, 2014 March)</p>
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>The M-IWRMP was conceptualised to promote more sustainable river basin management with the knowledge that the river shapes the economic prospects of the population in the six countries the Mekong flows through. At the time of project conceptualisation (2007), the catchment area was just beginning to see a surge in development for human use (including hydropower, increased irrigation, development, etc.) and the need to establish a consensus on managing the Mekong's resources against development was evident. Soft infrastructure, such as IWRM planning, institutional capacity building and technical assistance for environmental monitoring and stakeholder engagement were included in all phases to establish adequate capacity for sustainable development in the region (World Bank, 2007). Additionally, two national laws in Cambodia were promulgated during the conceptualisation period: the National Law on Water Resources Management (2007) and the National Law on Fisheries (2006). These laws are described below in further detail and, essentially, establish a framework for sustainable management of the water resources for socioeconomic benefits. The existence of these two laws in Cambodia most likely guided how the project was conceptualised and implemented.</p> <p>Economic growth strategies were in place for Vietnam and Lao PDR (i.e. Vietnam's 2011–2020 Socioeconomic Development Strategy and Lao PDR's 2003 National Growth and Poverty Eradication Strategy), although neither strategy specifically calls out green growth. Green growth strategies were formalised for several countries after the start of this project (e.g. Vietnam, 2011–2015; Cambodia, 2013–2030; Lao PDR, in progress).</p>
<p>Regional Importance of the Mekong River</p> <p>The Mekong River is a defining factor in the social, economic and cultural life of the countries through which it flows (i.e. China and Myanmar in the Upper Mekong basin and Cambodia, Lao PDR, Thailand and Vietnam in the lower Mekong basin). The Mekong shapes the economic prospects of these countries and their mutual relations. The Mekong is the longest river in Southeast Asia with a drainage basin of approximately 795,000 square kilometres (Atkinson & Domske, 2015). It is also the 12th longest river in the world (at 4,800 kilometres [Jacobs, 2002; Asian Development Bank [ADB], 2004; Mehtonen, Kekinen, & Varis, 2008]) but differs from others because of the large fluctuations in seasonal discharge between the dry and wet seasons. Flooding during the wet season creates productive and diverse freshwater ecosystems (e.g. Tonle Sap in Cambodia). These ecosystems provide about 80% of the more than 73 million people in the Mekong basin with the main part of their livelihood (Mehtonen, et al., 2008; World Bank, 2007; ADB, 2004; Jacobs, 2002). The fisheries in the Mekong are among the most productive in the world, trailing only the Amazon (ADB, 2004). Additionally, the river provides a source of energy through hydropower production.</p> <p>The Mekong River is the only remaining major international river that is not yet significantly regulated, whose catchment areas are not yet developed and whose water resources have not been significantly impacted from humans (World Bank, 2007). The basin stressors are seasonal flooding, land use change (including deforestation), watershed degradation, population growth and the development of dams for hydropower in the upper basin, which affects downstream flows and aquatic ecosystems. In the last decade alone, basin countries have proposed more</p>	

Project Summary: Mekong Integrated Water Resources Management Project

Project name	Mekong Integrated Water Resources Management Project
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than 100 new dams on the Mekong (Atkinson & Domske, 2015). Fourteen dams were under construction as of 2015. Of the six countries the Mekong flows through, Cambodia faces the greatest risks from flooding during the rainy season because of its proximity to the Mekong Delta combined with upstream flooding of the Tonle Sap River (Atkinson & Domske, 2015), whilst Thailand faces the greatest risk of water scarcity. All six countries are still developing, focusing on economic growth and infrastructure development over social and environmental impacts, and water degradation is occurring. The rate of degradation is expected to increase given projected population growth. Additionally, each country has different levels of institutional capacity and different priorities with respect to the Mekong:

- ◆ Cambodia is concerned with the maintenance of the seasonal high and low flow to protect the Tonle Sap Lake and other floodplain ecosystems.
- ◆ Vietnam considers sufficient low flows the most significant issue.
- ◆ Thailand prioritises projects that divert flow from the main stem and tributaries to support irrigated agriculture.
- ◆ China and Lao PDR focus on hydropower development.
- ◆ China is also working to open a trade route to Southeast Asia by making key portions of the Mekong navigable for shipping.

The water resources management decisions made by one country will impact other countries, necessitating transboundary IWRM and multi-stakeholder co-operation, two core objectives of this World Bank project.

Stakeholder Influence on Regional Infrastructure Projects

Transboundary cooperation in managing the Lower Mekong basin began in 1957 with a United Nations-led effort to promote international river basin planning (Jacobs, 2002; Mehtonen et al., 2008). This effort resulted in the establishment of the Committee of Coordination and Investigation of the Lower Mekong River basin. Countries involved included Cambodia, Lao PDR, Thailand and South Vietnam and, together, they are referred to as the International Mekong Committee. In 1995, the Agreement on the Cooperation for the Sustainable Development of the Mekong River basin was signed by all four lower basin countries (i.e. Cambodia, Lao PDR, Thailand and Vietnam). The Agreement also formed the Mekong River Commission (MRC). Today, the MRC and many other stakeholders support capacity building for the management of the Mekong River prior to this project and influence regional infrastructure projects. Each of the Lower Mekong basin countries has commitments to IWRM and, within those, a commitment to public participation.

The MRC has not regularly engaged in comprehensive and consistent method of stakeholder analysis and engagement prior to or during its programmes and has struggled to promote public participation in its activities (Neusner, 2016; MRC, 2010). The MRC also engages with some stakeholders more often than others (e.g. donors vs. civil society) because, for example, of existing lines of communication with donors and the dynamic nature of non-governmental organisations (NGOs). The 2010 report, 'Stakeholder analysis for the MRC basin Development Plan Programme Phase 2, included notes that 'despite several attempts to strengthen stakeholder participation in the MRC there still has not been a strategic approach that has been applied across the institution [with respect to engaging the civil society, including NGOs]. The need to improve stakeholder participation has been repeatedly identified by donors and institutional reviews as a priority for the MRC (e.g. Hirsch & Morck Jensen, 2006). The MRC has been subject to criticism for not strengthening broader public participation in water resources governance and public criticism on many occasions regarding specific issues...The MRC has not yet addressed how to deal with difference of opinions and values among stakeholders, how to deal with criticism and how to generate at least some degree of consensus' (MRC, 2010 page 3). None of the NGOs in the region are dedicated solely to IWRM, which may be one reason the MRC does not specifically engage with many NGOs. However, the NGOs do have themes and work areas that overlap with IWRM and sustainable development.

With respect to the private sector, the International Finance Corporation (IFC) notes that private sector involvement will be essential to sustainable development of the Mekong basin, yet information sharing between the MRC and the private sector remains limited (IFC, n.d.). The private sector and the MRC, for example, could improve data sharing to inform hydropower development and cumulative impacts analyses in the basin. One such tool to facilitate stakeholder engagement on hydropower is the Rapid Sustainability Assessment Tool, a basin-wide hydropower sustainability assessment tool (Neusner, 2016). No information was obtained during the literature review on how the private sector was specifically involved in this project.

The major stakeholders are described in the table below.

Major Stakeholders

Project Summary: Mekong Integrated Water Resources Management Project			
Project name		Mekong Integrated Water Resources Management Project	
Stakeholder	Role	How were they impacted by this project?	Additional comments
MRC	The principal organisation responsible for transboundary co-operative management of the lower Mekong River basin. Guides member countries in the implementation of IWRM. Emphasises national and regional interactions over local- or community-level interactions.	<ul style="list-style-type: none"> ♦ Improved understanding of common issues/ challenges associated with IWRM of the Mekong; information and data sharing needs and co-ordination requirements related to transboundary management. ♦ Development of various transboundary management plans (e.g., fishery management plans). ♦ Capacity building for improved monitoring, control and surveillance. ♦ Prioritisation of livelihood enhancements, particularly agriculture and investments in rural infrastructure. 	The MRC is a policy-making body; its policies are binding for the four member countries: Cambodia, Lao PDR, Thailand and Vietnam. It cannot set a basin-wide agenda because China and Myanmar are not signatories to the 1995 agreement, which established the MRC. The MRC is funded by the member countries and donors (World Bank, ADB and others provide 90% of the MRC budget; Atkinson & Domske, 2008). The MRC lacks legally-binding authority over its member states, which critics suggest is a major limiting factor.
Vietnam Ministry of Natural Resources and Environment (MONRE)	Implementing agency Phase II		
Mekong National Committees (Cambodia, Vietnam and Lao PDR)	Implementing agency for Component 2 and overall project management of Phase III		
Ministry of Agriculture, Forestry and Fisheries	Implementing agency for Component 1 of Phase III		
Ministry of Water Resources and Meteorology	Entity responsible for implementing the project (Phase III) and overall executing agency		
Vietnam Ministry of Agriculture and Rural Development	Secondary influencers		

Project Summary: Mekong Integrated Water Resources Management Project			
Project name		Mekong Integrated Water Resources Management Project	
Member Country River Basin Organisations, River Basin Committees, and Basin/Sub-Area Organisations	Secondary influencers		
Private sector (includes hydropower, irrigation, fisheries, agriculture, mining and tourism)	No specified role during project conceptualisation and implementation	They will be impacted by project outcomes, but that impact remains to be determined.	
Upstream countries (China and Myanmar)	Dialogue partners with the Mekong River Commission	No expected direct impact to them from this project, although any regional development decisions made by the MRC could increase their participation/co-operation on regional development in general. They are involved in data sharing and provide input to decision-making.	
NGOs (e.g., the International Union for Conservation of Nature [IUCN] and Global Water Partnership [GWP])	IUCN promotes dialogue between local, national and regional groups. GWP promotes IWRM through water forums. Other local NGOs were not identified as being directly involved in the stakeholder engagement process.	Both IUCN and GWP have or are working in the region and have overlapping interest. Their projects may be impacted by any decisions or outcomes resulting from this project. It is unknown at this time how local NGOs will be impacted by this project.	
Association of Southeast Asian Nations (ASEAN)	ASEAN promotes economic co-operation and the welfare of the people in its region.	ASEAN does not have a specific role in this project and is not expected to be impacted by this project.	Established in 1967 by Indonesia, Malaysia, Philippines, Singapore and Thailand. All Mekong countries, except China, are members.
Greater Mekong Sub-region (GMS)	The GMS programme covers seven main sectors and focuses on economic and infrastructure development, energy and transportation.	GMS Does not have a specific role in this project and is not expected to be impacted by this project.	

Project name	Mekong Integrated Water Resources Management Project
Situational Analysis of Regional and National Policies, Regulations and Institutions	
<p>In the 1990s, all six countries entered the Greater Mekong Sub-Regional Economic Cooperation Program (GMS Programme) to strengthen environmental protections, institutions and sustainable development mechanisms. In practice, the GMS Programme primarily focuses on co-operation for economic and infrastructure development over environmental protection and sustainable development (Mehtonen et al., 2008). In 1995, the MRC was established (role described above). In 1996, ASEAN began the Mekong basin Development and Co-operation Initiative to enhance economic and sustainable development of the Mekong basin (Mehtonen et al., 2008). In 2002, ASEAN then created a working group on Water Resources Management focused on IWRM.</p> <p>In the early 2000s, Mekong basin governance was strongly centralised with state-controlled systems. Progress towards regional dialogue and consensus at the national level was made through efforts in recent years, including the IUCN Water and Nature Initiative, the United Nations Development Programme (UNDP) Mekong Wetlands Biodiversity Project and others. At the start of this project (2008), the already established multi-stakeholder platforms co-ordinating on IWRM strategies – the Mekong River Commission and individual country Mekong National Committees – combined with recent donor-funded projects provided a strong foundation on which to make further progress in IWRM and contribute to the burgeoning green growth agenda of Vietnam and Cambodia.</p> <p>Although the lower Mekong basin is not heavily regulated, several national laws and strategies are applicable to this project (listed below). There is overlap in how relevant laws are implemented within each country and across the impacted countries based on the fact that Component 2 of Phase I focuses on support for developing a harmonised water resources management legal framework (World Bank, 2007). This is not surprising – many countries will use existing legal language to develop their own law; thus, they will either promulgate a similar law or will improve an existing law with evidence from lessons learned. Atkinson and Domske (2015) note that, whilst sustainable development is a foundational principle of the 1995 agreement and IWRM, neither sustainable development nor IWRM have gained much traction in the region.</p> <p>The most applicable national laws to this project stem from the Kingdom of Cambodia because this is where most of the project activities take place. The Cambodian national laws on fisheries (2006) and water resources management (2007) most likely guided how this project was conceptualised and implemented.</p> <ul style="list-style-type: none"> ◆ Law on Environmental Protection and Natural Resources Management, Cambodia (18 November 1996). The general purposes of this law are to (1) protect and enhance the environment quality and public health by means of prevention, reduction and control of pollution; (2) assess the environmental impacts of all proposed projects prior (i.e. EIAs are required for public/private development projects); (3) ensure the rational and sustainable preservation, development, management and use of the natural resources of the Kingdom of Cambodia; and (4) encourage and provide the public participation in environmental resource management decision-making. ◆ Law on Fisheries, Cambodia (30 March 2006). The aims of this law, as given in Articles 1 and 2, are to (1) ensure fisheries and fishery resource management; enhance aquaculture development and the management of production and processing and promote the livelihood of people in local communities for the social, economic and environmental benefits, including the sustainability of the conservation of biodiversity and natural culture heritages in the Kingdom of Cambodia (Article 1) and (2) ensure the rights on traditional use of fishery resources for local communities. The law covers all fisheries – natural, artificial and aquaculture. This law is the key underlying legal framework for Component 1. ◆ Law on Water Resources Management, Cambodia (29 June 2007). The general purpose of this law is to foster the effective and sustainable management of the water resources of the Kingdom of Cambodia to attain socioeconomic development and the welfare of the people. This law supports the implementation of the National Water Resources Policy (2004) and the National Strategic Development Plans. This law determines (1) the rights and obligations of water users, (2) the fundamental principles of water resources management and (3) the participation of users and their associations in the sustainable development of water resources. This law is the key underlying legal framework for Component 2 of the Mekong project. This law also lays out provisions on water allocation, licensing and dispute resolution. <p>Other relevant laws include the:</p> <ul style="list-style-type: none"> ◆ Environmental Protection Law, Vietnam (1993, 2005) ◆ Water and Water Resources Law, Lao PDR (1996) ◆ Law on Water Resources, Vietnam (1998) ◆ Sub-Decree 27 on Water Pollution Control, Cambodia (1999) 	

- ◆ Sub-Decree 36 on Solid Waste Management, Cambodia (1999)

Numerous strategies are also applicable, including:

- ◆ Agreement on the Co-operation for the Sustainable Development of the Mekong River Basin (1995)
 - Established the goals, objectives and underlying principles by which the four member countries intended to co-operate in all fields of sustainable development, utilisation, management and conservation of the water and related resources of the Mekong River basin.
 - Established the MRC. Includes strict policies for maintaining minimum flows during the dry season but does not include provisions for maintaining high flows during the wet season.
- ◆ National Growth and Poverty Eradication Strategy, Lao PDR (2003)
 - Defined the framework for the Socioeconomic Development Plan (developed every five years) and provides for the creation of National Sector Plans to promote sustainable growth and poverty eradication in sectors, including agriculture/forestry, industrialisation and modernisation.
- ◆ IWRM-based Basin Development Strategy 2011–2015 for the Lower Mekong Basin (2010). The first basin development strategy.
- ◆ Vietnam's 2011–2020 Socio-Economic Development Strategy
- ◆ National Policy on Green Growth and the National Strategy Plan on Green Growth, Cambodia 2013–2030 (2013)
 - Aims to strike a balance between economic development and environment, society, culture and sustainable use of national resources through integration, matching and adaptation, as well as harmonisation between a green growth principle and national policy.
- ◆ National Strategic Development Plan 2014–2018, Cambodia (2014)
 - Provides direction to rehabilitate and reconstruct irrigation and drainage systems; promotes investment by the private sector in irrigation, drainage and other aspects of agricultural water management and promotes effective river basin management and water allocation systems
- ◆ IWRM-based Basin Development Strategy 2016–2020 for the Lower Mekong Basin (2015)
 - Sets out how the lower Mekong basin countries will use, manage and conserve the water and related resources of the Mekong in line with the Agreement on the Co-operation for the Sustainable Development of the Mekong River basin
- ◆ Green Growth Strategies (Vietnam, 2011–2015; Cambodia, 2013–2030; Lao PDR, in progress).

Supportive Conditions and Impacts to the Economy Growth Pathway

The supportive conditions for the M-IWRMP include the following:

- ◆ Existence of the MRC, which joined all the lower Mekong basin countries together; a stronger, more comprehensive Commission would include the upstream countries (China and Myanmar)
- ◆ Previous policies/strategies that promoted IWRM (e.g. the 1995 agreement)
- ◆ Existing relationship between the MRC and water and environment ministries from the member countries
- ◆ Previous IWRM projects implemented by the MRC and others (e.g. UNDP and IUCN) in the region
- ◆ National growth strategies (Vietnam Green Growth Strategy, 2011–2015) and progress in that direction for Cambodia (when this project started in 2008)

The M-IWRMP was not conceptualised in response to any country's formal green growth strategy because no strategies were in place during project development. However, this project was visualised to promote sustainable development and IWRM in the Mekong delta region and nearly every component of the M-IWRMP ties into the concept of green growth.

Vietnam and Cambodia now have formal green growth strategies and the Global Green Growth Institute (GGGI) is working with Lao PDR to develop their national strategy (as of August 2016). The 2014 mid-term review noted that the M-IWRMP 'has supported the revision of the water law (2012). For the first time in history, all sector experts have been brought together to negotiate about water management issues. This is the most complicated programme in the MRC and it usually has only a co-ordinating role between the other programmes...The programme can be a good forum for data exchange' (MRC, 2014 March).

The 2014 mid-term review also notes that the M-IWRMP has made some impact in introducing IWRM by developing tools and providing capacity building.

The project impacts will be realised both locally and regionally (i.e. in the lower Mekong basin). The existing national laws on water resources management and existing relationship between the regional ministries and the Mekong River Commission all helped move this project forward.

Discussion and Relevancy to the East African Context

The M-IWRMP Inception Report states that addressing IWRM through the three levels of regional, transboundary and national initiatives in a combined project offers several advantages over separating them into stand-alone activities that, once merged, add up to an institutionalised IWRM framework (MRC, 2014, March). However, the 2014 mid-term review did not find adequate evidence to justify the linkage. The review stated that the three risks related to implementation of the regional component, as identified in the Inception Report, became true:

- 1) Lower Mekong basin countries are not fully committed to the 1995 Mekong Agreement and its implementation,
- 2) the MRC is not empowered to finalise the pending procedures and technical guidelines and
- 3) the three project phases have become disconnected because of delays in preparation of national and transboundary components.

At the time of the mid-term review, the transboundary component was on hold and did not become fully functional until April 2016.

The MRC's 2014 mid-term report on the M-IWRMP did not identify any lessons learnt from the inter-programme cooperation to date, and because the transboundary component was on hold from May 2014 to about April 2016, results from the transboundary activities could not be evaluated. Phase II was delayed from April 2014 to May 2016 because of two issues: (1) lack of clarity between the roles of the Vietnam National Mekong Committee and the MONRE and (2) delays in budget authorisation for the project by the national government.

Despite the challenges identified during the 2014 mid-term review, progress is occurring. The May 2017 Implementation Status Report for Phase I indicated that a key milestone for the overall M-IWRMP was achieved as all three national projects – Phase 1 in Lao PDR, Phase 2 in Vietnam and Phase 3 in Cambodia, are now fully operational and able to contribute to the core activities under the MRC component. Although progress towards achieving the Phase I PDO is moderately satisfactory, the overall risk rating remains substantial. Phase II received a moderately unsatisfactory rating towards achieving the Phase II PDO and also has a substantial risk rating.

The factors that will help this project be implemented successfully include the following:

- ◆ **National water resource laws and management organisations.** A mandated framework helps to clarify roles and responsibilities, but care must be taken to ensure the laws are comprehensive and consider how the law would be implemented by various stakeholders before promulgation.
- ◆ **Inter-governmental organisation on the issue – in this case, the MRC.** This project builds on decades of experience. Having established lines of communication between the different countries and organisations already in place is essential.
- ◆ **The three levels of project components (national, regional and transboundary) included under one project may also facilitate success.** Evidence supporting this has yet to be seen, but all three components have only been fully operational for a year. More time is needed before this factor can be fully evaluated.
- ◆ **The combination of institutional capacity building and development of knowledge products** (e.g. decision support systems, the Toolbox, hydro-met modelling and monitoring) to support the water management policies for each country may also be a success factor. Integrated knowledge products that can be applied across the countries could also be considered for success, especially since the lower Mekong basin countries are jointly working towards IWRM of the Mekong.

Mekong Integrated Water Resources Management Project

Financing

- ☐ Diversity of financing options
- ☐ Investor leadership

National conditions

- ☐ National government leadership
- ☒ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
- ☐ Improved enforcement of the national-level policies and regulations

Outreach and capacity building

- ☐ Inclusive stakeholder engagement to build project support
- ☒ Institutional capacity building and development of knowledge products

Proof-of-concept

- ☒ Existing project(s) of similar scope
- ☐ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

- ☐ Regional strategy for green growth
- ☒ Mechanisms to foster collaboration among countries

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Table B-5. Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

Project Summary: Niger Basin Water Resources Development and Sustainable Ecosystems Management Project	
Project name	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
Location (countries, watersheds, etc.)	West Africa: Benin, Guinea, Mali, Niger, Nigeria Niger Basin
Duration	3 July 2007 to 31 December 2017
Funder and funding amount (currency)	<p>World Bank (Project ID P093806) Commitment Amount: USD 186 million Total Project Cost: USD 233.2 million</p> <ul style="list-style-type: none"> ◆ All government funding sources ◆ Financiers: International Development Association Grant (USD 24 million); African Development Bank (USD 34 million); Canadian International Development Agency (USD 4.72 million); European Commission (USD 3.54 million); International Development Association (USD 162 million); French Agency for Development (USD 4.94 million) <p>Borrower: Niger Basin Authority (NBA)</p> <p>Note: The World Bank recently funded a project with overlapping scope: the Niger River Basin Management Project (28 January 2015–31 December 2019 for USD 7.50 million). This project will support efforts to (1) develop a more autonomous and sustainable financial resource base for the NBA, (2) improve the basin-wide legal framework for enhanced co-ordination in the operation of transboundary infrastructure and (3) facilitate evidence-based and well-informed decision making on projects of regional interest. This project will specifically support Annex 2 of the Water Charter.</p>
Sector (energy, transport, water)	<p>Water</p> <p><u>Additional sector classification</u></p> <ul style="list-style-type: none"> ◆ Large hydropower: 59% ◆ General water, sanitation and flood protection: 19% ◆ Central government administration: 12% ◆ Irrigation and drainage: 5% ◆ General agriculture, fishing and forestry sector: 5%
Major objectives/goals	<ul style="list-style-type: none"> ◆ To achieve a sustainable increase in the overall productivity of existing water resources to foster economic development in selected countries of the Niger River basin. ◆ To enhance regional coordination and improve water resources management in the Niger River basin. ◆ To create a collaborative framework that benefits the 100 million people living in the basin.

Project Summary: Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

Project name	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>Yes. All three components were conceptualised and developed to promote green growth, as follows:</p> <ul style="list-style-type: none"> ◆ Component 1: Strengthen the NBA and build its capacity ◆ Component 2: Rehabilitation, optimisation and development of regional infrastructures (e.g. hydroelectricity plants and watershed management) ◆ Component 3: Sustainable management of priority degraded ecosystems and the rehabilitation of small-scale hydraulic infrastructures <p>This project invested in hydropower plants, reservoirs, irrigation schemes and navigation facilities, which have the potential to significantly contribute to economic growth, food security, climate resilience and improved livelihoods.</p> <p>The Niger River basin formalised a Shared Vision process in 2002 and a Sustainable Development Action Plan (SDAP) in 2007. No national green growth strategies have been formulated for any of the riparian countries. The SDAP was developed to promote co-ordinated and co-operative development of the Niger basin to achieve a sustainable increase in the overall productivity of water resources. Lessons learned from the Shared Vision process and the implementation of the SDAP may be relevant to the regional water management organisations in the East African Community (EAC).</p>

Regional Importance of the Niger Basin

The Niger River is the economic mainstay for its nine riparian countries (Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria). The Niger River basin covers 7.5% of the continent, or an area of 2.2 million square kilometres (km) (Food and Agricultural Organization of the United Nations [FAO], 1997), and spreads across 10 countries. The Niger River, at 4,100 km, is the third longest river in Africa after the Nile and Congo/Zaire Rivers, and the longest and largest in West Africa. The source waters originate in the forest of Guinea.



West Africa comprises four geographic zones (as shown in the figure by Statfor, 2017): the arid Sahara in the north (i.e. the northern half of Mauritania, Mali, Niger and Chad); the savannah (i.e. the southern half of Mauritania, Mali, Niger and Chad and most of Burkina Faso); the forest and the coastline. The Niger River flows through these distinct zones driving agriculture and sustaining the region's approximately 95 million inhabitants (Statfor, 2017; Clanet & Ogilvie, 2009). Transboundary water dependence is calculated at 90% for the Niger (Clanet & Ogilvie, 2009). During project conceptualisation, the World Bank noted that the potential to harness the river for hydropower, irrigable lands and agricultural productivity and improved waterway was under-developed (World Bank, 2007).

The region is wrought with economic water scarcity. Severe droughts occurred in the 1970s and 1980s, and rainfall has been consistently low in the Sahelian zone (Clanet & Ogilvie, 2009). However, the three quarters of the basin that is not in the Sahelian or semi-arid climate shows annual rainfall at more than 700 millimetre (mm), which is sufficient for rain-fed agriculture (Clanet & Ogilvie, 2009). Climatic modelling for the Niger basin predicts

Project Summary: Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

Project name	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
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increased temperatures, variability, dry spells (e.g. reduced rainfall) and extreme events that will increase the strain on water resources and irrigation for agriculture.

The economic output in the Niger basin countries is highly dependent on the Niger River. Mali and Niger are almost entirely dependent on the river for their water resources (FAO, 1997), whilst agriculture for all basin countries primarily relies on rainfall. In the extreme north, the land is just sufficient for occasional pasture (Clanet & Ogilvie, 2009); the water supply is better in the southern portion because of the larger amounts of rainfall. Several small dams exist in Burkina Faso, Mali and Côte d'Ivoire, which impact the tributaries that flow into the Niger River. Millions of rural poor rely on livestock and fisheries for their livelihoods.

One rationale for the World Bank's intervention in the Niger basin builds upon the riparian countries' willingness and the urgent need to move away from unilateral planning towards coordinated development actions throughout the basin (World Bank, 2007). This project was particularly important given the variability of the Niger water resources, the chronic energy crises and increasing competition for dam development. This was the first major project that provided assistance at the river level in the Niger basin. It was conceptualised to find solutions to the energy, food and natural resources degradation in the basin.

Stakeholder Influence on Regional Infrastructure Projects

The Niger basin has a complicated institutional and political context. Traditional chiefs have authority at the local and regional level, which means that customary laws vary by ethnic group/community, water rights are intimately linked to land rights and nomadic herding is practiced. In addition to local powers, state and regional institutions also influence decision-making.

With respect to stakeholder influence on regional infrastructure projects, the NBA, created in 1980, is the primary body impacting infrastructure investment. Under the NBA, a focal point (individual expert or team of experts) from each country is represented. NBA can secure large investments for infrastructure, primarily from donor bank and government agency loans or grants. Individual Member States also have their own infrastructure projects (mostly for dams).

Major Stakeholders

Stakeholder	Role	How were they impacted by this project?	Additional comments
NBA	Borrower of the project funds and the primary influencer on project implementation	<ul style="list-style-type: none"> Improved capacity for the NBA to implement integrated water resources management (IWRM) practices Improved understanding of common issues/ challenges associated with IWRM of the Niger basin, information and data sharing needs and co- 	An intergovernmental organisation created in 1980 to replace the Niger River Commission (1964). Consists of nine Member States: <u>Benin</u> , Burkina Faso, Cameroon, Chad, Côte d'Ivoire, <u>Guinea</u> , <u>Mali</u> , <u>Niger</u> and <u>Nigeria</u> (project includes the underlined countries). Promotes co-operation among member states (by harmonising and co-ordinating national development policies) and ensures an integrated development of the Niger basin.
NBA Observatory	Primary influencer on project; responsible for data collection and monitoring and evaluation		
NBA National Focal Structures	Primary influencer on project; provides technical expertise and financial management of the technical		

Project Summary: Niger Basin Water Resources Development and Sustainable Ecosystems Management Project			
Project name		Niger Basin Water Resources Development and Sustainable Ecosystems Management Project	
	activities carried out in their national territory	ordination requirements related to transboundary management	
National Implementing Agencies	Secondary influencers on project; responsible for procurement; directly execute activities in their areas of expertise		Includes Direction Nationale du Génie Rural in Guinea, Agence d'Exécution des Travaux d'Infrastructures et d'Equipements Ruraux in Mali, Direction des Aménagements et Equipements Ruraux Agricoles in Niger, Centre Régional pour la Promotion Agricole du Borgou-Alibori in Benin and Power Holding Company Nigeria in Nigeria.
Member States' Water Agencies, River Basin and Rural Development Authorities	Users; possibly provided input on project implementation	Improved understanding of how to implement IWRM practices through NBA	Includes, for example, Nakanbe Water Agency in Burkina Faso
West African Power Pool (WAPP)	Secondary influencer on project; provides NBA with expertise on the power sector and specifically hydropower and electricity transmission	Direct impacts are not expected	WAPP is the coordinating body for the power utilities across West Africa. Liaises with the NBA to better co-ordinate the development of power-related infrastructure in the Niger basin.
Economic Community of West African States (ECOWAS)	Supporter; assuming they provided project implementation input to NBA	Direct impacts are not expected	Gathers all West African states and plays a major role in the regional process towards IWRM implementation that was launched in 1988 as the Ouagadougou Declaration.
Permanent Framework for Coordination and Monitoring of IWRM in West Africa (PFCM WA)	Supporter; assuming they provided project implementation input to NBA	Direct impacts are not expected	
Civil society (e.g., traditional village chiefs, farmers and irrigators associations and unorganised water users)	User of water resources and ecosystems services	Direct impacts are not expected	
NGOs (e.g., Eau Vive, GWP-West Africa Partnership, and Secrétariat International de L'eau)		Direct impacts are not expected	

Project name	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
Situational Analysis of Regional and National Policies, Regulations and Institutions	
<p>At the national level, decentralisation and IWRM is encouraged, but is not yet practiced. Reasons for this include lack of funds and institutional capacity, national policies that do not cover certain aspects of land and water and misalignment with customary traditions (Clanet & Ogilvie, 2009). The misalignment between ethnic groups/communities and development projects and legislation tailored towards IWRM and decentralisation can create land and water governance problems and conflicts. There are no centralised institutions implementing directives at the local level, enabling village and land chiefs to maintain considerable influence and power (Ogilvie et al., 2010).</p> <p>Water rights are interlinked with land rights in most of the customary tenure systems. The legal pluralism is seen as one of the main causes of agriculture productivity stagnation and rural poverty due to the insecurity it creates in terms of definition, allocation and enforcement of land rights and consequently for the dependent water rights (Clanet & Ogilvie, 2009). Traditional collectively-owned land is frequent in many countries (except Chad, Nigeria and Niger) and formal land titling is often lacking.</p> <p>'The role of the states remains essential in the management of natural resources in the Niger basin. Contrasting with the trend towards private ownership and private rights in the land tenure sector, reforms to water legislation – largely driven by international exogenous forces – have seen the assertion of state control over water resources and the introduction of complex mechanisms for the allocation of administrative water rights' (Hodgson, 2004 as cited in Clanet & Ogilvie, 2009).</p> <p>Relevant regional and national policies and regulations are as follows:</p> <ul style="list-style-type: none"> ♦ Niamey Agreement (1973). Ensures equitable sharing of the Niger basin waters and formulates and implements an integrated basin management plan, taking into account the need for investments on common water infrastructures. ♦ Convention Creating the Niger Basin Authority (the 1980 Convention). Created the NBA (in 1982) and defined legal authority and significantly revised the Niamey Agreement. Includes the protocol relating to the Development Fund of the Niger Basin (the Protocol) (1982) ♦ 1997 United Nations Watercourses Convention. The only universal agreement covering the development and management of shared transboundary watercourses. To date, only Nigeria and Burkina Faso have ratified. ♦ Ouagadougou Declaration (1998). Considered the commitment of ECOWAS for the implementation of IWRM in the region ♦ PFCM WA (2000). Aims to improve the water management framework, specifically IWRM, at regional and national levels. Directly supports the river basin management structures established in all transboundary basins, including the NBA. ♦ SDAP (2002, 2007). Established a Shared Vision process for the development of the Basin. The Shared Vision objectives are (1) strengthen the existing legal and institutional frameworks; (2) develop water resources in a sustainable and equitable manner with a view to promote prosperity, security and peace in the basin and (3) develop and implement a strategic framework of the basin development (i.e. the SDAP). The SDAP is a USD 8 billion, 20-year investment plan consisting of a mix of large- and small-scale investments in the basin. The SDAP was formalised in 2007. A Strategic Action Plan was developed for a Global Environment Facility project, adopted in 2010, and integrated into the SDAP and the Investment Program of the NBA. ♦ Investment Program of the NBA by 2027 (2008). Covers the period of 2008 to 2027 and consists of three fields: Field 1 – Development of socioeconomic infrastructure, Field 2 – Resources and ecosystems protection and Field 3 – Capacity building and involvement of IWRM. ♦ The Declaration of Paris (2004). Focuses on the principles of management and good governance for sustainable and shared development of the Niger basin; signed by all nine member states. ♦ Niger Basin Water Charter (La Charte de l'Eau du Bassin du Niger) (2008, 2011). Championed by the NBA. Ensures that NBA member states share the Niger River's resources by defining a series of general principles for use and management of the Niger basin water. ♦ Various member states water codes, laws, acts and plans. Nigeria appears to be the only country with a Water Act (1993) all other countries have Water Codes. Burkina Faso and Mali have IWRM National Plans (2003 and 2007, respectively). 	

- ♦ **Various member states land use codes, laws and acts.** Establish guidelines for agricultural land property rights. Land property rights are mainly traditional and informal for most member states.

Supportive Conditions and Impacts to the Economy Growth Pathway

The impacts from this project will be realised within the basin area in the countries work was performed in, including Niger, Guinea, Mali and Benin. This project contributed to the green growth agenda and was most likely conceptualised in response to the 2002 SDAP. In fact, one project indicator was to implement activities according to the SDAP. As of June 2016, the main achievements under this indicator were adoption of the Niger Basin Water chapter, development of Annex 1 of the Niger Basin Chapter and the organisation of the Niger Basin Panel of Experts.

The December 2016 Implementation and Status Report (the latest available at the time of writing this case study) indicated satisfactory progress towards achieving the programme development objective and implementation. The risk rating changed from moderate to substantial between the June 2016 to December 2016 report because of fiduciary and institutional capacity for implementation and sustainability concerns. Project activities closed in Mali, Nigeria, Benin and Niger. The only remaining activities are in Guinea and relate to conducting the Fomi Dam feasibility study and phase 1 of the environmental studies. These activities are still underway because of financial concerns. The activities were originally grouped under one project, but the estimated cost was higher than the remaining budget and splitting the activities into two studies was more cost effective.

The most notable achievements were in Nigeria where two major dams (Kainji hydropower plant and the Jebba plant) were rehabilitated for power generation and/or safety. The project appraisal document noted inadequate operation and maintenance of the existing water infrastructure was heavily impeding the effective management of existing hydraulic assets (World Bank, 2016). Other achievements include restoring 13,358 hectares of land, including 7,500 hectares in Niger for watershed protection and dune stabilisation, 1,815 hectares in Benin for new and existing plantations and land upstream of dams, and 500 hectares in Guinea).

Discussion and Relevancy to the East African Context

The most effective approaches to advancing green growth at the transnational level and at achieving co-ordination and ambition across the key players include

- ♦ A decision-making body comprising individuals from the highest level of authority (i.e. heads of states) from each member state (i.e. the NBA) and the Shared Vision process.
- ♦ Strong political will across the member states and desire to move away from unilateral planning towards co-ordinated development actions throughout the basin (as noted in the Appraisal Document; World Bank 2007).
- ♦ Sector knowledge within the NBA, which is composed of several technical teams/individuals from the member states.

One of the project goals noted in the Appraisal Document was to work with the nine riparian countries to empower the NBA and require the organisation to fully commit to key legal and institutional mechanisms fostering overall coordination, management and optimisation of the activities across the basin (World Bank, 2007). Progress has been achieved on this goal through the adoption of the Niger Basin Water Chapter, development of Annex 1 of the Niger Basin Chapter and organisation of the Niger Basin Panel of Experts.

Niger Basin Water Resources Development and Sustainable Ecosystems Management Project

Financing

- ☐ Diversity of financing options
- ☐ Investor leadership

National conditions

- ☒ National government leadership
- ☒ National policies, laws, regulations, strategies, and/or plans that support regional collaboration
- ☐ Improved enforcement of the national-level policies and regulations

Outreach and capacity building

- ☐ Inclusive stakeholder engagement to build project support
- ☐ Institutional capacity building and development of knowledge products

Proof-of-concept

- ☐ Existing project(s) of similar scope
- ☐ Quantification of benefits and tradeoffs using accepted methods, such as social impact assessments, strategic environmental assessments, and/or environmental impact assessments

Regional conditions

- ☐ Regional strategy for green growth
- ☒ Mechanisms to foster collaboration among countries

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EAC Case Studies

Table B-6. Kenya Water Security and Climate Resilience Project

Project Summary	
Project name	Kenya Water Security and Climate Resilience Project
Location (countries, watersheds, etc.)	Kenya, with spill over effects in Tanzania and Uganda
Duration	May 2015–2022, 8 years
Funder and funding amount (currency)	Total project cost amount: USD 327.8 million World Bank funding committed amount: USD 182.67 million; the rest will be provided by a pool funding from a number of countries and agencies loaning to the Government of Kenya (GOK) through the World Bank
Sector (energy, transport, water)	Water, with impact in agriculture and energy
Major objectives/goals	<ul style="list-style-type: none"> ♦ Improve GOK capacity to better manage water resources within its boundaries ♦ Improve the use of water resources to spur economic growth through irrigation and hydropower production
Was the project conceptualised and developed to promote green growth in the relevant countries?	Yes, through improved water resources planning and management, efficient water use across different economic sectors, improved water storage and clean energy production. This was guided by the provisions of the Water Act 2002, now transitioned to Water Act 2016, both of which explicitly require that water allocation planning, including surface and ground, be done in an equitable manner, and in keeping with the Green Water Defense principle, which aims to protect ecosystems preservation and functioning.
<p>The Kenya Water Security and Climate Resilience Project (KWSCR) aims to deploy technology and infrastructure to support water resources planning and management, promote efficient water use, generate clean energy through hydropower, better align land use practices to respond to emerging climate change impacts and increase irrigation uptake to support food security. The long-term goal of the project is increased water quantity and quality across Kenya, and the transboundary basins between Kenya and its neighbouring countries of Tanzania and Uganda.</p> <p>This project has regional implications due to the shared ecosystems and transboundary basins between Kenya, Uganda and Tanzania. For instance, flood and drought early warning systems deployed along the Sio-Malaba-Malakisi river basin between Kenya and Uganda would, to a large extent, influence land-use patterns across the two countries along the expansive basin. Equally, the hydro-metrology network and surface water flow simulation model deployed along the Mara River basin between Kenya and Tanzania will have an impact on water abstraction plans across the two countries with regards to the Mara River and its tributaries.</p> <p>From interviews with project team and other key stakeholders, the weakest link identified in the project so far is the different levels at which regional countries (e.g. Kenya, Uganda and Tanzania) are at with regards to the adoption of the integrated water resources management (IWRM) principle. Although Kenya adopted the principle in 2001 and domesticated related laws and statutes in 2002, including the Water Act 2002, its neighbours, Uganda and Tanzania, are still far behind in integrating IWRM principles into a water resources development agenda. With the lack of a solid transboundary water resources management policy in the two countries, by itself, Kenya cannot effectively undertake transboundary activities. Thus, there is a need for both Uganda and Tanzania to quickly reach the same level as Kenya in so far as the IWRM application is concerned. Additionally, the two countries may want to consider strengthening their capacities around transboundary water resources management by establishing effective local policies and statutes in line with the regional policies brought about by the Lake Victoria Basin Commission (LVBC), an organ of the East African Community (EAC).</p> <p>In context of this analysis, it can be argued that the project has succeeded in many aspects, including</p> <ul style="list-style-type: none"> ♦ Strengthening of a water abstraction permitting programme across the six main catchment areas of Kenya, ♦ Strengthening of decision support tools for enhanced equitable allocation of water resources, 	

Project Summary			
Project name		Kenya Water Security and Climate Resilience Project	
<ul style="list-style-type: none">◆ Better understanding of water demand and availability curve from the quality data sets generated through project intervention,◆ Minimising transboundary water conflicts through deployment of shared decision support tools,◆ Improving transnational resilience and adaptation capabilities around water resources availability and◆ Improved transnational collaboration on water resources management.			
Stakeholder Influence on Regional Infrastructure Projects			
<p>Over the past decade, the increasingly unpredictable water resources availability informed a debate amongst key stakeholders on the various Kenyan economic interests at stake due to diminishing resource availability. This prompted the government, through the Ministry of Water and Irrigation, to explore the most appropriate measures to contain the eminent threat that water scarcity was likely to pose on the general economic growth of the country, which eventually led to the project conceptualisation.</p> <p>This came at a time when the country’s lead agency on water resource management, the Water Resources Management Authority (WRMA),¹⁵ was grappling with the challenge of illegal water abstraction from various source points (i.e. surface and ground). Therefore, KWSCR was partly designed to respond to such challenges by developing and deploying a new set of decision support tools to help identify both known and unknown abstraction and recharge points, monitor abstractions – permitted or otherwise – and relay real-time data on water resources availability across a set of defined variabilities and conditions</p> <p>Water and Agriculture: As the project begins to yield results, some stakeholders may have to adjust their <i>modus operandi</i> to respond to the new set of water use rules and emerging structures, especially the large commercial farms undertaking irrigation activities. With introduction of improved basin planning and deployment of strong catchment management plans, most of the commercial farms may be required to abstract lower quantities than previously permitted because of the new permitting regime, which is heavily reliant on quality flow data being generated by the simulation models under deployment – the lack of which was a major gap under the previous arrangement. This could scale down their operations or force them to adopt more efficient irrigation infrastructure to keep up with reduced abstraction rates.</p>			
Major Stakeholders			
Stakeholder	Role	How were they impacted by this project?	Additional comments
Local communities	Jointly form the Water Resource Users Association and helps water authorities with catchment protection, data collection and abstraction permitting review	An improved abstraction permitting programme means that local communities can now get equitable access regardless of their ability to influence water allocation plans by the authorities	The main interest of this stakeholder category is availability of water resources to support day-to-day needs
Commercial agricultural players	Aligning their agricultural operations with the set abstraction rules, including quantities and time series	With improved systems, cases of withdrawal permit failures have drastically reduced, translating into less losses by the commercial farms	This level of stakeholders is mainly interested in availability of reliable water resources to support irrigation and other on-farm commercial activities

¹⁵ The WRMA was established under the Water Act 2012, but its name has since changed to Water Resources Authority (WRA) under the Water Act 2017, now in force.

Project Summary			
Project name		Kenya Water Security and Climate Resilience Project	
		because of better planning made possible by real-time data availability	
Manufacturing and industrial outfits	Under the project, manufacturers and industrialists have strived to adhere to set guidelines on efficient water use and reuse in all commercial entities	Through project intervention, this group of stakeholders minimised on losses previously arising from unpredictable water supply, which hampered their business operations	This group's interest is reliable water supply to support industrial processes and operations
Water Resources Authority (WRA)	WRA hosts the project implementation unit and oversees all policy and operational direction of the project	Increased revenue from water abstraction permits	WRA's key interest in the project is resource management and a reliable abstraction permitting programme that supports sustainable growth
GOK	Project design, management and resource mobilisation	Through increased water resources availability, the country's global standing in the ease of doing business index went up, restoring investor confidence	GOK's main goal is the ultimate availability of water resources to support the country's multi-sector development plans under the overall national development blueprint – Vision 2030
Illegal water abstractors	Not applicable	WRA was not only losing revenue because of illegal abstractions, but was also keen to have an accurate data on all withdrawals – permitted or not – to support water resources planning	The new water withdrawal permitting programme has eliminated most of the illegal abstractors from both surface and ground water sources
<p>By impact, KWSCRCP stretches beyond Kenya owing to the transboundary nature of some of the river basins of interest, namely Mara and Sio-Malaba-Malakisi. These two river basins are interconnected to the Nzoia and Yala river basins, which form the project's core areas. As Kenya is a water scarce country, the project was partially designed to help the country mitigate against the potential effects of climate change and cushion the country against acute water shortage in later years.</p> <p>As part of the project, and through public-private collaboration, constructed wetlands will be erected at specific locations across the Nzoia, Yala and Mara river basins. Therefore, this case study relates to green infrastructure by directly contributing to biodiversity conservation through ecosystems preservation and management.</p>			

Project Summary

Project name

Kenya Water Security and Climate Resilience Project

Situational Analysis of Regional and National Policies, Regulations and Institutions

Protocol for Sustainable Development of Lake Victoria Basin – November 29, 2003

The protocol was established to bring into force a dedicated, special purpose regional entity to advance increased investment in the fields of infrastructure, clean energy, transport, communication, tourism, agriculture and fisheries, among other areas of social and economic endeavours, to spur development and eradicate poverty in the Lake Victoria Basin.

Below are some of the key institutions in the applicable country(ies) impacting the infrastructure investments.

Kenya – Kenya Vision 2030 Coordination Secretariat, Ministry of Water and Irrigation, Ministry of Agriculture, Livestock and Fisheries

Vision 2030 Coordination Secretariat (*Ruwaza ya Kenya 2030* in Swahili) is the country's development programme from 2008 to 2030. It was launched on 10 June 2008 to help transform Kenya into a 'newly industrialising, middle-income (income exceeding world's average currently at US \$100,000) country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Developed through "an all-inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country," the Vision is based on three pillars': (1) economic, (2) social and (3) political.'

Kenya Vision 2030 is to be implemented in successive 5-year plans, with the first plan covering the period 2008–2012. Under the Vision, Kenya expected to meet its Millennium Development Goals by the deadline in 2015, although this was not achieved (nor has it been, to date).

Vision 2030 Coordination Secretariat impacts the infrastructure developments by conceptualising and coordinating infrastructure developments in consultation with other line ministries and county governments necessary for the attainment of Vision 2030. Some of these infrastructure developments relate to water storage and supply works, which requires huge investments.

Ministry of Water and Irrigation and Ministry of Agriculture, Livestock and Fisheries

These are the two line ministries that develop and oversee legal and policy frameworks upon which various water infrastructure investments can be executed, including those targeted at increased irrigated agriculture, water storage, flood management and transboundary water use, among others.

Based on the information collected for the situational analysis, there appears to be a complementary arrangement between existing regional and national development policies and plans. For instance, all the EAC countries subscribe to IWRM principles, which require that all factors and actors affecting water resources availability be considered, including ecosystems health, in the overall management and allocation plan of water at a given point. This makes it easier to collaborate and co-manage transboundary water resources as a shared resource.

However, the different levels at which various countries stand with regards to IWRM principle differs – Kenya rates much higher than other countries. Additionally, the difference in water security indices among different countries influences individual country priorities and water resources management approaches.

East African Community Vision 2050 – established March 9, 2014

EAC Vision 2050 incorporates the key development highlights from each member state, acting as a unifying development for the bloc. This makes it easier for the bloc, or any member country to engage other partner(s) in the conceptualisation and design of a regional intervention in any aspect of development.

No overlap of policies was noted at either the national or regional levels. The existence of an overarching protocol for Sustainable Development of Lake Victoria Basin, in addition to the EAC Vision 2050, provides a regional policy upon which various countries are to anchor in-country legal and policy interventions with regards to the water sector.

However, there does exist one common gap – in-country policies and statutes governing the water sector, which are generally designed under the same principles, but are presently at different levels of implementation and policy cycle.

Project Summary	
Project name	Kenya Water Security and Climate Resilience Project
Supportive Conditions and Impacts to the Economy Growth Pathway	
<p>Based on this analysis, the case study contributes to the green growth agenda at both national and regional levels through improved water use efficiency. Through project efforts, water resources planning and management will form an integral ingredient in Kenya's sustainable growth path. Improved water use efficiency will, in turn, bring about multiple green benefits, including improved climate resilience and minimised climate shocks. It is anticipated that these positive impacts will be felt at all levels – local, national and regional.</p> <p>KWSCRCP has become a success in supporting a green growth pathway by providing reliable data and decision support tools that promote increased investments in hydropower projects. The project has also helped address water security concerns across the country, attended to transboundary water management challenges, supported improved water use efficiency and responded to water resource development challenges arising from climate change.</p> <p>During analysis, a few difficulties were noted as having been experienced during project start-up. For instance, the overlap in country policies and laws between Kenya, Uganda and Tanzania regarding water resources development, particularly relating to the transboundary water management, is a challenge and may have resulted to the slow start. Whereas the project was designed and is being implemented under Kenya policies and laws, certain components require transnational collaboration and participation with neighbouring countries whose water sector laws and policies are still somewhat weaker than Kenya. This means other countries lag in many aspects of water resources management, sometimes resulting in delays implementing activities or, at worst, failure to find a common understanding between Kenya and its neighbours. To this end, we propose that a detailed analysis of the existing policy environment be undertaken and any necessary structures, i.e. policies and laws, be put in place before such a project is replicated. This will not only ensure smooth implementation but also consistent stakeholder confidence through the project's life.</p> <p>Following is a summary of the supportive conditions that, to a large extent, led to the successful development and implementation of this case study:</p> <ul style="list-style-type: none"> ◆ The project met the World Bank criteria for funding under the green development agenda, which states, amongst other criteria, that a project to be funded under this category must have no negative impact on ecosystems health and the general environmental set up. Further, a project must demonstrate potential green benefits, including preservation of natural ecosystems. ◆ The project proponents (i.e. GOK) demonstrated the potential impact of the project on the general status of Kenya's water security. ◆ There was unreserved stakeholder buy-in and support for the project. 	
Discussion and Relevancy to the East African Context	
<p>In conclusion, the analysis noted the following approaches to advancing green growth at the transnational level as having been most effective at achieving co-ordination:</p> <ul style="list-style-type: none"> ◆ Establishing a common strategy for transboundary water resources management, ◆ Applying a similar set of principles in the management and allocation of water resources across the countries of influence and ◆ Harmonising country specific resources management plans, as they relate to transboundary basins. 	

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The case study also relied on interviews with relevant stakeholders.

Table B-7. Lake Turkana Wind Power Project

Project Summary	
Project name	Lake Turkana Wind Power Project (LTWPP)
Location (countries, watersheds, etc.)	Turkana County, Kenya
Duration	3 years
Funder and funding amount	<p>A consortium of local and foreign private sector investors (Private Sector Initiative): USD 700 million</p> <p>Consortium comprising:</p> <ul style="list-style-type: none"> ◆ KP&P Africa BV ◆ Aldwych International ◆ Investment Fund for Developing Countries ◆ Vestas Eastern Africa Limited Finnish Fund for Industrial Cooperation Ltd.) ◆ KLP Norfund Investments AS ◆ Sandpiper
Sector (energy, transport, water)	Energy
Major objectives/goals	Sell up to 310 megawatts (MW) of electric energy to the national distribution network
Was the project conceptualised and developed to promote green growth in the relevant countries?	Yes. This was part a flagship wind power project aimed at harnessing the high winds in the Turkana Hills of Turkana County and bridge the energy deficit of the country to solidify its industrial growth, in line with the Kenya National Energy Masterplan, 2015.
<p>Wind turbines deliver clean energy that support the global fight against climate change. LTWPP wind farm covers 40,000 acres (162 kilometres [km]²) and aims to provide 310 MW of reliable, low-cost wind power to Kenya's national grid, equivalent to approximately 18% of the country's current installed electricity generating capacity. On completion, the project will comprise 365 wind turbines, each with a capacity of 850 kilowatts (kW), the associated overhead electric grid collection system and a high-voltage substation that will be connected to the national grid. The power produced will be bought at a fixed price by Kenya Power and Lighting Company Ltd (KPLC) over a 20-year period in accordance with a power purchase agreement (PPA) signed between LTWPP and KPLC.</p> <p>Because of the magnitude of its clean production, the project is the first major wind power investment of its kind in East Africa and the first major attempt by the private sector to invest in clean energy production under the independent power producer (IPP) framework. Therefore, the project qualifies as regional infrastructure based on the analysis criteria. Through the Eastern Africa Power Pool, Rwanda, Burundi and Tanzania have signed PPAs with Kenya. Therefore, this project contributes to the larger power bank through the national grid.</p> <p>The LTWPP does not in any way alter ecosystem functioning and health, nor does it expose the environment to any negative effects. The process of wind turbines converting wind energy into electrical energy for use by hundreds of thousands of people to spur industrial growth qualifies it as green infrastructure</p> <p>From conception, LTWPP was developed to promote green growth in the East Africa region. In the push to actualise the proposed EAC Energy Efficiency and Conservation Agency (EECA), Kenya, East Africa's largest economy, developed a Clean Energy Production Plan (CEPP) that aims to reverse the country's dependence on non-renewable energy sources by the year 2030 through promotion of increased private sector investment in the clean energy portfolio.</p>	
Stakeholder Influence on Regional Infrastructure Projects	
<p>At the time of analysis, no major challenges or failures had been noted by the project management. Project implementation remains on schedule, which the project managers attribute to an all-inclusive approach and continuous stakeholder consultations, especially with the county government of Turkana, local communities, regulatory authorities and financiers.</p>	
Major Stakeholders	

Project Summary			
Project name		Lake Turkana Wind Power Project (LTWPP)	
Stakeholder	Role	How were they impacted by this project?	Additional comments
Turkana County Government	Business licensing and relationship management between project and communities	Jobs and other opportunities offered to local communities	Interest: How does the project benefits local communities?
Local communities	Provision of manual labour and other non-technical support services	Through casual labourer opportunities	Interest: Job opportunities during construction and operations
GOK	Policy development and regulatory oversight	A step towards attainment of the National Energy Masterplan	Interest: Increased clean, renewable energy into the grid
Energy Regulatory Commission	Regulatory support	<ul style="list-style-type: none"> ♦ A reduction on the reliance on non-renewable energy sources ♦ Availability of reliable supply of energy to the population 	Interest: Availability of steady supply of clean, sustainable and affordable energy
Shareholders	<ul style="list-style-type: none"> ♦ Development of investment plan ♦ Resource mobilisation 	Sell the energy produced to the national grid	Interest: Return on investments
<p>This project is the first of its kind, where an exclusive private sector collaboration has championed the development of clean energy infrastructure of this magnitude across in East Africa. The project is situated on private land and licensed as an IPP initiative. The licensing allows the project owners to sell power to the national grid as provided in the PPA.</p>			
Situational Analysis of Regional and National Policies, Regulations and Institutions			
<p>Some of the key regional and national policies that directly impact LTWPP are listed below.</p> <p>Independent Power Production Policy, 2010. This policy provides for a guaranteed energy market for individual and private sector investors willing to invest in power generation. It defines which types of power generation equipment attract zero-rated tax and the regulatory framework under which such independent producers operate.</p> <p>East African Community (EAC) Vision 2050, 2014. This is East Africa's regional vision for socio-economic transformation and development.</p> <p>Kenya National Energy Masterplan, 2015. The masterplan provides the national roadmap for sustainable energy production to meet present and anticipated demands. Kenya aims to cut its reliance on non-renewable energy by 30% by the year 2030. This is in anticipation of increased energy yields from ongoing and proposed clear energy projects, including wind, hydro, solar and geothermal sources.</p> <p>During analysis, the study identified the following institutions as key stakeholders in infrastructure development:</p>			

Project Summary	
Project name	Lake Turkana Wind Power Project (LTWPP)
<ul style="list-style-type: none"> ♦ Energy Regulatory Commission: Provides the legal anchor upon which energy production projects are licensed and operate in Kenya. ♦ Kenya Vision 2030 Secretariat: Promotes public- and private-sector investments in clean energy production. ♦ EAC Business Council: Promotes cross-border trade and investments, especially in infrastructure and clean energy production. <p>Based on the information collected for the situational analysis, it was noted that existing regional and national development policies and plans work together. For instance, the EECA, CEPP and the Kenya National Energy Masterplan 2015 are all aimed at promoting a common agenda for clean, sufficient energy to support economic growth.</p>	
Supportive Conditions and Impacts to the Economy Growth Pathway	
<p>It is anticipated that project impact will permeate beyond national influence into other EAC countries. With an annual yield of 310 MW of energy to the Eastern Africa power pool through the national grid, the LTWPP will be amongst the highest contributor of clean energy across the region. It is also a significant milestone in the implementation of the CEPP and a positive step in the context of the EECA's agenda. Notably, Rwanda, Burundi and Tanzania have signed PPAs with Kenya under the regional power pool framework.</p> <p>Following is a summary of supportive conditions that led to the development of this project:</p> <ul style="list-style-type: none"> ♦ Existence of the IPP policy ♦ Market availability for electric power supply ♦ Kenya's county and national governments strong desire to attract a new stream of direct investments 	
Discussion and Relevancy to the East African Context	
<p>As a financing mechanism, private sector pool funding in support of infrastructure developments should be explored by respective governments as a viable financing option. This is best done by national and regional authorities through a targeted promotion of viable green investment opportunities to the private sector associations across the EAC block.</p> <p>Following are the major risks identified from this project, which may need to be addressed if the project is to be replicated:</p> <ul style="list-style-type: none"> ♦ The possibility of infrastructure vandalism because of political violence ♦ Price capping under the PPA policy, which does not favour IPPs ♦ Delayed payments by the power company purchasing from the IPPs ♦ Unconducive lending rates ♦ Low return on investments rates 	

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The case study also relied on interviews with relevant stakeholders.

Table B-8. Standard Gauge Railway Project

Project Summary	
Project name	Kenya Standard Gauge Railway (SGR) Interconnection
Location (countries, watersheds, etc.)	Kenya, with connections to Rwanda, Uganda and Tanzania under the East Africa Railway Masterplan
Duration	4 years; operational since 1 June 2017
Funder and funding amount (currency)	People's Republic of China (PRC), through the Chinese Development Corporation: USD 13.8 billion
Sector (energy, transport, water)	Transport, Trade
Major objectives/goals	<ul style="list-style-type: none"> ◆ Provide affordable cargo transport ◆ Reduce the cost of road maintenance by reducing the length of the cargo transport road ◆ Provide affordable mass passenger transport between East African Community (EAC) member states ◆ Slow the impact of climate change through a reduction in vehicle emissions
Was the project conceptualised and developed to promote green growth in the relevant countries?	<p>Yes. All motorised transport produces carbon dioxide (CO₂) – one of the greenhouse gases that contribute to climate change. Trains are an energy-efficient carrier of people and goods and, hence, produce relatively less CO₂ emissions per passenger than other transportation modes. Travelling by rail reduces one's contribution to climate change. Emissions of CO₂ per passenger/kilometre are, on average, approximately half that of travel by car.</p> <p>In the environmental management and emissions reduction plan for the SGR project, passenger trains are designed to record no less than 70,000 travellers each month between Nairobi and Mombasa. This would drastically reduce the number of buses that would be required to transport the same number of passengers between the two cities. It is estimated that this will lead to a reduction in emissions by several tonnes each year.</p>
<p>The track between the port city of Mombasa and the market town of Naivasha shortens the journey between the two cities from 12 hours to 5 hours. Passenger trains travel at 120 km/h and freight trains carry 25 million tonnes per year. Eventually, the East Africa Railway Masterplan, under the umbrella of the EAC, will link Mombasa with other major East African cities, such as Kampala, Uganda, and Juba, South Sudan. This will have multiple, significant benefits, including reduced emissions along the Great North Corridor because of a decline in cargo truck movement and passenger vehicles.</p> <p>By design, therefore, the project impact will permeate beyond Kenya to other EAC states. In the Kenya Green Economy Strategy (GESIP) 2016, the project design sought to drastically reduce the use of fossil fuel in the transportation of cargo and passengers from one country to another across the region. In general terms, rail is a relatively energy efficient transportation mode. Rail transport uses far less energy per passenger/Km than road travel. A rail passenger travelling by high speed train, even at 200 km/hr, typically uses only 0.8–1.0 megajoules (MJ) of energy, compared to 1.4–2.8 MJ for a car driver/passenger.</p> <p>Among the key challenges highlighted during case study analysis was weak stakeholder engagement, especially with regards to social and relocation plans during project kick-off. This resulted in disagreements between land owners and the government over compensations on the land holdings across which the railway was designed to pass, eventually leading to higher compensation rates than the project planning team previously anticipated.</p> <p>However, the analysis noted that this did not delay the overall construction period, which went on as scheduled. As was expected, the rail began formal operations on the 1 June 2017 and has been accredited for multiple benefits to a range of stakeholder groups using both passenger and cargo trains, including environmental benefits related to emission, average time of travel/cargo transportation and increased trade.</p>	

Project Summary			
Project name		Kenya Standard Gauge Railway (SGR) Interconnection	
Stakeholder Influence on Regional Infrastructure Projects			
<p>Public-private collaborations in this project were only confined to limited sub-contract awards to local construction and supply firms, such as suppliers of quarry products, sand and other readily available site consumables. Otherwise the entire project was a government-to-government arrangement between the GOK and the PRC – an arrangement that eliminated many would-be players. As part of the inter-governmental deal, China was to design the project and build and operate both passenger and cargo trains under a concession arrangement for no less than 5 years and no more than 20 years, as will be agreed upon by the two parties following expiry of the first 5 years and considering the loan repayment rate as of the time.</p> <p>As part of the monitoring and evaluation plan, project funders generated a list of environmental safeguards to cushion neighbouring communities, landscapes and other natural and man-made habitats and developments across the railway pathway. This was to ensure minimal interruption to wildlife habitat and to the daily lives of people by activities associated with railway construction and operations.</p> <p>The Kenya SGR qualifies as green infrastructure given that it partly addresses the high emissions arising from the thousands of cargo trucks across the EAC region.</p>			
Major Stakeholders			
Stakeholder	Role	How were they impacted by this project?	Additional comments
Cargo owners	Providing cargo transport market to the SGR and, by extension, adhering to the set cargo transportation rules and standards	The SGR brought about a cheaper, reliable cargo transportation option, as compared to road transport. This is expected to make cargo owners' business operations more efficient and, perhaps, profitable	These stakeholders are mainly keen to explore efficient and affordable movement of cargo to and from the port
Cargo transporters	Business competition brought about by the SGR	The cargo train might, unfortunately, drive some of this stakeholder group out of business as cargo owners switch to the direct use of a more reliable cargo train instead of the road trucks	These stakeholders hope to gain from improved service delivery to clients through use of a more reliable cargo train
Individual governments	Provision of an efficient, reliable transport system to their citizenry and promote cross border trade	Improved efficiency in cross border trade and movements by citizens	Individual governments were very instrumental in resource mobilisation to fund the East Africa Railway Masterplan, under which each country is to directly meet the costs of intra-border railway network construction
Chinese Development Corporation	Provision of loan facility, technical support and operations under concessionary arrangements	Successful completion and launch of the project expanded their global commercial footprint as a key exporter of technology	Interested in exporting technical skills, labour and other finished products. Also, interested in return on investment and establishing long-term bilateral trade relations with foreign nations

Project Summary			
Project name		Kenya Standard Gauge Railway (SGR) Interconnection	
General public	Availability of alternative, affordable transport options	Efficiency and reduced transportation cost brought about by the SGR compared to the road transport	The key interest of this category is availability of alternative, affordable transport options
EAC block	Establishment of regional policies and corporation frameworks to promote trade and cooperation among member states	Actualisation of the EAC Vision 2025, which provides for the East Africa Railway Masterplan	EAC Secretariat's interest is to see free movement of people, goods and services across the partner states to promote regional development
This study notes that a unifying regional goal, packaged as the East African Railways Masterplan, 2014, under the EAC umbrella for a modern, efficient and affordable transport network to spur economic growth, provided for a shared vision in the establishment of the SGR.			
Situational Analysis of Regional and National Policies, Regulations and Institutions			
Key policies that influenced conceptualisation of case study are detailed below.			
<ul style="list-style-type: none"> ♦ Railways Act, Cap 397 of the Laws of Kenya, 20 January 1978. This legislation provided Kenya Railways the mandate to co-ordinate and integrate rail and inland waterways transport services and inland port facilities within Kenya. The Act was amended through The Kenya Railways (Amendment) Act 2005 to make it possible for the Board of Directors to enter concession agreements or other forms of management for the provision of rail transport services. Following this Amendment, Kenya Railways conceded railway operations to Rift Valley Railways Ltd (as of 1 November 2006) for 25 years of freight services and 1 year of passenger services. ♦ The East African Railway Masterplan. Signed in Nairobi on 12 May 2014 by the EAC heads of states, the East African Railway Masterplan is a proposal for rejuvenating existing railways serving Tanzania, Kenya and Uganda, and extending them, initially, to Rwanda and Burundi and, eventually, to South Sudan, Ethiopia and beyond. The plan is managed by infrastructure ministers from participating East African Community countries in association with transport consultation firm CPCS Transcom. ♦ Kenya GESIP 2015. Kenya has one of the most dynamic economies in Africa, yet it is facing several pressing economic, environmental and social challenges. In 2016, Kenya developed and adopted a strategy to guide its transition of economy from business as usual investments to green economy in four key sectors that are critical for the country's green growth: agriculture, energy, manufacturing and transport. 			
In Kenya, particularly where the case study was analysed, the following institutions were identified as critical in infrastructure development of this nature:			
<ul style="list-style-type: none"> ♦ Kenya Railways Corporation ♦ Ministry of Transport, Infrastructure, Housing and Urban Development ♦ Vision 2030 Coordination Secretariat 			
<p>The Kenya Vision 2030 is the national long-term development policy that aims to transform Kenya into a newly industrialised, middle-income country providing a high quality of life to all its citizens in a clean and secure environment by 2030. The Vision comprises three key pillars: economic, social and political. The economic pillars aim to achieve an average economic growth rate of 10% per annum, which is to be sustained until 2030. The Vision 2030 Delivery Secretariat is charged with the mandate of spearheading the implementation of Vision 2030 as the country's blueprint and strategy towards making Kenya a newly industrialised middle-income country. The Secretariat provides strategic leadership and co-ordination in the realisation of the overall goals and objectives of Vision 2030 and its medium-term plans.</p>			
<p>Ministry of Transport, Infrastructure, Housing and Urban Development is the lead policy and supervisory arm of the GOK in all matters pertaining to infrastructure development. The Ministry envisions Kenya to be a global leader in provision of transport infrastructure, maritime economy, the built environment and sustainable urban development.</p>			

Project Summary	
Project name	Kenya Standard Gauge Railway (SGR) Interconnection
<p>Kenya Railways is the lead government agency that develops, operates and maintains all railway transport and related infrastructure in Kenya. This includes rail and inland waterways transport services and inland port facilities within Kenya, consisting of both passenger and cargo trains.</p> <p>Our analysis found that the existing regional and national development policies and plans work together. Overlaps were identified by the fact that transport infrastructure design across the EAC states are largely informed by anticipated trade turnover, movement of persons and other proposed developments, which would impact the transport network (e.g., road, rail, water and air). This ensures that infrastructure corresponds to the various development plans across the region. No major gaps were identified during the analysis.</p>	
Supportive Conditions and Impacts to the Economy Growth Pathway	
<p>Based on the information collected for the situational analysis, the following can be summarised as the supportive conditions that led to the development of this project:</p> <ul style="list-style-type: none"> ♦ High cost of road maintenance because of the many cargo trucks beyond the anticipated numbers ♦ High cost of cargo transportation by road ♦ Lack of efficient passenger transport linking regional states ♦ Availability of project financing options ♦ Competition amongst countries to attain a measure of industrialisation <p>Important to note is the fact that the case study contributes to the green growth agenda at both national and regional levels through reduced emissions. It is further noted that the project experienced some risks, mainly owing to the fluctuating foreign exchange rate.</p> <p>Major risks were</p> <ul style="list-style-type: none"> ♦ High cost of foreign lending ♦ Rising inflation rate, which lowered the Kenya shilling against the US dollar, thereby increasing loan interest rates 	
Discussion and Relevancy to the East African Context	
<p>In context of the case study, the following approaches were most effective in advancing green growth agenda at the transnational level:</p> <ul style="list-style-type: none"> ♦ Designing a common regional transport network in support of regional trade ♦ Using the narrative of economies of scale likely to arise from the project as a selling point to the funding sources <p>Subsequently, pool loaning by the regional states was identified as the most appropriate financing mechanisms in support of a common regional agenda aimed at increased trade and development.</p> <p>In conclusion, it is recommended that the following highlights be considered beforehand in the event a similar project is to be replicated:</p> <ul style="list-style-type: none"> ♦ Relocation and compensation of the communities and other developments along the railway path should be more consultative. Sufficient time is needed for this process to avoid uncertainties and misinformation, especially amongst the affected population. ♦ A structured stakeholder engagement strategy with a clear participatory approach plan should be developed and rolled out during the project inception period to help clarify stakeholder concerns and address any emerging issues. 	

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The case study also relied on interviews with relevant stakeholders.

Annex C. Stakeholder Identification and Engagements

Stakeholder Selection for Field Work Engagements

The study team conducted a stakeholder analysis to select stakeholders to engage with during the fieldwork. Stakeholders were considered based on their expertise, position interests and the influence that they could have on the regional infrastructure projects in the energy, transportation and water sectors.

The stakeholder analysis included a review of the existing African Centre for Technology Studies (ACTS) and RTI International project partners, those who have attended conferences, policy roundtables and fora organised and/or attended by ACTS and experts who have previously interacted with ACTS and RTI on projects with a similar scope. The stakeholder analysis was also informed by a review of existing policies and regulations at the national and regional levels to identify relevant government agencies and ministries.

The team identified over 100 stakeholders in the four East African Community (EAC) member countries representing academia, civil society organisations (CSOs), community-based organisations (CBOs), the donor community, government ministries and departments (national and regional), non-governmental organisations (NGOs), private sector actors and United Nations (UN) agencies.

The field work commenced at the EAC Secretariat in Arusha, Tanzania, and the study team conducted exploratory interviews with the Secretariat's experts on regional policies, strategies, projects, programmes and plans related to climate change, energy and transport and their perceptions on the ways in which regional infrastructure can support green growth, including the opportunities and limitations (Table 1).

The EAC Secretariat experts provided a regional perspective and also suggested national-level stakeholders to engage with in Kenya, Rwanda, Tanzania and Uganda. Therefore, the study team refined the target list of stakeholders based on the initial engagements with experts at the EAC Secretariat.

The EAC Secretariat experts also provided guidance to help the study team narrow down the list of stakeholders to interview in the four countries (Kenya, Rwanda, Tanzania and Uganda). The EAC Secretariat experts recommended relevant stakeholders representing researchers, practitioners, NGOs, UN agencies, CSOs, policy-makers, academics and CBOs.

Stakeholder Engagements

In January and February 2017, the study team conducted field work in Kenya, Rwanda, Tanzania and Uganda. Table 1 provides an overview of the number and type of stakeholders that the study team engaged with, broken down by country.

The study team engaged stakeholders to participate in the study through official communication (official letters), emails and phone calls. The study team used social media platforms (e.g., Facebook, LinkedIn, Skype, Twitter and What's App) and professional relationships to reach out to the stakeholders.

The study team conducted 67 in-depth interviews with stakeholders in Tanzania, Rwanda, Uganda and Kenya. The interviews were with experts in the energy, water and transport sectors

and those specialising in the cross-cutting themes of climate change, environment, gender, regional integration and trade. The stakeholders interviewed in each sector were primarily key decision-makers and/or policy-makers in their respective organisations or ministries. The study team organised one focus group discussion (FGD) each in Rwanda, Tanzania and Uganda (three total).

In Rwanda, the study team conducted 14 interviews with stakeholders from CSOs, the private sector, UN agencies, NGOs, government and parastatals. The FGD held in Rwanda was attended by four CSO representatives and one private sector representative. Some of the FGD participants in Rwanda also participated in the in-depth interviews.

In Tanzania, the study team interviewed 18 stakeholders from water, energy, transport, environment and climate change ministries and held one FGD that brought together five representatives from CSOs.

In Uganda, the study team conducted 13 interviews with stakeholders from the transport, energy, environment and climate change and water sector and one FGD that brought together six different stakeholders from ministries, CSOs and a university. At least one or two of the stakeholders who participated in the individual in-depth interviews also attended an FGD.

In Kenya, 22 stakeholders representing different key ministries, organisations and private sector were interviewed and at least 35 policy makers, researchers, practitioners, CSOs, private sector and academia representatives from Uganda, Tanzania, Rwanda, Kenya and Ethiopia attended a regional workshop and policy roundtable held in Nairobi on 11th and 12th April 2017.

East Africa Regional Policy Roundtable and Workshop

In April 2017, the study team also brought together 35 stakeholders from Ethiopia, Kenya, Rwanda, Tanzania and Uganda for a two-day East Africa Regional Policy Roundtable and Workshop held in Nairobi, Kenya, to discuss potential improvements to international climate change policies to support low-income countries. The Policy Roundtable included participants from academia, CSOs, national ministries, the private sector and representatives from the UN Development Programme. The workshop provided a platform for various East African policy-makers to share their knowledge and experiences. The workshop also provided insight on leveraging climate finance to support regional infrastructure investments to support green growth, the extent to which 'Climate Relevant Innovation-system Builders' can be a key mechanism through which the Nationally Determined Contributions (NDCs) can be implemented to support green and climate resilient economies in the region, and the ways in which countries can implement their NDCs to leverage maximum international climate finance to build innovation systems around new and existing climate-resilient technologies.

One approach discussed included designing climate-relevant innovation system builders to leverage maximum financial support for low-carbon economic growth, the implementation of NDCs and poverty alleviation in low-income countries.

Table C-1. Summary of field work

Country	Sector	Government (Ministry; Department)	CSO	Private Sector	Academia	Number of Representatives
Tanzania	Transport	EAC (1)		Private Sector (1)		2
	Energy	EAC (1); Rural Energy Authority (1)				2
	Water	Ministry of Water (2)				2
	Climate Change/Environment/Green Growth	EAC; Ministry of Environment (1)	CSOs (10)			11
	Trade and Regional Integration	EAC (3)		Private sector (1)		1
	FGD (climate change; environment; water; energy)					5
TOTAL of Unique Stakeholders						23
Rwanda	Transport	Ministry of Infrastructure (1)				1
	Energy	Rwandan Development Board (2)		Private Sector (1)- <i>Daladala</i> driver/informal transport system		3
	Water		CSOs (2)			2
	Environment/Climate Change/Green Growth	Rwandan Environment Management Authority (2); Ministry of Environment and Natural Resources (1); EAC Consultant (1);	UN agency (1); CSOs (2)			7
	Trade and Regional Integration	Ministry of Trade, Industry and East African Affairs (1)				1
	FGD (energy, water, environment,		CSOs (5)			5

Country	Sector	Government (Ministry; Department)	CSO	Private Sector	Academia	Number of Representatives
	transport, climate change)					
TOTAL of Unique Stakeholders						19
Uganda	Transport	Ministry of Public Works and Transport (1)			University (2)	3
	Energy	Ministry of Energy (2)				2
	Water	Ministry of Water (1)				1
	Environment/Clim ate Change/Green Growth	Ministry of Environment and Natural Resources (2);	CSOs (3)	Private Sector (1)		6
	Trade and Regional Integration			Private Sector (1)		1
	FGD (energy, water, environment, transport, climate change)	Ministry of Environment (1)	CSOs (4)		University (1)	6
TOTAL of Unique Stakeholders						19
Kenya	Transport	Ministry of Transport (2)		Private Sector (2)- <i>Matatu</i> industry drivers		4
	Energy	Ministry of Energy (2)				2
	Water	Ministry of Water (2); Development Authority (1)				3
	Environment/Clim ate Change/ Green Growth	Ministry of Environment and Natural Resources (3); National Environment Management Authority (1);	UN agency (2)	Private Sector (1)	University (3)	10
	Trade and Regional Integration			Private Sector (1)		1
	Gender Issues		CSO (2)			2
TOTAL of Unique Stakeholders						22

Country	Sector	Government (Ministry; Department)	CSO	Private Sector	Academia	Number of Representatives
East African Region	East African Regional Policy Roundtable & Workshop (green growth; energy; water; environment; transport; climate change; gender; regional integration)	EAC (1)-Rwanda; Ministry of Environment (3)-Ethiopia; Ministry of Environment (1)-Uganda; Ministry of Environment & Natural Resources (2)-Kenya;	UN agency-Rwanda (1); CSOs (2)-Tanzania; CSO (1)-Uganda; CSOs (10); journalists (2)-Kenya; Donors (5)-Kenya	Private sector (2)-Kenya	University (5)-Kenya	35
TOTAL						35

Note that some stakeholders participated in both an interview and an FGD. Therefore, the total number of stakeholders for each country includes the unique number of stakeholders, not the gross amount.

Annex D. Questions for Field Interviews

Overall Research Question	Research Objectives	Interview Questions	Energy Sector, Water Sector & Transport Sector Stakeholders
How can regional infrastructure development promote the transition to green economies in the East African community (EAC)? What are the supportive national policies and plans and related financing options and incentives?	<p>1) Understand experiences from elsewhere in the world where regional infrastructure development has been used to promote a transition to a green economy.</p> <p>2) Scope the opportunities for the role of regional infrastructure to promote the transition to green economy growth in the EAC with respect to energy, transport and water-related infrastructure</p> <p>3) Make recommendations on effective policy and implementation approaches for regional infrastructure to support more sustainable growth patterns, reduce poverty and enhance climate resilience, within the political context of the EAC.</p>	What are the existing regional infrastructure projects in the water, energy and transport sectors and where are they located regionally and in the countries?	African Development Bank (AfDB), EAC, World Bank, COMESA and other development partners
		Who are the main players involved in the development of these infrastructure projects and what role do they play (e.g., funding, technical or policy)?	AfDB, EAC, World Bank, COMESA and other development partners
		What are some of the policies supporting or regulating these projects?	AfDB, EAC, COMESA and other development partners
		What are the development and livelihood impacts (social, economic and environmental) of these projects?	AfDB, EAC, COMESA and other development partners
		What potential role do these projects have in supporting green economy transitions? Or in impacting negatively the local/national/regional economies?	AfDB, EAC, World Bank, COMESA and other development partners
		Has your organisation supported green technologies, innovations and infrastructure development (e.g., water, energy and transport) within or outside of the EAC region? If yes, please describe the technologies. If no, please describe why not.	AfDB, EAC, World Bank, COMESA and other development partners
		What measures have you put in place to ensure that the projects are supportive to the region's green economy agenda?	AfDB, EAC, World Bank, COMESA and other development partners
		Does your organisation have any policies, plans, programmes and strategies supporting regional infrastructure development that contribute to green growth in the water, energy and transport sectors? Please describe. These examples could be global.	AfDB, EAC, World Bank, COMESA and other development partners; Ministries; government departments
		What are some of the impacts (i.e., benefits, opportunities or obstacles) at the regional, national, subnational and local levels resulting from transitioning	AfDB, EAC, World Bank, COMESA and other development partners; Ministries;

Overall Research Question	Research Objectives	Interview Questions	Energy Sector, Water Sector & Transport Sector Stakeholders
		from conventional development to green development?	government departments; private sector
		Are you familiar with any successful examples of green technologies, innovations and infrastructure in the water, energy and transport sectors that have been implemented in your country and/or the region? Please describe. How were the successes achieved? What do you perceive as the obstacles?	Ministries; government departments; private sector
		What do you perceive as the benefits and disadvantages/risks of regional infrastructure approaches that support green economic growth? How do these benefits and disadvantages vary by stakeholder group?	All stakeholders
		What are the financial instruments and arrangements that you have in place to support development of green technologies, innovations and infrastructure (e.g., water, energy and transport)? For example, what role can private capital, such as private equity funds, pension funds and insurance companies have in the development of regional infrastructure in the EAC?	All stakeholders, excluding civil society organisations (CSOs)
		Are you currently providing any incentives to catalyse development of green technologies, innovations and infrastructure (e.g., water, energy and transport)? If yes, can you describe them?	Ministries; government departments; private sector
		What are some of the key challenges (e.g., policy conflicts, low capacity of organisation or weak governance) you are facing as you facilitate greening of technologies, innovations and infrastructure?	Ministries; government departments; private sector; non-governmental organisations (NGOs)
		What role do you think your organisation has or could have to support green growth? Are you familiar with any national and regional programmes that could be modified or leveraged to support green growth objectives?	All stakeholders
		Do you have any recommendations to improve synergies among stakeholders, improve policy coherence and achieve effective regional integration in support of green growth?	All stakeholders

Overall Research Question	Research Objectives	Interview Questions	Energy Sector, Water Sector & Transport Sector Stakeholders
		What screening tools or economic and financial appraisal models can be used at the loan preparation and due diligence stage to ensure proper identification and quantitative determination of environmental risks, costs and benefits?	AfDB, EAC, World Bank, COMESA and other development partners
		How do the participation, financial commitments and levels of risk taking vary in the private sector for capital expenditures in support of initial development of infrastructure compared to operational expenditures for maintenance and cost recovery of commissioned infrastructure facilities?	AfDB, EAC, World Bank, COMESA and other development partners

Annex E. Overview of Laws, Policies and Regulations in the East African Community (EAC)

The policies, laws, regulations, strategies, plans and programmes governing or constraining the national and regional infrastructure development (energy, transport and water) in Kenya, Uganda, Tanzania and Rwanda are outlined in the matrix below. Regional examples are included in the far-right column.

Uganda	Kenya	Tanzania	Rwanda	Region (EAC)
National				
The Constitution of Uganda (1995)	The Constitution of Kenya (2010)	The Constitution of Tanzania (1998)	The Constitution of Rwanda (2003)	Re-established in 1999 by the Treaty for the Establishment of the EAC
Uganda National Vision 2040	Kenya National Vision 2030	Tanzania Development Vision 2025	Rwanda Vision 2050	EAC Vision 2050
Economic Development and Green Growth				
National Development Plan 2015/2016–2019/2020 of Vision 2040	Second Medium Term Plan (MTP) of Vision 2030	National Five Year Development Plan 2016/2017–2020/2021	Economic Development and Poverty Reduction Strategy 2013–2018	EAC Industrialization Policy and Strategy
Uganda's Green Growth Development Strategy (GGDS): Draft by United Nations Development Programme (UNDP)	Kenya Green Economy Strategy and Implementation Plan (GESIP), 2016	Under development	Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development, 2011	—
Energy				
Uganda National Energy Policy, 2002	Energy and Petroleum Policy, 2015	Energy Policy, 2015	Energy Policy, 2011; Rwanda Energy Policy, 17 March 2015	Energy Security Policy Framework for the EAC Region (Draft)
Hydropower Master Plan	Least Cost Power Development Plan, 2011–2031	Power System Master Plan, 2007–2031	—	Power Master Plan; Regional Strategy on Scaling up Access to Modern Energy Services in EAC (2006)
Electricity Act, 1999	Energy Act, 2006	Electricity Act, 2008; Electricity Act, 2016	Electricity Law, 2011	—
—	—	Rural Energy Act, 2005	—	—
Rural Electrification Strategy and Plan, 2013–2022	Rural Electrification Master Plan	National Electrification Program Prospectus, July 2014	Rural Electrification Strategy, June 2016	Agriculture and Rural Development Policy, 2006; and Strategy, 2005–2030

Uganda	Kenya	Tanzania	Rwanda	Region (EAC)
—	—	Rural Energy Act, 2005	—	—
Atomic Energy Act, 2008	Draft Nuclear Regulatory Bill, 2016	Atomic Energy Act, 2011	—	—
Power Sector Investment Plan, 2010–2030	Strategic Plan, 2013–2017	Electricity Supply Industry Reform Strategy and Roadmap, 2014–2025	Energy Sector Strategic Plan, 2013–2018	—
Renewable Energy Policy for Uganda, 2007	—	—	—	—
Energy Feed-in Tariff, Revised in November 2012; Renewable Energy Feed-in Tariff guidelines for the period 2011–2012	Feed-In-Tariffs Policy on Wind, Biomass, Small-Hydro, Geothermal, Biogas and Solar Resource Generated Electricity, Revised in 2012	—	Renewable Energy Feed-in law, 2012	—
National Oil and Gas Policy for Uganda, 2008–2018	Petroleum Sector Master Plan, 2015	Petroleum Act, 2015 and Oil and Gas Revenues Management Act, 2015	Petroleum (Exploration and Production) Law, 2013; Gas Law (under development)	—
Sustainable Energy for All (SE4All)	SE4All	SE4All	SE4All	—
Environment, Water				
National Environmental Management Act, 1995	Environmental Management and Coordination Act, 1999	National Environmental Management Act, 2004	Law determining the modalities of protection, conservation and promotion of environment in Rwanda. This law puts in place the use, conservation, protection and management of water resources regulations	—
Environmental Laws	Environmental Laws	Environmental Laws	Environmental Laws	—
	National Environment Policy, 2013	National Environment Policy, 1997	Environmental Policy, 2003	—
National Biodiversity Strategy and Action Plan II, 2015–2025	—	—	—	Protocol on Environment and Natural Resources Management, 2006
—	—	—	Biodiversity Policy, September 2011	—

Uganda	Kenya	Tanzania	Rwanda	Region (EAC)
Water Act, 2000; National Water Policy, 1999	Water Acts, 2002; Water Act, 2016	Water Law of 2008	Sectorial Policy on Water And Sanitation, 2004	Strategic Action Plan (SAP) for the Lake Victoria Basin, March 2007; Protocol on Sustainable Development of Lake Victoria Basin, 2003
Forestry Policy, 2001	Forest Act, 2005; Forest Conservation and Management Act, 2016	Forest Act, 2002	Forest Act, 2011	—
Climate Change				
—	Climate Change Act, 2016	—	—	—
—	National Climate Change Action Plan, 2015 and National Climate Change Response Strategy	National Adaptation Programme of Action, 2007; Mpango wa Pili wa Kukuza Uchumi na Kuondoa Umaskini Tanzania; National Adaptation Strategy and Action Plan, 2009; National Climate Change Strategy, 2012; National Climate Change Communication Strategy (2012–2017)	Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development, 2011	EAC Climate Change Master Plan, 2011–2013 and EAC Climate Change Strategy
Uganda National Climate Change Policy, 2015	Draft Climate Change Policy, 2016	—	—	EAC Climate Change Policy
Uganda's Nationally Determined Contributions (INDCs)	Kenya's INDCs	Tanzania's INDCs	Rwanda's INDCs	EAC Post Rio+20 Plan of Action
Transportation				
Transport and Road Safety Act, 1998	Integrated National Transport Policy, May 2009	National Transport Policy, 2011 to 2025	Public Transport Policy and Strategy for Rwanda, October 2012	—
National Transport Master Plan, 2008–2023, Transport Sector Investment Plan	—	Local Government Transport Programme and the Transport Sector Investment Programme	Strategic Transport Master Plan for Rwanda, September 2012	East African Transport Strategy and Regional Road Sector Development Program, 2011
Uganda Railway Master Plan, embedded in the National Transport	Kenya Railways Corporation Act, 1979	Railways Act, 2002	Currently, Rwanda has no railway network. However, it is working in partnership with other	East African Railways Master Plan, 2009

Uganda	Kenya	Tanzania	Rwanda	Region (EAC)
Master Plan, 2008-2023			countries in the region to find a railway network	
Public-Private Partnerships				
Public-Private Partnerships Act, 2015	Public-Private Partnerships Act, 2013	Public-Private Partnership Act, 2010	Public-Private Partnerships Law, 2016	—
Private Sector Development Strategy	Private Sector Development Strategy, 2006–2010	Private Sector Development Strategy (draft)	Rwanda Private Sector Development Strategy, 2013–2018	EAC Private Sector development strategy, 2006 (abridged version)
—	—	Private Sector Development Policy (draft)	—	—

Annex F. Eastern African Communities (EAC) Project Examples

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
General Description	<p>Transport experts interviewed in Kenya shared the progress of the LAPSSET Corridor project, which is Eastern Africa's largest infrastructure project. It brings together Kenya, Ethiopia and South Sudan and opens access to other East African Community (EAC) member states (e.g., Rwanda, Burundi, South Sudan and Tanzania). The construction of the Standard Gauge Railway (SGR) is a component of LAPSSET, which the EAC countries pledged to implement. The larger LAPSSET project has political backing and commitment from the national leaders because it is also linked to their political pledges and the national visions. Kenya, in partnership with China, has initiated and completed SGR construction from Mombasa to Nairobi.</p>	<p>The project aims to transform the air transport system and integrate other components, such as shopping malls and environmental factors, as envisioned in the Rwandan Vision 2030.</p>	<p>The Dar es Salaam Rapid Transit (DART) BRT System in Tanzania is a successful infrastructure funded through a PPP in the EAC region, which was shared with us by the transport experts. It is being implemented in partnership with the private sector through Tanzania's PPP Act 2010. This Act is a law that guides and facilitates partnerships and mobilises resources, including financing and building synergy, between the public and private sector.</p>	<p>This project was executed by the Tanzania National Roads Agency, Kenya National Highways Authority and the EAC Secretariat. It is a bilateral partnership between Kenya and Tanzania. This recently constructed road links Kenya and Tanzania and passes through the wildlife-rich Tsavo National Park. The road design took wildlife movement into consideration by placing speed limits and speed bumps to reduce wildlife accidents. The construction also complied to both countries' environmental standards. This road has a regional impact because it eases the transportation of goods and people between Kenya and Tanzania. The completion of this road is envisioned by Kenya and Tanzania to contribute to the achievement of the development objectives of Kenya's Vision 2030 and the Tanzania</p>

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
				<p>Development Vision 2025, as well as the EAC common approach to improving regional transport infrastructure to support economic and social development programmes in the region, promote tourism, reduce transit and travel times between Mombasa and Arusha and (therefore) reduce transportation costs and foster regional co-operation and integration. The project will be implemented over a 5-year period (2013–2018). It was launched in July 2016 by the president of Kenya and Tanzania. This road is identified in the East African Regional Integration Strategy Paper (SAP 2011–2015) and the East African Transport Strategy and Regional Road Sector Development Programme (November 2011) as a priority intervention in the region.</p>
Financing Costs	SGR is also the most expensive infrastructure in Kenya. SGR is a successful PPP initiative, which accommodates local private	The project is funded 50% by the Government of Rwanda (GOR) and 50% by private sector and development partners,	The Government of Tanzania (GOT) is addressing the huge costs of infrastructure projects through the implementation of the PPP	The multinational Holili-Taveta-Mwatate-Voi Road Corridor Development Project's total cost, net of taxes, is

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
	<p>companies to supply locally available materials. Kenya maximised on its bilateral partnership with China – the project's financing over the last 4 years reached KES327 billion (USD \$3.8 billion). This resulted in single bidding where the China Road and Bridge Corporation was awarded the tender to construct the SGR. The Chinese Exim Bank provided 90% of the project cost, with the rest coming from Kenya, largely through the Railway Development Fund (RDF), which was introduced by the Government of Kenya in December 2012. Through the RDF, the government mobilised finance by charging 1% of the value of goods imported by importers and exporters.</p>	<p>including the EU. Portuguese firm, Mota Engil, will finance, construct and operate the airport project over a period of 25 years with an optional 15 year extension. Other private sector partners who signed an agreement with the GOR include Aviation Travel and Logistics Holdings Limited (ATL), which was approved to oversee management of RwandaAir's Airports and Aviation facilities. ATL is a holding company that is fully registered and governed by company law. It was approved by the GOR' cabinet on 14 October 2015 and will manage aviation activities including travel, logistics, ground, freight and cargo handling, as well as charter services. The GOR compensates any affected households.</p>	<p>Act. The DART BRT scheme is being implemented in six phases. The first phase was primarily funded by the World Bank (contributing USD 325 million) and the GOT (contributing 23.5 billion Tanzanian Shillings or USD 10.5 million). The Phase 1 infrastructure was implemented by Tanzania Roads using private contractors (i.e., STRABAG International Gmb [building] and Snowy Mountains Engineering Corporation Limited [consultants]). The study team witnessed the operation of the BRT after the completion of Phase 1. Stakeholders interviewed advised that they requested an evaluation of the impacts of urban transportation infrastructure to gather empirical evidence on this issue. Keeping in line with this process, the GOT and development partners will also conduct a similar study.</p>	<p>USD 261.13 million. In 2013, the African Development Bank (AfDB) approved two loans totalling USD 232.5 million for the 157.5-kilometre road project from Arusha to Holili in Tanzania, and Taveta to Voi in Kenya, in an effort to reduce the cost of transport and enhance access to agricultural inputs, larger markets and social services within the EAC. The project is jointly financed by the Bank Group (89.1%), the GOT (4.7%; contributed USD 12.3 million), the Government of Kenya (5.9%; contributed USD 15.6 million) and the Africa Trade Fund (0.3%). This project is expected to be completed by December 2018. The Africa Trade Fund extended a USD 0.74 million grant for a small component of trade facilitation at the Namanga border, bringing the total cost of the project to USD 262.2 million. The AfDB contributed an advance loan totalling USD 218 million for the construction of the road</p>

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
				and the upgrading of the Arusha-Holili section. Kenya received USD 116 million and Tanzania received USD 102 million of the USD 218 million from the AfDB.
Compliance to Environmental Regulations	The SGR infrastructure designed is to be extended to Uganda and Rwanda through the SGR, pipeline and road transport network. SGR implementation in Kenya was subjected to an Environmental Impact Assessment (EIA). The extension from Nairobi to Naivasha town in Kenya was highly contested by civil society and environmental and wildlife conservationists because it is designed to pass across the Nairobi National Park and wildlife conservancies. The SGR is passing through national park and game reserves where wildlife movement was taken into consideration by rising the rail to allow easy movement of wildlife across the migratory routes and was sound proofed to reduce sound pollution in the parks and reserves.	The EAC member states have established environmental regulations, which current construction of the national and regional (bilateral or tripartite) infrastructure must comply with through submissions of the EIA. The Protocol on Environment and Natural Resources Management (2006), EAC Climate Change Master Plan 2011–2013, EAC Climate Change Strategy and the EAC Climate Change Policy facilitate integration of environment and climate resilience into the regional and national policies, programmes and infrastructure.	The construction of the projected six phases of the BRT System in Tanzania will be subjected to the national environmental regulations.	The construction complied with both countries' environmental standards. The road construction factored integrated environmental and social impact mitigation measures.
Job Creation	The study team received highlights from the transport experts that the SGR	According to the experts interviewed in Rwanda, they anticipated an airport	The stakeholders consulted including the small and medium entrepreneurs	This road has been designed to promote regional integration,

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
	infrastructure implementation has created job opportunities for the local communities along its route. It was estimated that 60 jobs would be created for every kilometre (km) of the anticipated 609-km railway in Phase 1 from Mombasa to Nairobi. The Ministry of Transport estimated that the SGR will create more jobs as it proceeds from Nairobi to Naivasha, then later to Kampala, Uganda. It's estimated that by the time the SGR starts operation, 3,000 will have been created. The project's contractor, CRBC, entered into an agreement with the Kenya Railways Corporation – the government's implementing agency – to set aside 40% of the civil and related works for Kenyan firms who meet quality standards and deliver on time. Part of the land acquired for SGR constructed was acquired through compulsory acquisition, which led to compensation of farmers and companies on time.	city will also be established to support the airport and people with services and goods. This is a whole new airport that is projected to be bigger than Kigali Airport in Rwanda and stakeholders believe that the new airport will create more jobs for the youth and the growing population in Rwanda and the East African region.	attributed increase in movement of goods and people in Dar es Salaam to the operation of the BRT. They believed that as the expansion towards the 6th phase, BRT will catalyse movement and creation of more businesses hence attracting even the youth to venture into small and medium entrepreneurship. More drivers, mechanics, and other services providers will be employed to work in the BRT system	enhance tourism and improve accessibility for the communities to markets and social services. In doing this, it contributes to the reduction of poverty. This road has a regional impact because it eases the transportation of goods and people between Kenya and Tanzania. Its construction creates jobs, which benefit the local communities through direct employment and supply of goods and services to the site personnel and related works.
Integration of green economy/infrastructure	Transport experts interviewed in Kenya shared the progress of the LAPSSET Corridor project,	The infrastructure was designed to ease pressure on the existing airports, accommodate	The GOT is implementing the BRT because of its capacity to reduce the carbon emission in its cities. BRT	The construction also complied to both countries' environmental standards. The road

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
	which is Eastern Africa's largest infrastructure project. It brings together Kenya, Ethiopia and South Sudan and opens access to other EAC member states (e.g., Rwanda, Burundi, South Sudan and Tanzania). The construction of the SGR is a component of LAPSSET, which the EAC countries pledged to implement. The larger LAPSSET project has political backing and commitment from the national leaders because it is also linked to their political pledges and the national visions. Kenya, in partnership with China, has initiated and completed SGR construction from Mombasa to Nairobi.	the growing air traffic in the country, increase the airport's profitability and enhance Rwanda's economic growth and development through increased tourism as a business conference destination. GOR is also making the airport greener through technical support from the Global Green Growth Institute (GGGI) in Seoul, keeping in line with the National Green Growth and Climate Resilient Strategy. This model can be improved based on lessons learned and replicated at the EAC level to attract relevant investors to invest in the regional (i.e., green) infrastructure that will promote green economies.	construction factored in the efficiency in fuel use by the buses and movement of passengers. The discussion with civil society noted the need to integrate disaster mitigation because they alluded its prone to flooding during heavy rainy season.	construction factored and integrated environmental and social impact mitigation measures.
Mobilisation of the Finance and Cost Reduction through the PPP Policy	SGR is a successful PPP initiative, which accommodated local private companies to supply locally available materials. The Government of Kenya's PPP Act is a legislative framework being used to incentivise and attract private sector players in the ongoing SGR construction. According to the private	The implementation of infrastructure such as the Bugesera International Airport, SGR, BRT and Holili-Taveta-Nwatate-Voi Road have been enabled through financial commitment from the private sector, international development partners and the governments, which are	The DART BRT System in Tanzania has set a good precedence, being a successful infrastructure funded through PPPs in the EAC region, in integrating the private sector in expanding the transport infrastructure in the region as alluded by the stakeholders in the transport and private sector. The interviewed stakeholders	The road is also designed to foster the integration of private sector investment in the region. Kenya and Tanzania have established stable road funds. In Tanzania, the Roads Fund Board comprises government and private sector representatives. In 2015, Kenya established the

Project	Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET)	Bugesera International Airport	Dar es Salaam Bus Rapid Transit (BRT) System in Tanzania	The Holili-Taveta-Mwatate-Voi Road
	sector players and transport experts interviewed, they emphasised the challenges that the legislation has not adequately addressed, including the inadequacy to incentivise and allocate more capital for the small private sector stakeholders to enable them compete with the 'big' private sector players.	enabled by the presence of PPP Law 2016 (Rwanda), PPP Act 2013 (Kenya) and PPP Act 2010 (Tanzania). These legislations also enabled the local private companies to supply locally available materials and labour service. These governments were able to meet the project cost and reduce the pressure on the public exchequer. The stakeholders consulted recommended the need to develop a regional PPP policy and legislation to meet the initial high cost of a green infrastructure or an infrastructure that will help the EAC member states transition to green economies.	emphasised the inclusion in the operationalisation of the GOT's PPP Act 2010 to ensure small and large private sector players are integrated and fairly provided incentives.	Roads Annuity Fund to provide capital for the development and maintenance of new roads through PPPs. The Roads Annuity Fund has accumulated USD 200 million. According to data from Kenya Roads Board, the government collected USD 510 million in a fuel levy in the year from June 2015 to June 2016, compared to the USD 321 million it collected in the 2014/15 financial year.