



IGAD REGIONAL INFRASTRUCTURE MASTER PLAN

Final IRIMP Report



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Foreword by Executive Secretary of IGAD

The Intergovernmental Authority on Development (IGAD) Regional Infrastructure Master Plan (IRIMP) is an ambitious plan, the implementation of which will accelerate the region's growth and structural transformation. The IRIMP consists of policy initiatives and infrastructure investments that will significantly strengthen the process of regional economic cooperation and integration. The IRIMP is aligned with, and furthers the aims of, the Abuja Treaty, the Constitutive Act of the African Union, Agenda 2063, and the national development plans of IGAD Member States.

The process of preparing IRIMP began in March 2006 when the 11th IGAD Summit of the Heads of State and Government, held in Nairobi, recognised the importance of infrastructure projects as a vehicle for the integration of the IGAD region and as a catalyst for the economic growth and development of IGAD Member States.

The following year experts from the European Union (EU), IGAD Member States, and the IGAD Secretariat met in Mombasa (Kenya) to prepare the Horn of Africa Initiative (HOAI). HOAI priority areas were: (i) interconnectivity in transport (focus on transport and trade facilitation) priority road corridors linking region to seaports; (ii) energy; (iii) ICT; and (iv) water resources for food security.

Subsequently, the IGAD Secretariat organised a meeting of Member States, held in Nairobi during December 2010, at which was prepared a comprehensive roadmap for the Minimum Integration Plan which would create a Free Trade Area (FTA) in the IGAD region. The roadmap recommended the preparation of IRIMP, which was cited as crucial to achieving the FTA. The preparation of the IRIMP is very timely as the African Continental Free Area (AfCFTA) has recently been established and all IGAD Member States have signed the Agreement. AfCFTA seeks to accelerate intra-African trade and to boost Africa's trading position in the global market by strengthening Africa's common voice and unified position in global trade negotiations.

In June 2013, IGAD requested support from the African Development Bank (AfDB) to develop the IRIMP. The positive AfDB response culminated in the commencement of the preparation of the IRIMP in May 2018. Support from the AfDB for IGAD initiatives is substantial and includes the Kampala–Djibouti Corridor Studies, and the IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI). The AfDB is also supporting a number of regional projects that are connecting the Member States including the construction of Isiolo–Moyale Highway in Kenya and the rehabilitation of Awassa–Moyale Highway in Ethiopia.

The IRIMP covers infrastructure in Transport, ICT, Energy and Transboundary Water Resources. The IGAD region is unfortunately characterised by the low stock of infrastructure, particularly in transport and energy, and the inadequate development of the ICT sector and digital economy. Coupled with the increasingly severe strain placed on water resources the region's productivity and growth, and regional integration, has fallen short of expectations. Studies have shown that inadequate infrastructure shaves off at least 2% of Africa's annual economic growth. Adequate infrastructure would lead to productivity gains by African firms of up to 40%.

The IRIMP will help facilitate regional integration by bridging the gap in national and regional policies and strategies and addressing infrastructure needs in vital areas, including in remote and pastoralist areas. The IRIMP will guide the process of implementation of priority regional infrastructure projects – constituting the basis for IGAD Member States commitment to a common infrastructure development programme, in





the form of a Declaration, as well as the basis for regular review of its implementation. The IRIMP will be implemented over three phases; in the short term (2020-2024); the medium term (2025-2030); and over the long term (2031-2050).

There is an urgent need to scale up regional infrastructure development to accelerate regional integration and development. The IRIMP will help address key regional infrastructure deficits. This includes projects that will address transport and energy needs of the region in a manner that ensures accessible and affordable access by the region's population, and the sustainable development of energy and water resources with a special emphasis on renewable sources. The IRIMP will help to enhance the equitable sharing of water resources amongst competing uses. The IRIMP will also further help the region to make necessary steps to expand and deepen the access to modern, affordable, and reliable ICT technologies and services.

The IRIMP focuses on effective implementation of projects by identifying preferable and practical financing strategies, and by proposing policy and institutional frameworks that will ensure the unfettered and seamless implementation of identified projects and interventions.

H.E. Dr. Workneh Gebeyehu

Executive Secretary





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The IGAD Regional Infrastructure Master Plan (IRIMP) was prepared by a team from IPE Global and Africon Universal Consulting. Preparation was a collective effort that involved the IGAD Member States, and their respective ministries, departments, and agencies responsible for infrastructure planning, finance, and delivery. The Member States, through the Joint Steering Committee, provided valuable feedback on the IRIMP as it progressed through the preparation process and the reporting milestones.

The support and contributions of the African Development Bank team, led by Mr. Mtchera Chirwa, were invaluable in ensuring the IRIMP was firmly focused on delivering sound infrastructure investments that supported wider continental ambitions of inclusive, resilient, and sustainable growth.

IPE Global and Africon Universal Consulting are grateful to the many officials and experts that shared their time and knowledge with us in order to improve the quality of the evidence, review the findings, and to sharpen the recommendations.

The IGAD Secretariat, under the stewardship of Mr. Elsadig Abdalla (Director Economic Cooperation and Social Development) and Mr. Zacharia King'ori (Project Coordinator), ensured that the interests of the Member States were at the forefront of the analysis and prioritisation processes shaping the direction and recommendations of the IRIMP. Mr. Zacharia King'ori provided much valued day-to-day guidance on project management matters. He was a reliable sounding board on technical issues and how they can best be communicated to ensure the IRIMP can be acted on by Member States.

Throughout the IRIMP preparation process, the driving philosophy was 'plan to implement' and to build on the positive infrastructure initiatives that the IGAD Member States were already developing and implementing. The policy and project recommendations reflect this philosophy.





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List of Acronyms

AEEP	Africa-EU Energy Partnership
AfDB	African Development Bank
AfCFTA	African Continental Free Trade Area
AFD	Agence Française de Développement (French Development Agency)
AIIM	Africa Infrastructure Investment Managers
AEG	Autonomous Energy Grids
AFESD	Arab Fund for Economic and Social Development
AU	African Union
BASA	Bilateral Air Service Agreements
CAGR	Compound Annual Growth Rate
CBET	Cross Border Energy Trade
CMI	Corridor Management Institute
CIIP	Critical Infrastructure Information Protection
CIRT	Cyber Security Response Team Centre
COMESA	Common Market for Eastern and Southern Africa
CRGE	Climate Resilient Green Economy
CSA	Central Statistical Authority, Ethiopia
CFA	Cooperative Framework Agreement
CIDCA	China International Development Cooperation Agency
DARE	Djibouti Africa Regional Express
DDC	Djibouti Data Centre
DFID	Department for International Development
DjIX	Djibouti Internet Exchange
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
DMIC	Delhi-Mumbai development corridor
EAC	East African Community
EAPP	East Africa Power Pool
ECOWAS	Economic Community for West African States
EDRI	Ethiopian Development Research Institute
EDC	Economic Development Corridor
EE&C	Energy Efficiency and Conservation
ENTRO	Eastern Nile Technical Regional Office
EEPCo	Ethiopian Electric Power Corporation
EPA	Environmental Protection Authority
ESIA	Environmental Social Impact Assessment
EWWCCE	Ethiopian Water Works Construction Enterprise
EU	European Union
FDI	Foreign Direct Investment
FINNIDA	Finnish International Development Agency





G2A	Gulf to Africa
GDI	Gross Domestic Income
GDP	Gross Domestic Product
GESI	Gender, Environment and Social Impact
GERD	Grand Ethiopian Renaissance Dam
GHG	Green House Gases
GoK	Government of Kenya
GTP	Growth and Transformation Plan (Ethiopia)
GWP	Global Water Partnership
HVA	High Value Added
IGAD	Intergovernmental Authority on Development
IDP	Infrastructure Development Programme
ISP	Internet Service Provider
IPP	Independent Power Provider
IMF	International Monetary Fund
IRIMP	IGAD Regional Infrastructure Master Plan
ITU	The International Telecommunication Union
IWRM	Integrated Water Resources Management
IXP	Internet Exchange Points
JICA	Japan International Cooperation Agency
KOSAP	Kenya Off-Grid Solar Access Project
KeNHA	Kenya National Highways Authority
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
KRC	Kenya Railways Corporation
KPC	Kenya Pipeline Company
LAPSSET	Lamu Port-South Sudan-Ethiopia-Transport Corridor
LCDA	LAPSSET Corridor Development Authority
MEL	Monitoring Evaluation and Learning
MDG	Millennium Development Goals
MAEM-RH	Ministry of Agriculture, Livestock Production, and Marine Affairs-Water Resources, Djibouti
MTEF	Medium-Term Expenditure Framework
MoMFNG	Ministry of Mines, Fuel and Natural Gas, Ethiopia
MoT	Ministry of Transport, Ethiopia
MoWIE	Ministry of Water, Irrigation and Electricity, Ethiopia
MUDHo	Ministry of Urban Development and Housing, Ethiopia
NAPA	National Adaptation Programme of Action
NBI	Nile Basin Initiative
NREL	National Renewable Energy Laboratory
NEPAD	New Partnership for Africa's Development
Nile-SEC	Nile Basin Initiative Secretariat
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NETIP	North Eastern Transport Improvement Project
NGO	Non-Governmental Organisation
NDP	National Development Plan





NAP-UNCCD	National Action Program under United Nations Convention to Combat Desertification
NEAPG	National Environmental Impact Assessment Procedures and Guidelines
NWHSA	National Water Harvesting and Storage Authority
NWCPC	National Water Conservation and Pipeline Corporation
OECD	Organisation for Economic Co-operation and Development
ONEAD	National Water and Sanitation Office, Djibouti
PIDA	Programme for Infrastructure Development in Africa
PAP	Priority Action Plan
PPA	Power Purchasing Agreements
PPP	Public Private Partnership
PSO	Private Sector Organisation
REC	Regional Economic Community
RISE	Regulatory Indicators for Sustainable Energy
RWSS	Rural Water Supply and Sanitation
SADC	Southern African Development Community
SDI	Spatial Development Initiative
SDM	Single Digital Market
SDPRP	Sustainable Development and Poverty Reduction Plan
SHS	Solar Home Systems
SREP	Sustainable Energy for All
SREP	Scaling Up Renewable Energy Programme
SEZ	Special Economic Zone
SSATP	Sub-Saharan African Transport Policy Programme.
SPV	Special Purpose Vehicle
TBD	To Be Disclosed
TRBO	Transboundary River Basin Organisation
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNRA	Uganda National Roads Authority
URC	Uganda Railways Corporation
UWSS	Urban Water Supply and Sanitation
VRE	Variable Renewable Energy
WAB	Water Appeals Board
WASREB	Water Services Regulatory Board
WB	World Bank
WT	Water Tribunal
WSB	Water Services Board
WSTF	Water Services Trust Fund
WRM	Water Resources Management
WRMA	Water Resources Management Authority
WUP	World Urbanisation Prospects



Executive Summary



Introduction to the IRIMP

This IGAD Regional Infrastructure Master Plan (IRIMP) report is the primary output from the IRIMP study, which was implemented by IPE Global in partnership with Africon Universal Consulting on behalf of the IGAD Secretariat and funded by the African Development Bank (AfDB). The report is the result of 24 months of research and is accompanied by *Volume Two: The Evidence Base* as well as additional supplementary material contained in *Annexes*, which are referenced throughout. Together the two volumes and annexes provide the rationale, evidence base and intervention logic to secure the ambitious IRIMP objectives.

The objectives of the IRIMP are to:

- i. Develop a strategic framework for infrastructure development in the Transport, Energy, ICT and Water sectors;
- ii. Facilitate intra-regional and inter-continental trade, and the flow of goods, services, and the movement of people across borders of the region;
- iii. Support regional economic growth that is inclusive, resilient, and sustainable; and
- iv. Reduce isolation and promote regional integration and stability.

The IRIMP aims to catalyse investments in infrastructure in the IGAD region, as outlined in the Terms of Reference (TOR): “[the] infrastructure master plan will provide an opportunity for Member States, development partners, investors and other stakeholders to **pick regionally accepted and bankable infrastructure projects to fund, invest and support.**”

The IRIMP not only focuses on projects but, equally important, highlights the need to invest in building sustainable institutional capacity to improve the delivery and management of investments in the long-term. The IRIMP is also about improving the quality of growth and investment by ensuring climate change, social inclusion (bringing vulnerable groups, women, and youth into the development process from design to implementation) and conflict sensitive investment choices are mainstreamed in decision-making and project execution.

The IRIMP Strategic Framework

The IRIMP maps out the provision of trans-border physical infrastructure and the implementation of related policy, regulatory and institutional strengthening (economic infrastructure) initiatives from 2020 to 2050. The primary principle guiding the selection of trans-border infrastructure projects for the IRIMP is the degree to which a project promotes the development of the corridors that traverse the IGAD region.

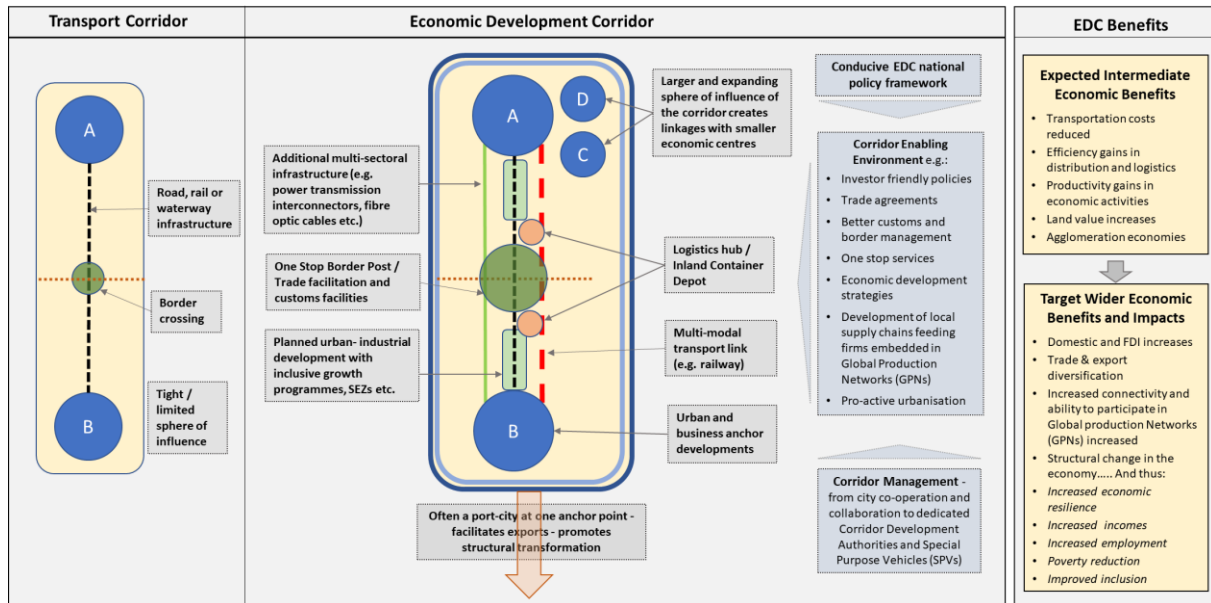
The objective of the IRIMP is to transition these transport corridors into economic development corridors that maximise job creation, are resilient to climate change, are people-driven and strengthen the role of women through gender-sensitive infrastructure development.

Corridors develop through four stages: 1) basic transport corridor; 2) multi-modal / multi-sectoral corridor; 3) logistics corridor; 4) economic development corridor. This is illustrated in Figure ES.1 below.





Figure ES.1: Evolution of Basic Transport Corridor to Economic Development Corridor



There are nine potential economic development corridors in the IGAD region (see Figure ES.2). At present, however, just three are functioning *effectively* as *regional* transport corridors, and these have not yet become clear drivers of economic development and structural transformation. The Northern Corridor is the most developed and is a functioning logistics corridor, while the Djibouti Corridor and Port Sudan Corridor are multi-modal / multi-sectoral corridors. While the port and connective infrastructure of the LAPSSET Corridor is not fully operational yet, the road and border crossing between Ethiopia and Kenya has been recently upgraded, boosting trade between the two countries. The Berbera Corridor provides access to the port of Berbera for Ethiopia, but capacity is limited and the road and border infrastructure needs upgrading. The remaining ports and corridors serve their respective national hinterlands but require significant upgrading to function as corridors that promote regional trade.

Table ES.1: Assessment of Potential Economic Development Corridors in IGAD Region

Corridor	Overall	Infrastructure	Investment	Harmonisation
Northern	Stage 3			
Djibouti	Stage 2			
Port Sudan	Stage 2			
LAPSSET	Stage 1			
Berbera	Stage 1			
Massawa	Not Functional			
Assab ¹	Not Functional			
Kismayo	Not Functional			
Mogadishu	Not Functional			

The above nine corridors originate from the major operational ports along the Indian Ocean and the Red Sea. Each of the IGAD countries is served by at least one corridor providing access to the sea and linking it with neighbouring countries. Other ports which may be developed in the future may be linked to existing corridors establishing an integrated network that will provide increased choices of routing traffic.

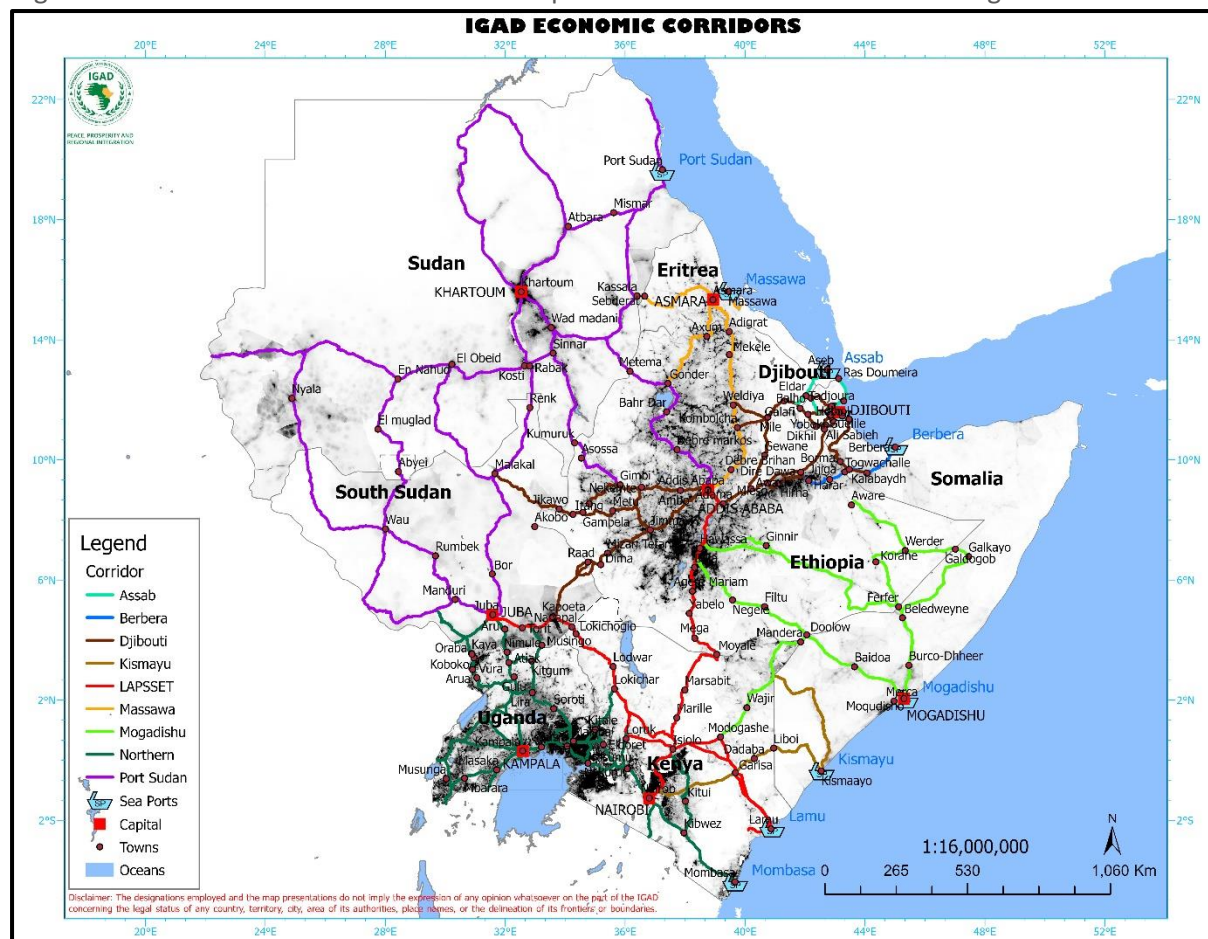
¹ Road to the border and port facilities already exist for Assab port





Some future ports include Shimoni and Malindi in Kenya; Baraawe and Bossaso in Somalia; and Suakin in Sudan. These will then have to develop transport links to the border posts or merge with existing corridor routes.

Figure ES.2: Potential Economic Development Corridors in the IGAD Region



In addition to the assessment of the current status of the IGAD corridors (Table ES.1), trade volume forecasts were made for each corridor under three scenarios. The contribution of a corridor to the IRIMP objectives – promoting regional integration, facilitating flow of goods, services and people and supporting economic growth – can be measured as the total volume of trade that flows along the corridor.

Investment in physical and economic infrastructure in the three functioning corridors should continue to be the priority, and will likely generate the greatest economic impact, as these corridors will continue to handle the majority of trade and connect the majority of the population and economic centres in the region. At the same time, it is essential to develop additional corridors to reduce congestion, provide multiple options for port access and connect population centres to further boost intra-regional trade.

It is recommended that the IGAD region follows a Phased Corridor Development pathway, with emphasis on the following:

1. **Transform the Northern, Djibouti and Port Sudan Corridors into EDCs by 2030** that are important drivers of growth, regional integration, and prosperity in the IGAD region.





2. **Develop the LAPSSET, Berbera and Massawa Corridors into functional logistics corridors by 2030** that have the potential to integrate the region and serve as conduits for intra-regional and international trade;
3. **Complete missing links on the Mogadishu, Kismayo and Assab Corridors** to ensure functional transport corridors by 2030.

Table ES.2: Phased Development of IGAD Corridors

Corridor	2019	2024	2030	2050
Northern	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC	Stage 4: EDC
Djibouti	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC
Port Sudan	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC
LAPSSET	Stage 1: Transport	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC
Berbera	Stage 1: Transport	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC
Massawa	Not functional	Stage 1: Transport	Stage 3: Logistics	Stage 4: EDC
Mogadishu	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics
Kismayo	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics
Assab	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics

Financing and Implementation Context

The IGAD member states face a number of challenges in financing infrastructure projects. Although concessional finance has been a major source of funding for projects to date, and will continue to be, especially in the short-term, it should be noted that the debt levels of some IGAD member states have risen in recent years and debt: GDP ratios for all countries are now above the IMF recommended threshold of 40%. As such, it may become more difficult to secure additional external debt, even concessional loans, in the short-term.

Given the rising levels of government debt and limited fiscal headroom, coupled with the significant gap between traditional concessional financing sources and the infrastructure investment required, there is an urgent need to leverage more private sector capital for infrastructure development in the IGAD region.

The key focus must therefore be on creating a pipeline of bankable projects with clearly demonstrated economic and financial viability, as well as proposing innovative models to involve private investors that address their legitimate concerns regarding risk.

Trans-border infrastructure projects often have a long gestation period from conception to commissioning and require support at all stages of the project cycle. Their implementation requires the sustained commitment of all member states involved, as well as transnational stakeholders including RECs or regional institutions (e.g., power pools). Funders – especially the private sector – often look for evidence of this sustained commitment when selecting projects to finance or support, which can be demonstrated through ensuring that projects are aligned with member states' National Development Plans, Memoranda of Understanding (MoUs) are signed between participating member states, master plans are regularly updated to review projects, and (where possible) initial project preparation is funded by member states.





Prioritisation is vital, as significant resources are required to prepare a bankable project and it is important to direct resources to projects that will have the greatest impact, and which have the greatest chance of being implemented – those which are most bankable.

It is essential that the development of infrastructure in the IGAD region leads to economic growth that is inclusive of all minority groups, women and youths, as well as resilient to the impacts of climate change. This approach is summarised in Table ES.3 below.

Table ES.3: Mainstreaming Inclusive and Resilient Growth

Action	Objectives	Climate Change	GESI / Youth	Fragility
Corridors	Develop integrated - multi-sectoral approach focused on jobs and improve the quality of growth Access to finance – leverage to increase standards (IFIs)	Greater resource allocation efficiency to reduce costs / promote GHG reductions	Corridors investment framework priorities jobs and gender equity. From compliance to empowerment to transformation (new 'rules')	Integrate Member States & communities through trade <i>Build in conflict sensitive project design / impact assessments</i> Stakeholder engagement and agreements
Energy	Regional integration through cross-border energy trade / access to reliable & affordable energy – extended service coverage	Mitigation (<GHG): efficiency, access to cleaner sources & off grid - solutions	Access to cleaner, lower cost & reliable sources at HH & enterprise level Safeguards / EIA	Integrate Member States and communities through regional energy systems / partnerships
Transport	Regional integration through cross-border multi-modal transport and ICT networks: connectivity, mobility and reduced logistics costs to increase competitiveness	Mitigation (<GHG): efficiency, modal choices	Project selection to improve inclusive growth / Safeguards / EIA	Integrate Member States and communities through trade and information flows.
ICT		Efficiency to improve resilience	Safeguards / Access at HH and enterprise level	Partner on project design and implementation
Water	Develop sustainable & resilient water resource management systems and practices	Adaptation and resilience	Safeguards EIA	Better resource allocation: sustainable sharing mechanisms





Strategic Objectives

Transport Sector

The vision for the transport sector by 2050 is to have its infrastructure fully interconnected, enabling the free and efficient movement of goods, services and people across national borders. All major corridors will function effectively as logistics corridors, and the majority will be economic development corridors that attract investment and drive sustainable and resilient growth.

The strategic objectives will be achieved over time; hence there are three phases with specific strategic objectives directly related to the IRIMP time horizons:

Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
<p>All IGAD member states to have access to at least one fully functioning transport corridor</p> <p>Port Sudan, Djibouti and Northern will be logistics corridors; all links missing in 2019 will have been completed, ports, dry ports, OSBPs and associated logistics infrastructure will be operational</p> <p>LAPSSET, Berbera and Massawa will be functioning transport corridors; all links missing in 2019 will have been completed; ports will have increased their share of trade from neighbouring member states</p>	<p>Port Sudan, Djibouti and Northern will be fully-fledged Economic Development Corridors, facilitating efficient intra-regional and inter-continental trade, attracting inward investment, and driving sustainable and resilient economic growth</p> <p>LAPSSET, Berbera and Massawa will be established as logistics corridors; additional infrastructure will have developed to complement the initial road link; logistics infrastructure and services will be developing; institutional framework (e.g. corridor management institution / corridor development authority) in place to actively manage and develop the corridors</p> <p>Missing links will be completed on Mogadishu, Kismayo and Assab so that they are functioning transport corridors</p>	<p>All IGAD member states will have access to at least one Economic Development Corridor</p> <p>Port Sudan, Djibouti, Northern LAPSSET, Berbera and Massawa will be fully-fledged Economic Development Corridors, facilitating efficient intra-regional and inter-continental trade, attracting inward investment, and driving sustainable and resilient economic growth</p> <p>Mogadishu, Kismayo and Assab will be developed, subject to demand, following the EDC model, and will be at least logistics corridors with established institutional framework</p>

In order to develop an efficient and sustainable regional transport system comprising infrastructure and services, the following overarching principles are proposed in order guide the development of policy in order to facilitate regional integration in the IGAD region:

- Corridor approach adopted and embodied in the development of regional (transboundary) transport infrastructure, provision of transit operations and trade and transport facilitation;
- Regional harmonisation adopted in policy development in the transport sector with the seamless interfaces at the continental level;
- Harmonisation of Regulatory Oversight covering technical and economic regulation; and
- Coordinated capacity building for institutions and human capital.





Energy Sector

The energy sector vision for 2050 is a system that is interconnected, harnessing the abundant renewable resources available within the region; affordable, utilizing least cost principles for development and operation within and beyond national boundaries; and reliable, providing a strong foundation for the continued economic and social development of the region. The IRIMP is primarily focussed on the provision of trans-border power transmission interconnectors and creation of the regional power grid.

The strategic objectives should, however, also recognise that a substantial proportion of households in the IGAD region live in areas that are not served by an interconnected grid. Although grid extension and grid densification should continue to be the aim, particularly in the medium-term, in the long-term emerging technologies mean that achieving universal access to electricity may be better served through alternative solutions.

The strategic objectives for the three time-periods are given below:

Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
<p>New power transmission interconnectors developed on the priority corridors so that IGAD member states are connected to at least one neighbour for bilateral energy trading, although Eritrea and Somalia likely to be exceptions to this in the short-term</p> <p>Surplus capacity is essential for significant trade and timely implementation of projects is essential; IGAD to promote good IPP procurement practices, high levels of transparency, and standardised PPAs</p> <p>IGAD establishes a Roadmap for progressive integration of the regional power system, together with associated interventions to ensure adequate harmonisation at each step in the integration process</p> <p>Harmonisation to be consistent with EAPP, and therefore IGAD to request observer status at EAPP meetings</p> <p>Harmonisation to focus on regulations, grid codes, technical standards and operational procedures, that will facilitate system synchronisation</p> <p>IGAD develops and implements policies recognising that a significant proportion of the population will only gain access to modern energy in the short-, medium-or long-term through off-grid rather than on-grid solutions</p> <p>Off-grid solutions, as well as on-grid components, likely to involve significant Renewable Energy capacity, so IGAD to encourage member countries to prepare Renewable Energy policies</p> <p>IGAD to encourage the approaches and policy instruments adopted successfully by Kenya for off-grid energy solutions</p>	<p>Other trans-border power transmission interconnectors are completed, where clear surplus capacity is available or other interconnection merits have a strong business case</p> <p>The beginnings of a regional power grid are thus created; most IGAD member states can trade with most of the others; a cooperative power pool is formed; independent cross-border energy regulator at the regional level is established</p> <p>IGAD to monitor international progress with interconnecting microgrids using smart technology and autonomous communication, and encourage this approach in the more remote parts of the IGAD region</p> <p>Harmonisation of planning across the IGAD regional power system</p>	<p>Any remaining IGAD member countries are added to the interconnected system</p> <p>The power pool evolves from cooperative to competitive, reducing energy costs in the region; planning for investment in generation and transmission is undertaken at the regional level; the IGAD power pool is integrated fully in the EAPP</p> <p>Adoption of off-grid and leapfrogging technologies, such as Autonomous Energy Grids, to fill the gaps in the regional power grid and achieve universal access to electricity in the IGAD region</p>





ICT Sector

It is envisaged that in 2050 the IGAD region will be characterised by *sustainable, seamless, integrated and secured regional ICT networks which will be affordable, reliable, resilient and bridging the Digital Divide*. The vision will contribute substantially to the achievement of the IGAD region integration objectives, 2063 Agenda and sustainable development goals. The ICT sector in the IGAD region will progressively evolve from one characterised by rapid but uneven growth, poor internet and broadband connectivity and usage, and a Digital Divide. This will lead to a state in which all businesses and the majority of the population can access and efficiently use the digital economy, making ICT an important driver in propelling IGAD into a regionally and internationally competitive economy.

The Vision for the three time-periods is given below:

Short term (2020-2024) Vision	Medium term (2025-2030) Vision	Long term (2031-2050) Vision
The policy and regulatory environment enabling the growth of and improved access to the regional ICT architecture is strengthened, agreed and implemented. Internet and broadband connectivity and usage is significantly improved	Regional ICT infrastructure and cross border links are significantly improved, as is internet and broadband usage which reaches International standards. Private sector investment significantly; all operators agree terms	The digital divide is overcome, and the digital economy is a major driver of prosperity and integration in the IGAD region, which becomes a hub of ICT and digital content innovation of Continental significance

Strategic objectives to realise the vision are as follows:

- Enhance enabling environment and institutional arrangements towards building digital market;
- Construct and expand regional ICT infrastructure links and networks;
- Increase the usage of ICT services, e-applications such as financial services, e-commerce, e-health, internet services, social media, content development and promote infrastructure digitalisation;
- Develop the IGAD Region Safe Cyber Space;
- Build capacity and promote technology transfer.

Table ES.4: Summary of Policy and Institutional Options

Summary of Policy and Institutional Options	
Development of Regional ICT and Cyber security policy and regulatory frameworks	Establish a Committee for Regulatory Authorities as well as operators and ISPs
Development of Regional cooperation agreement on cyber security	Setting up of Regional CIRT Establishing a regional mechanism for recognition Certificate Authorities
IGAD supports Member States to develop national cyber security, policy, laws and strategies to ensure domestications, harmonisation and regional cooperation	IGAD supports member States to establish national CIRT
Create an enabling environment for infrastructure competition	Stimulate roll-out in underserved and rural areas
Remove regulatory obstacles to investment and competition a) <i>Remove limits on the number of network licenses</i>	Competitive subsidy models • <i>Provide operator(s) with subsidy to build and operate a network in currently underserved areas of the country. Services provided in these</i>





<p>b) <i>Encourage the entry of alternative infrastructure providers</i></p> <p>c) <i>Remove constraints on the backbone services market</i></p> <p>d) <i>Improve the regulation of backbone networks</i></p> <p>Reduce the cost of investment</p> <p>1) <i>Facilitate access to passive infrastructure.</i></p> <p>2) <i>Promote infrastructure-sharing and unbundling</i></p> <p>Reduce political and commercial risks <i>Risk guarantees and political risk insurance</i> <i>Demand aggregation</i></p> <p>Promote effective competition in the downstream market <i>Promote downstream competition through effective regulation.</i></p>	<p><i>areas on a non-discriminatory basis.</i></p> <p>Shared infrastructure/consortium models</p> <ul style="list-style-type: none"> <i>Provide operators with incentive to cooperate in the development of backbone infrastructure in currently undeserved areas of the country where infrastructure competition is not commercially viable</i> <p>Incentive-based private-sector models</p> <ul style="list-style-type: none"> <i>Provide operators with an incentive to build networks in currently underserved areas through reductions in USF contributions or sector levies.</i>
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Table ES.5: IRIMP ICT Sector Benchmarks and Targets

	Target	2024	2030	2050
	Growth - enable and foster access to and increased utilisation of ICT services and applications and bridge the digital divide			
1	Mobile penetration per 100 inhabitants	60%	80%	100%
2	Mobile geographical coverage	70%	85%	100%
3	Fixed broadband penetration per 100 inhabitants	5%	10%	60%
4	Percentage of Individuals using Internet	25%	40%	80%
5	Affordability and Reduction of tariffs by	15%	25%	60%
6	The rural areas mobile coverage	65%	75%	100%
7	Percentage of household having access to Internet	15%	30%	60%
8	Gender equality among Internet Users	10%	30%	60%
9	Enabling environments ensuring accessibility ICT services and applications for persons with persons with disability	60%	70%	100%
	Sustainability - Manage challenges emerging from ICT development			
10	Cyber security policy and legislations	0	0	0
11	Establishment of National and Regional CIRTs by	0	0	0
12	Develop PKI regulations, infrastructure and institutions by		0	0
13	Develop Regional Cooperation framework by		0	0
14	Volume of redundant e-waste to be reduced by	30%	50%	70%
15	Reduction of Green gas emission generated by ICT sector	20%	40%	60%
	Technology transfer and Innovation			
16	Enabling environment conducive to technology transfer	0	0	0
17	Enabling environment conducive to Innovation	0	0	0
18	Smart partnerships of stakeholders in ICT development	0	0	0
	ICT Infrastructure Interconnectivity			





19	National Broadband connectivity	200G	400G	1000G
20	Cross-border ICT infrastructure connectivity	20%	40%	100%

Water Sector

The overarching vision for water by 2050 is to ensure *the provision of adequate water for the growing economies of IGAD in a manner that is environmentally sustainable and directly and positively contributes to the water, energy, and food security nexus*. While the need for improved access to clean water is felt in every country, the IRIMP will focus strategically on the *transboundary water basins that require transboundary interstates agreement concerning water resources sharing for mutual social and economic benefit*.

It is envisaged that the water sector in the IGAD region will progressively evolve from a state characterised by deficits, and vulnerabilities and stresses to one that is able to provide adequate water for all future demands and in a manner that is environmentally sustainable and fully takes into account possible adverse impacts of climate change. The Vision for the three time-periods is given in Table. The Vision for the three time-periods is given below:

Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
Inter-state agreements concerning the sharing and use of water related to trans-boundary water resources are agreed and enshrined in related policies, regulations and laws of the relevant member states.	At least half of all trans-boundary water basins are internationally recognised as being managed sustainably and are providing sufficient water for the relevant members' states.	All trans-boundary water resources are managed in a sustainable and regenerative manner, and able to provide adequate water for each member state.

To overcome the prevailing challenges currently being faced by the member states in ensuring the available scarce transboundary water resources, the overarching principles that will ensure the IGAD region successfully share the resources is adaption of the best international practice in development and utilisation of the transboundary water resources. These include the following:

- Formation and strengthening of a Transboundary Basin Management Unit;
- Sharing of the hydro-meteorological, river flows, population, biodiversity and economic activities data of the basins;
- Understanding the cultural practices of the basin population; and
- Technological transfer of the international best practice in river basin management.





The Infrastructure Development Programme

The development of infrastructure for each sector on each of the nine IGAD corridors is planned in three phases: short-term 2020-2024; medium-term, 2025-2030; and long-term, 2031-2050. Projects identified in the IRIMP inventory were screened and phased into short, medium, and long-term based on an assessment of the gap between forecast demand and infrastructure capacity. Where capacity gaps were identified, and there was no existing project in the inventory to address the gap, a new project has been proposed – this is particularly the case in the final planning period (2031-2050), which can be considered more of a long-term vision for the development of each corridor.

The infrastructure development programme for each corridor is presented as a series of annotated maps, as follows.

Northern Corridor

Figure ES.3: Development of physical infrastructure Northern Corridor, 2020-2024

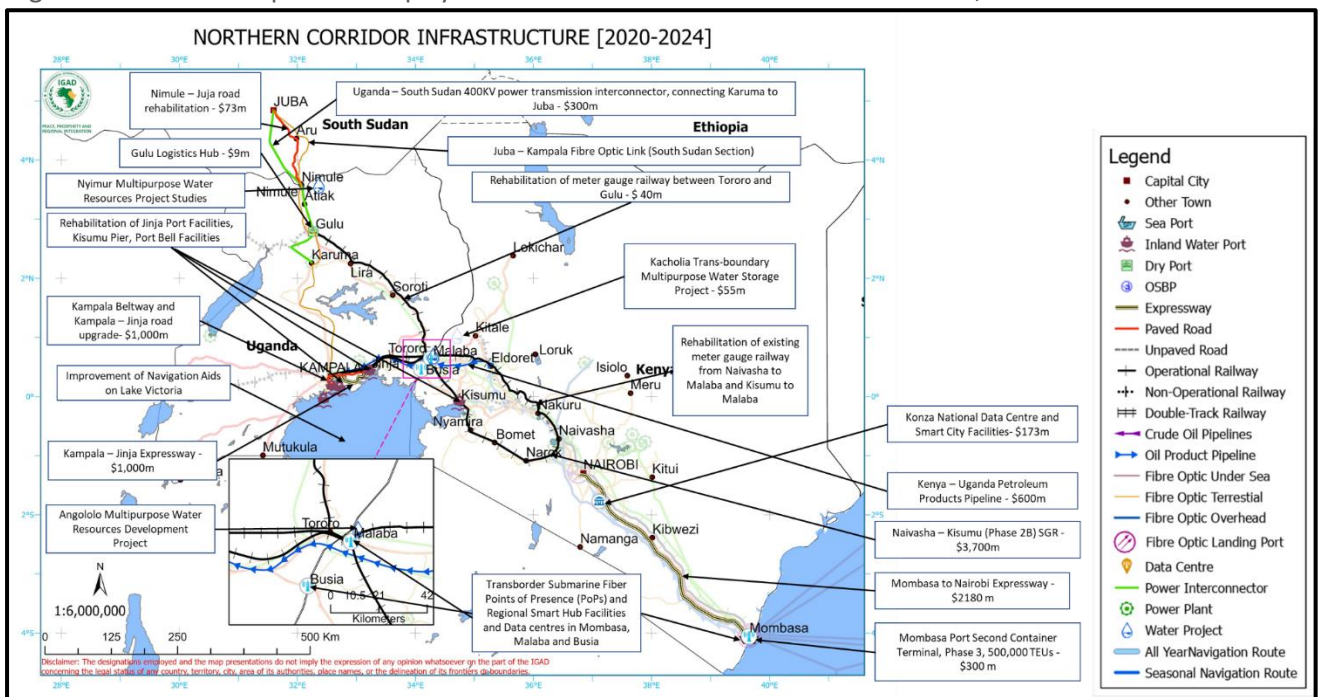




Figure ES.4: Development of physical infrastructure Northern Corridor, 2025-2030

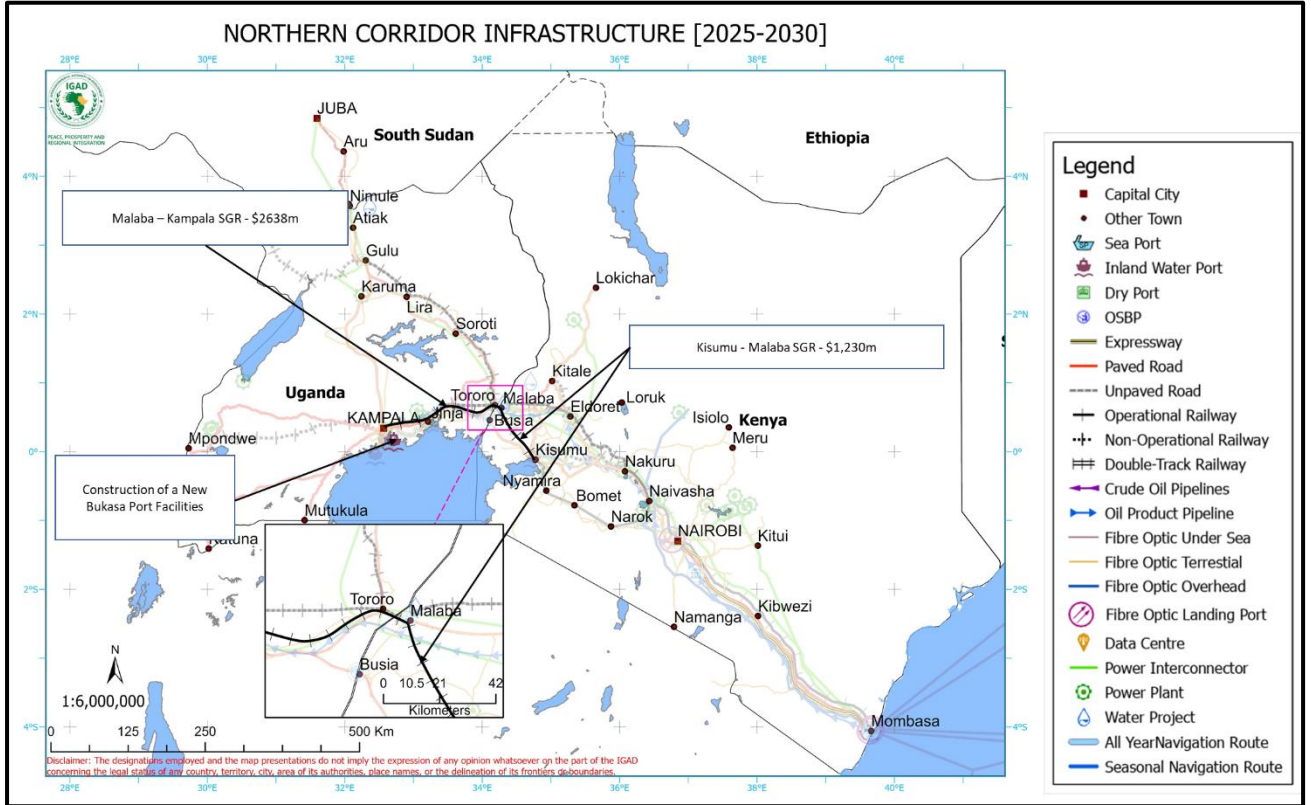
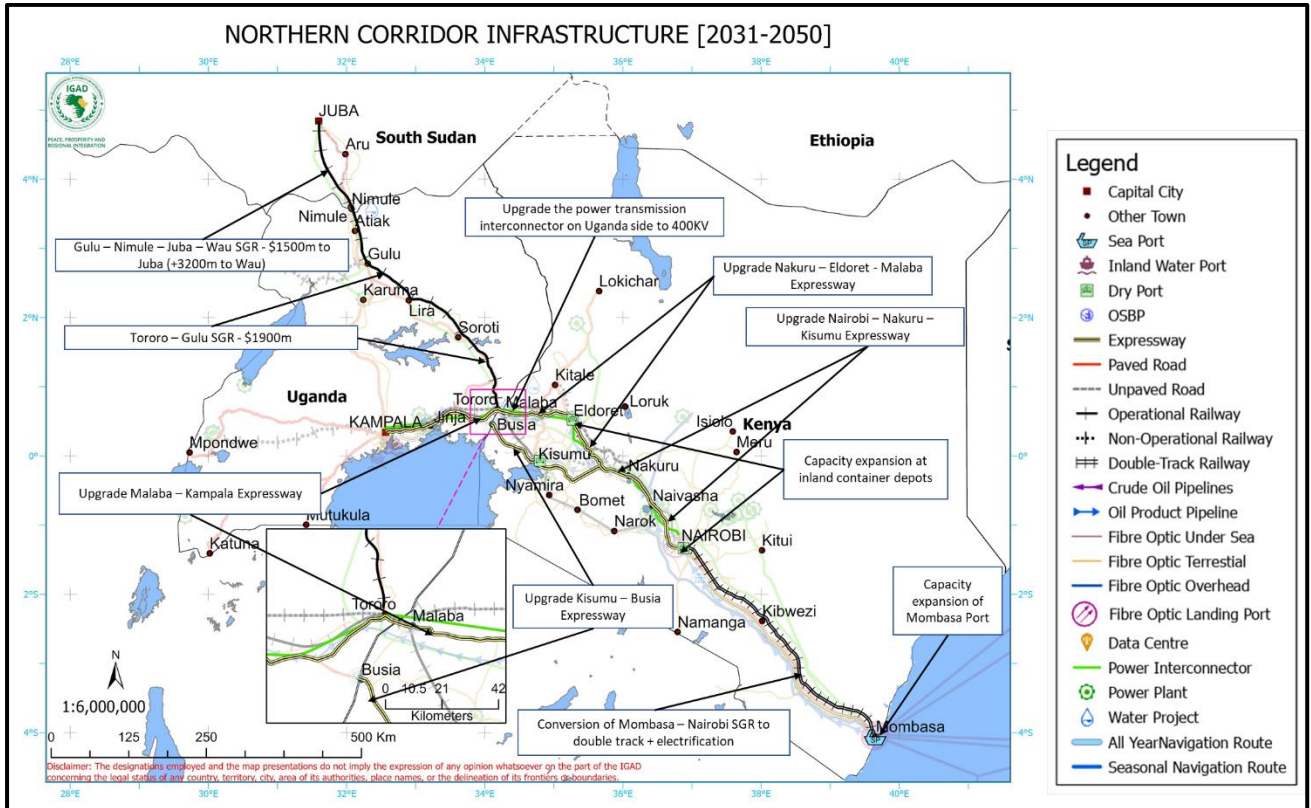


Figure ES.5: Development of physical infrastructure Northern Corridor, 2031-2050





Djibouti Corridor

Figure ES.6: Development of physical infrastructure Djibouti Corridor, 2020-2024

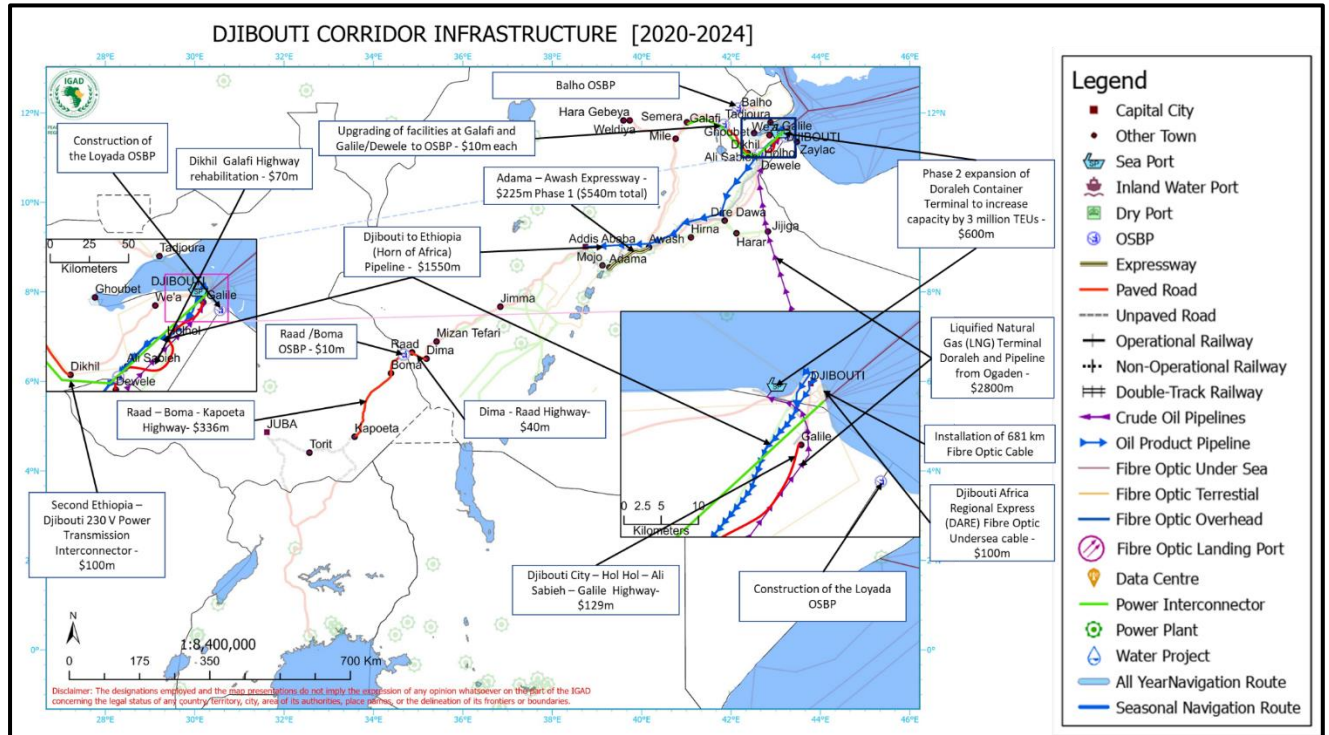


Figure ES.7: Development of physical infrastructure Djibouti Corridor, 2025-2030

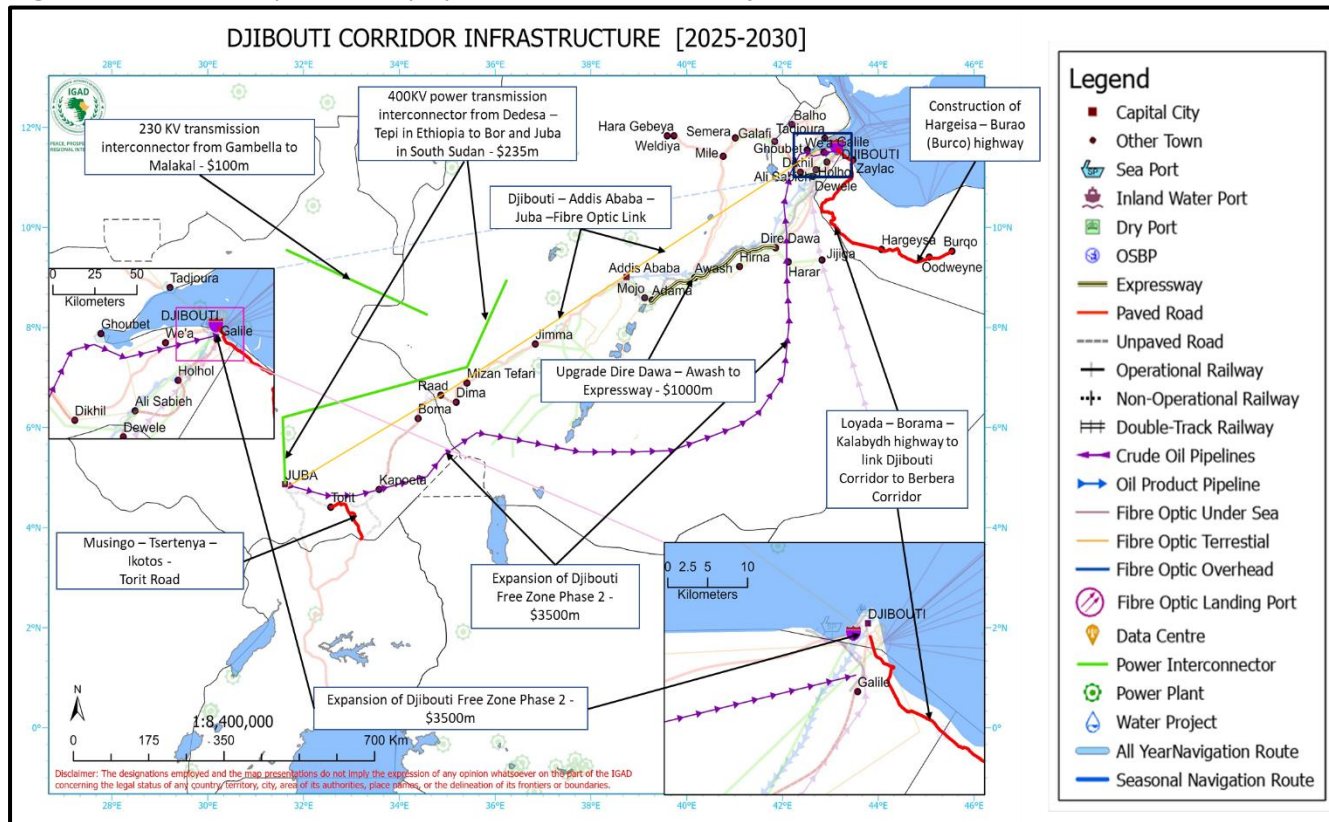
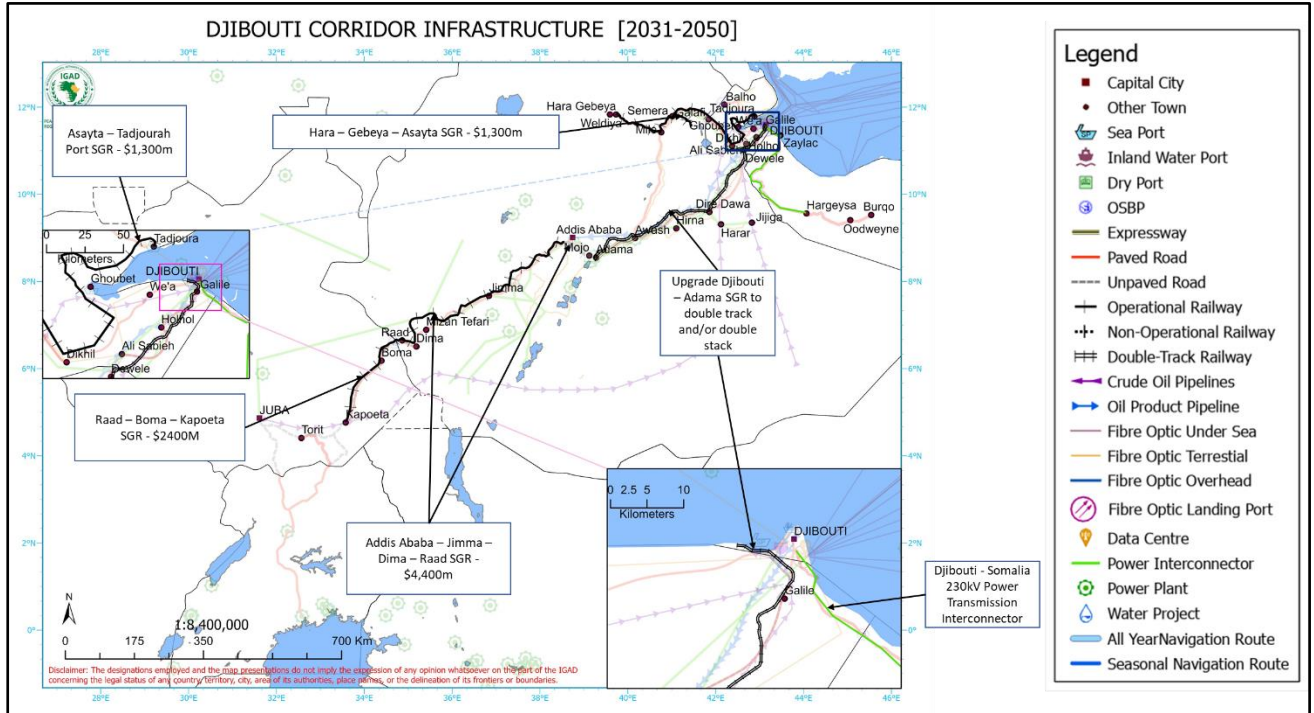




Figure ES.8: Development of physical infrastructure Djibouti Corridor, 2031-2050



Port Sudan Corridor

Figure ES.9: Development of physical infrastructure Port Sudan Corridor, 2020-2024

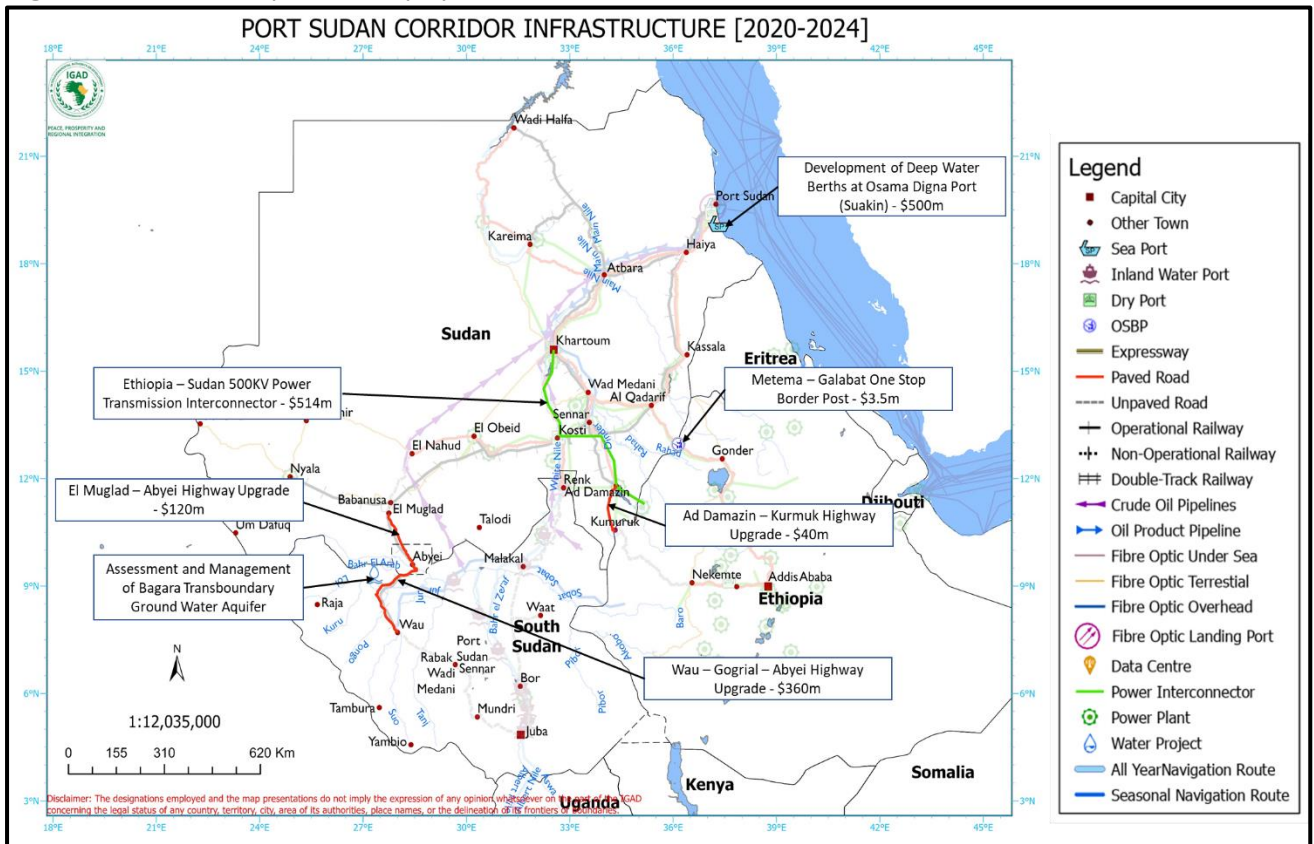




Figure ES.10: Development of physical infrastructure Port Sudan Corridor, 2025-2030

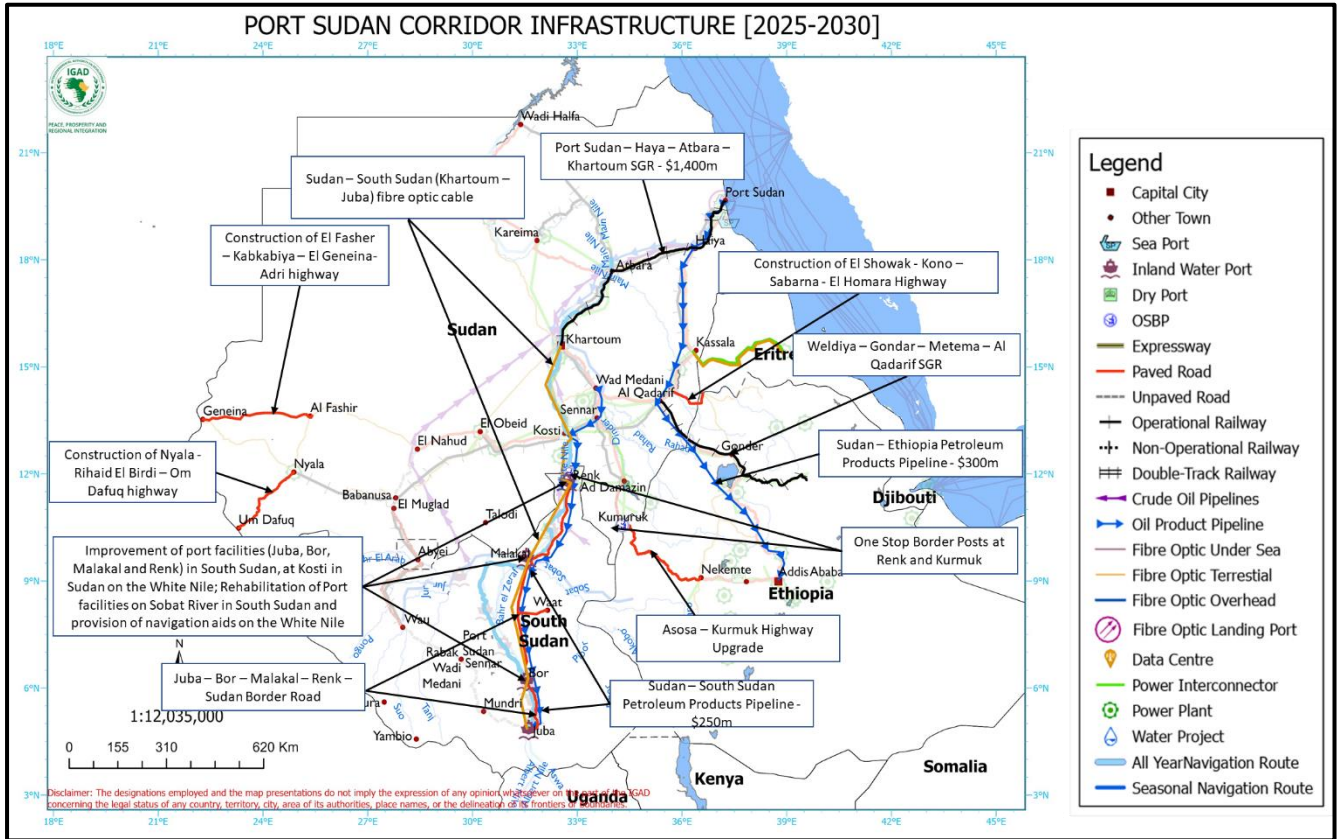
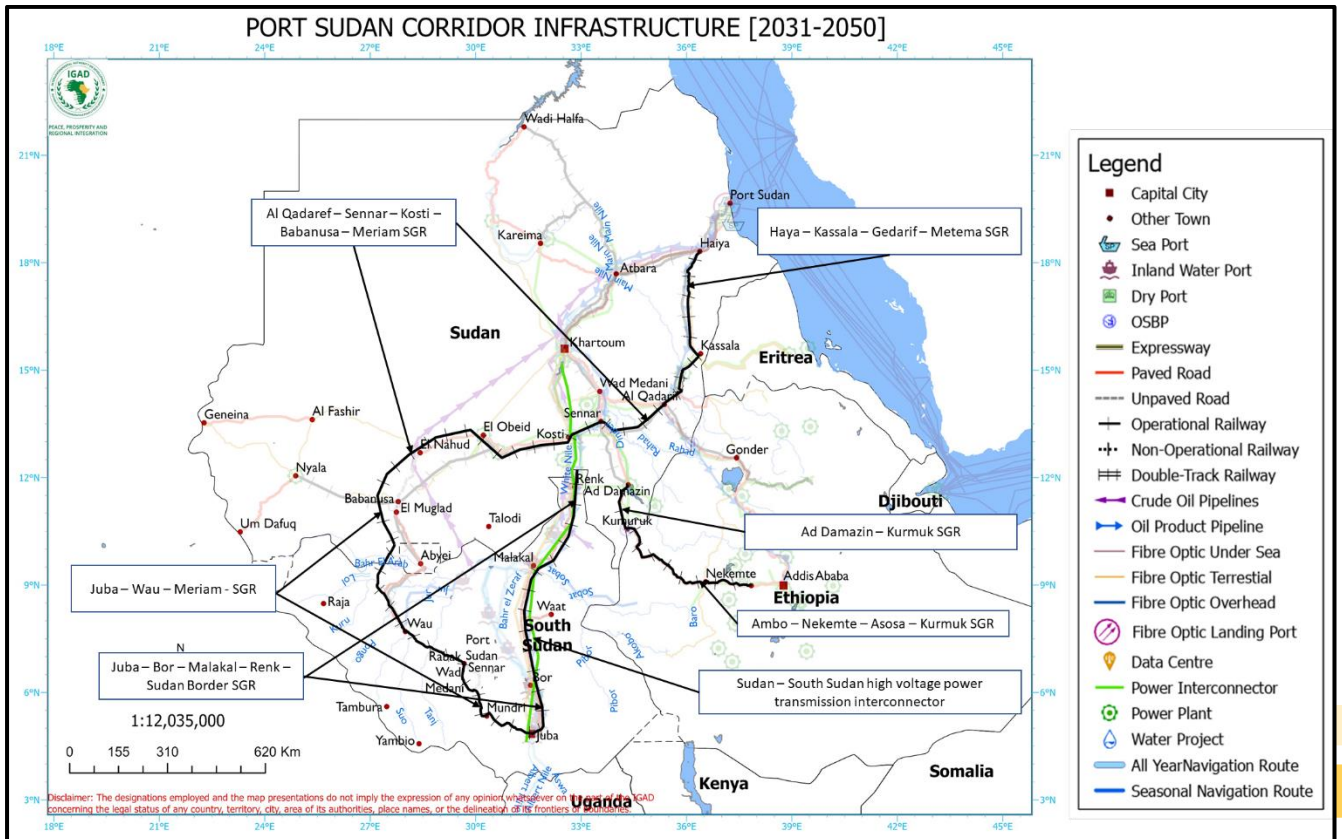


Figure ES.11: Development of physical infrastructure Port Sudan Corridor, 2031-2050





LAPSSET Corridor

Figure ES.12: Development of physical infrastructure LAPSSET Corridor, 2020-2024

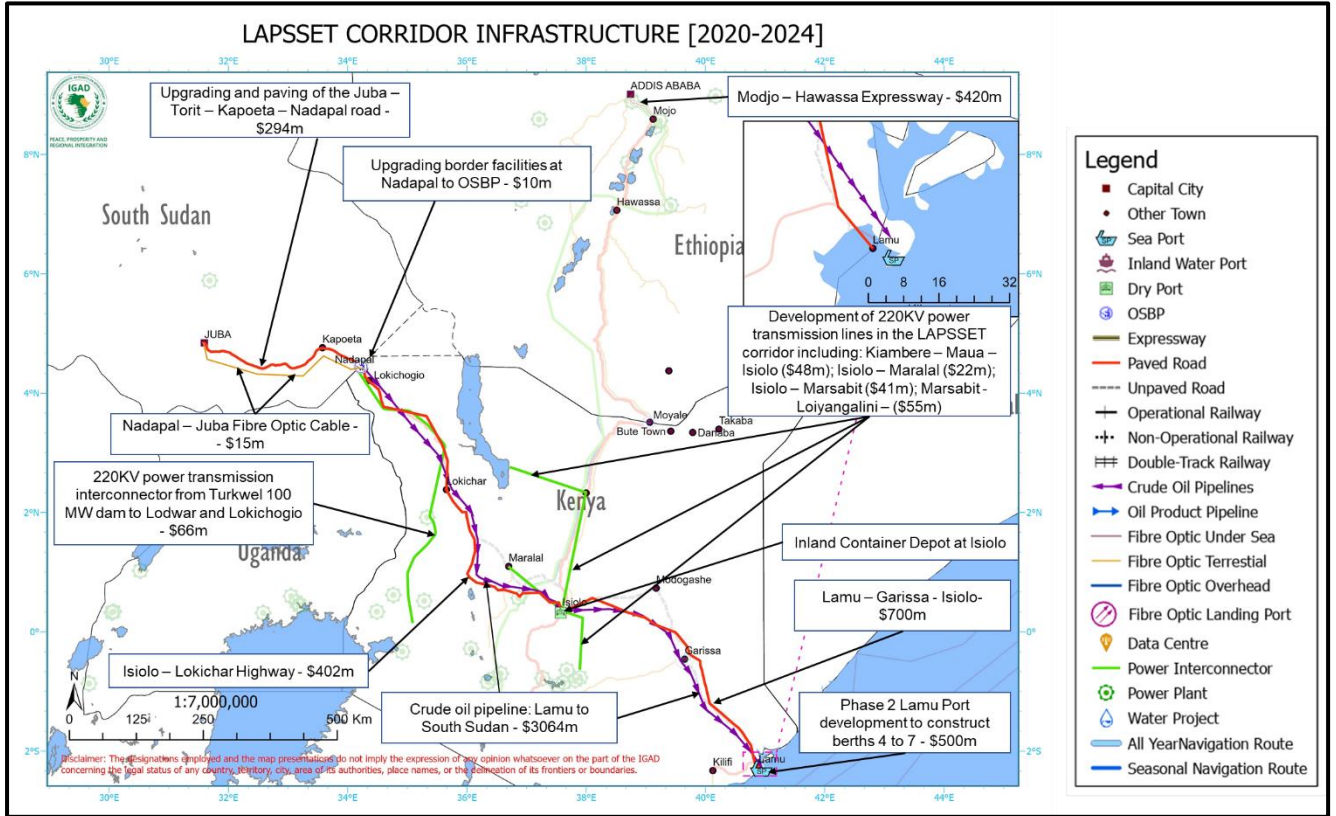


Figure ES.13: Development of physical infrastructure LAPSSET Corridor, 2025-2030

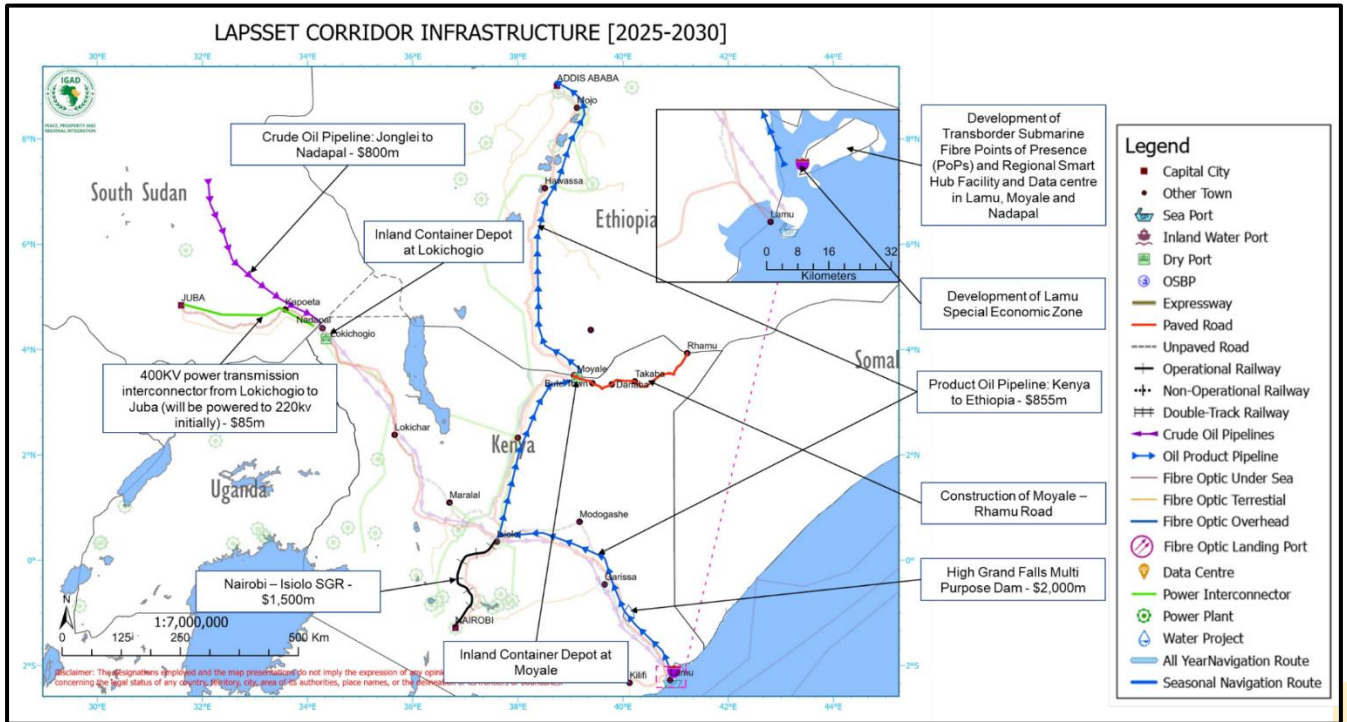
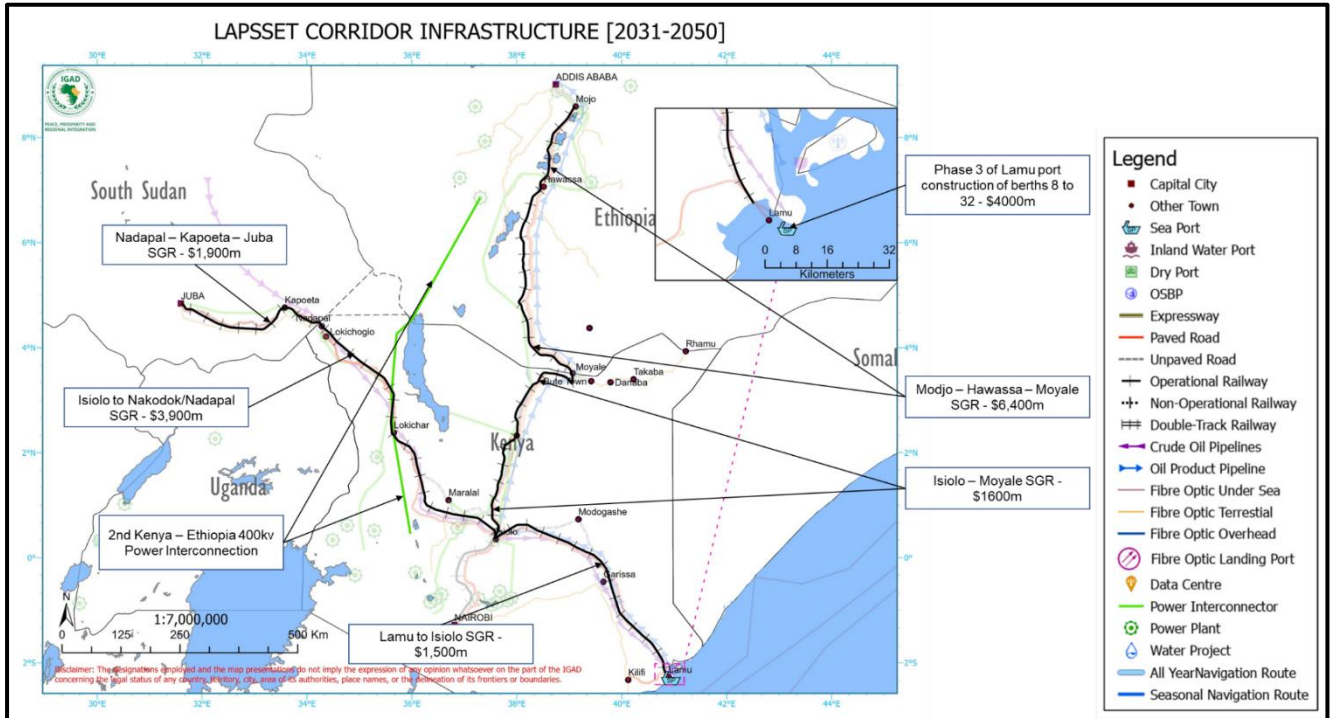




Figure ES.14: Development of physical infrastructure LAPSET Corridor, 2031-2050



Berbera Corridor

Figure ES.15: Development of physical infrastructure Berbera Corridor, 2020-2024

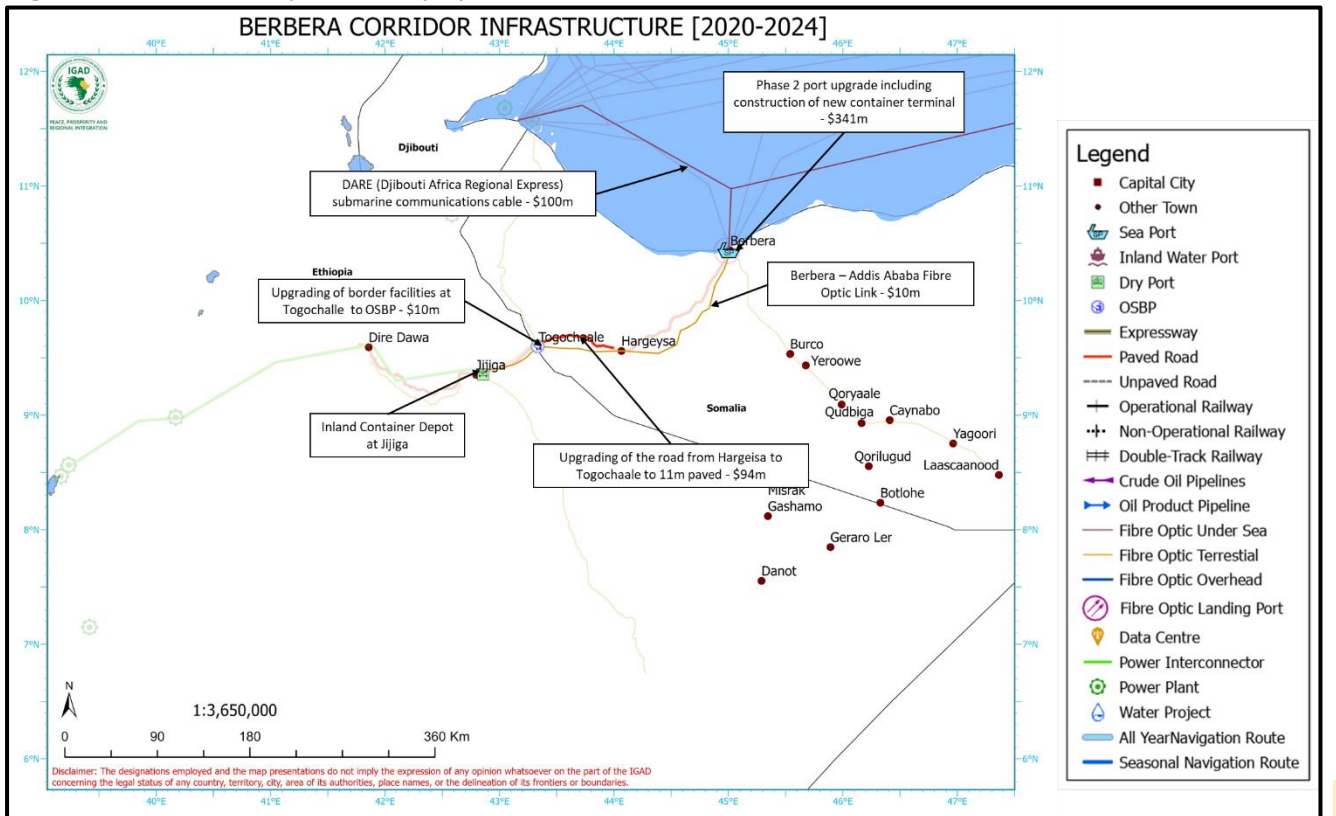




Figure ES.16: Development of physical infrastructure Berbera Corridor, 2025-2030

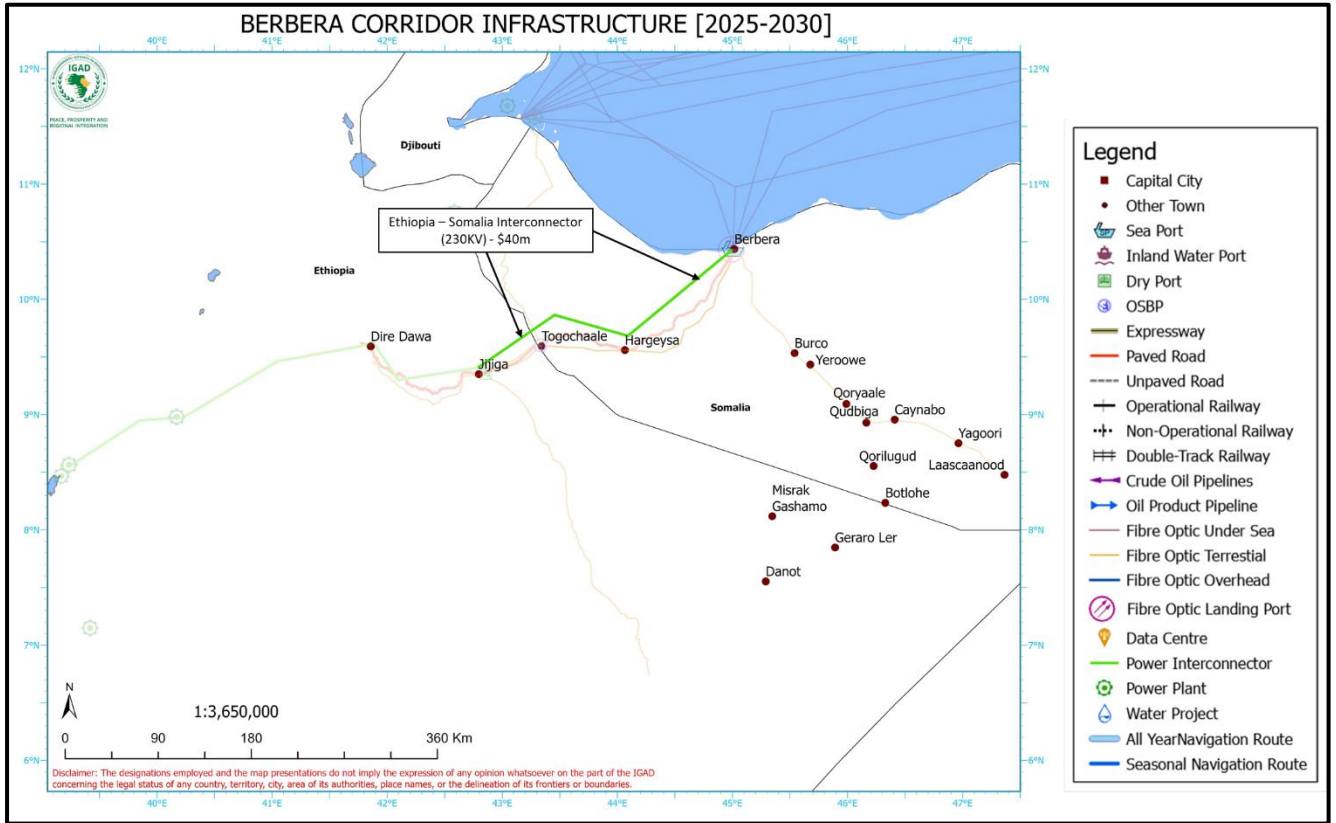
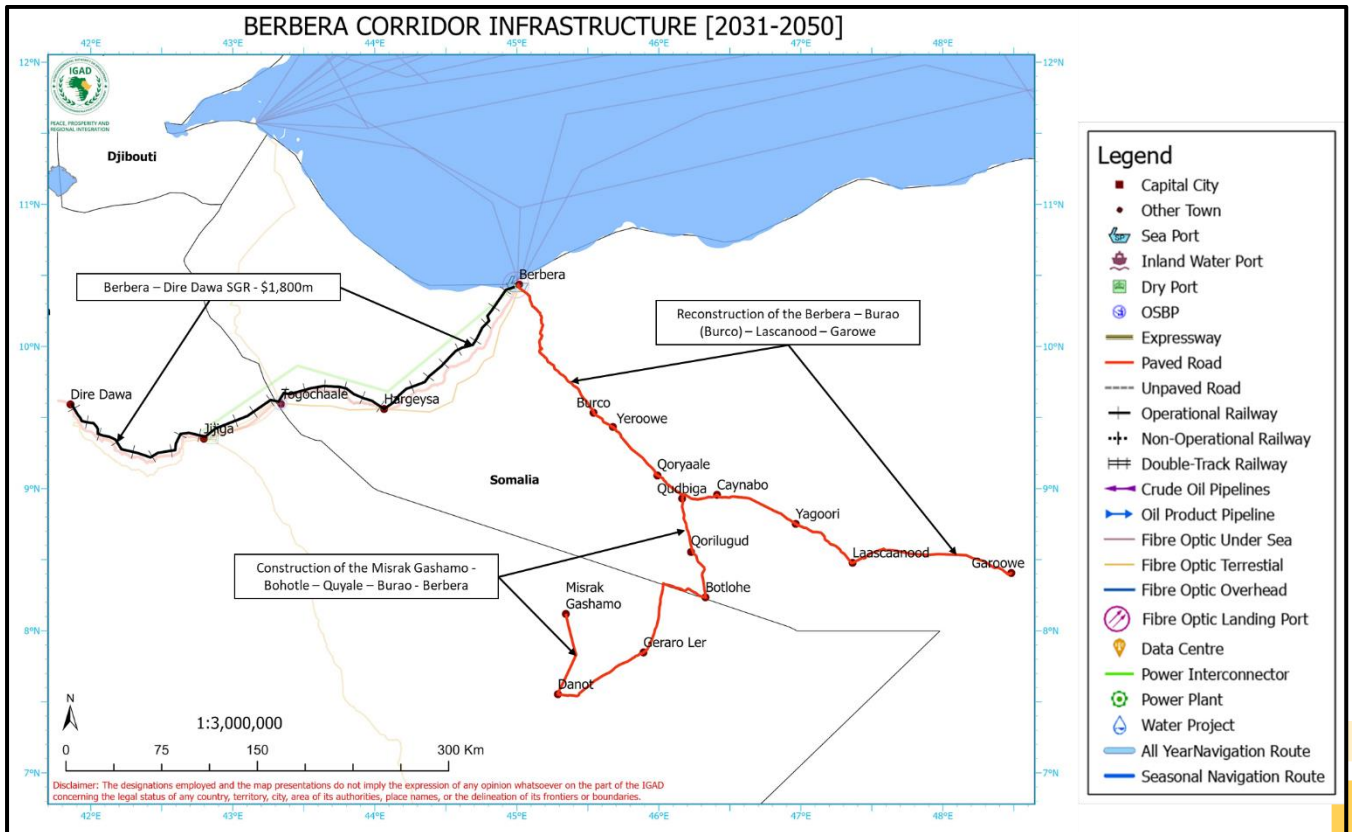


Figure ES.17: Development of physical infrastructure Berbera Corridor, 2031-2050





Massawa Corridor

Figure ES.18: Development of physical infrastructure Massawa Corridor, 2020-24

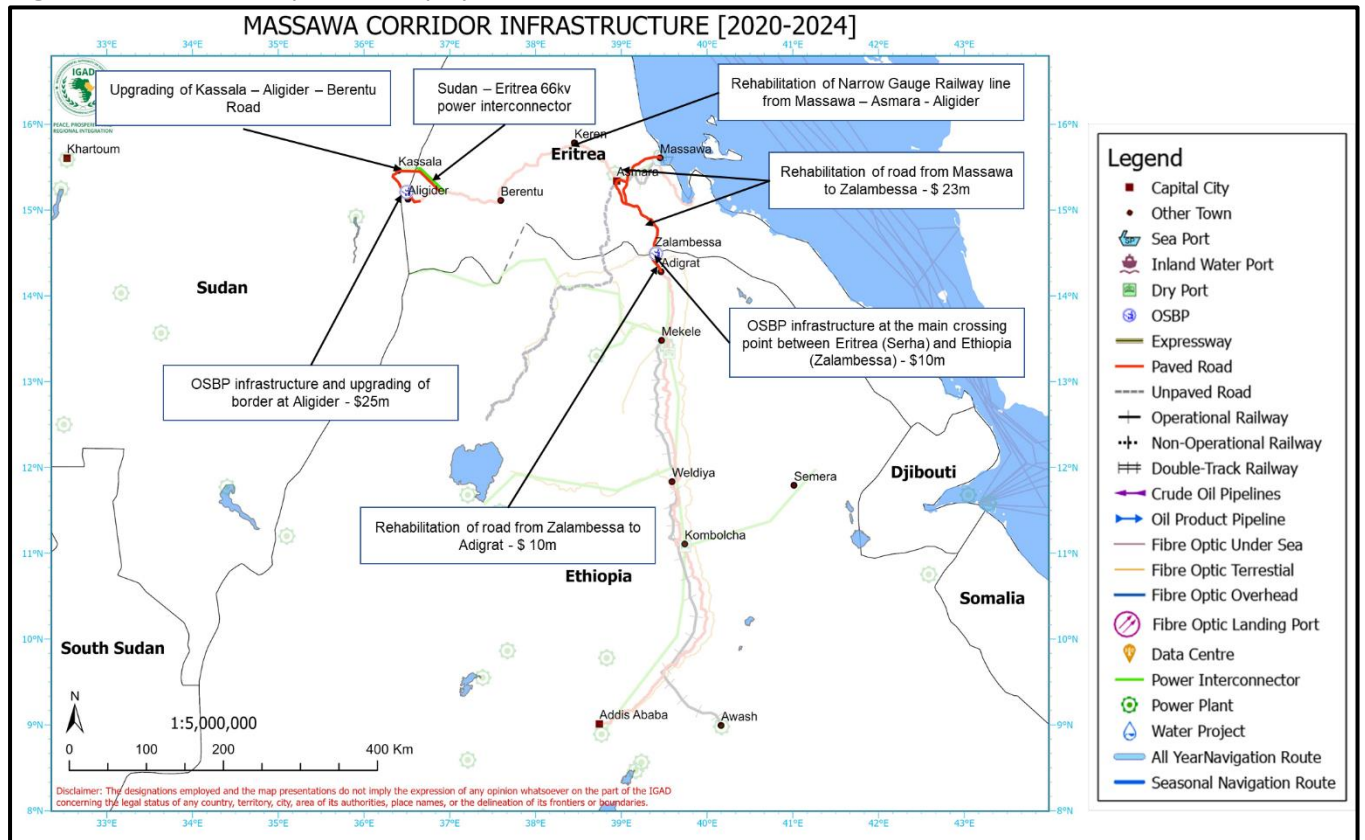


Figure ES.19: Development of physical infrastructure Massawa Corridor, 2025-30

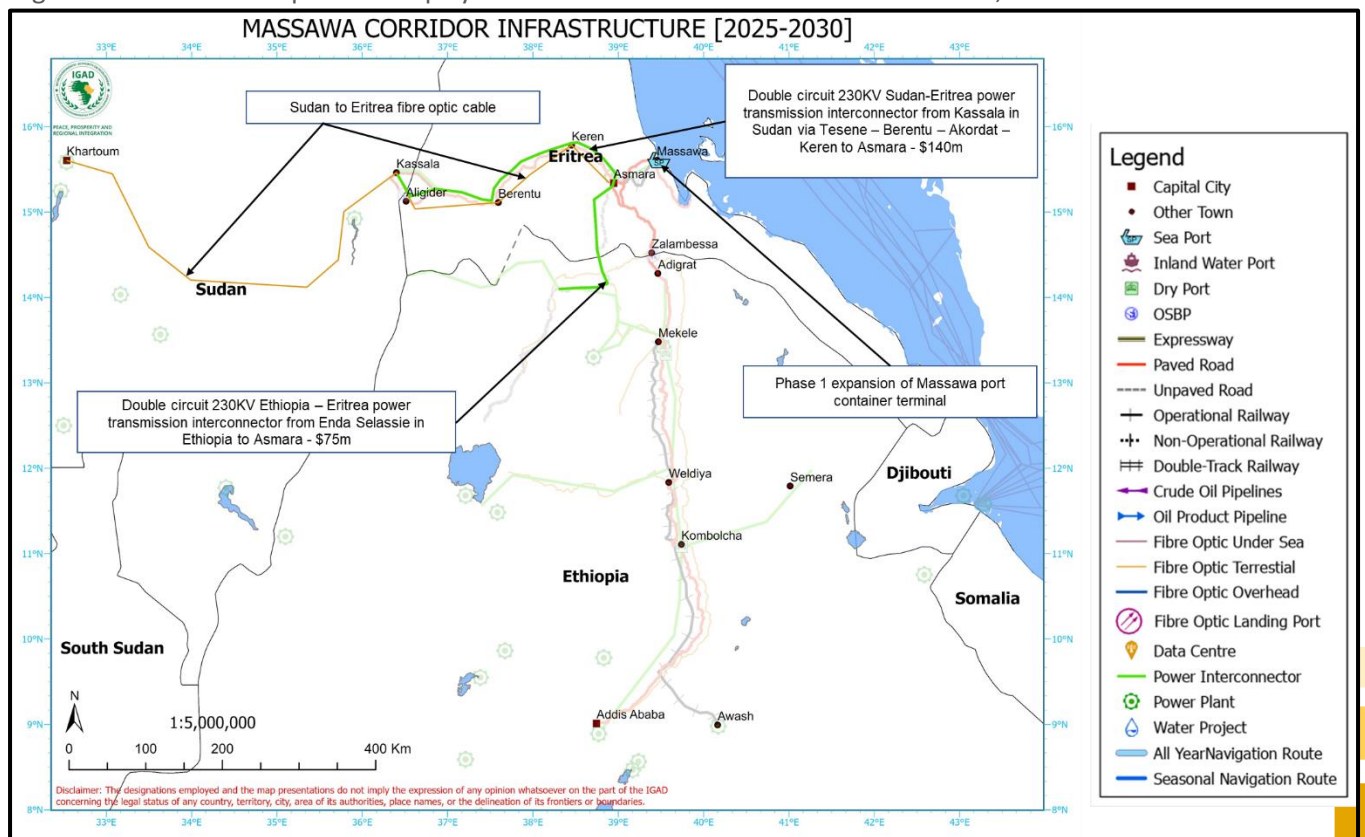
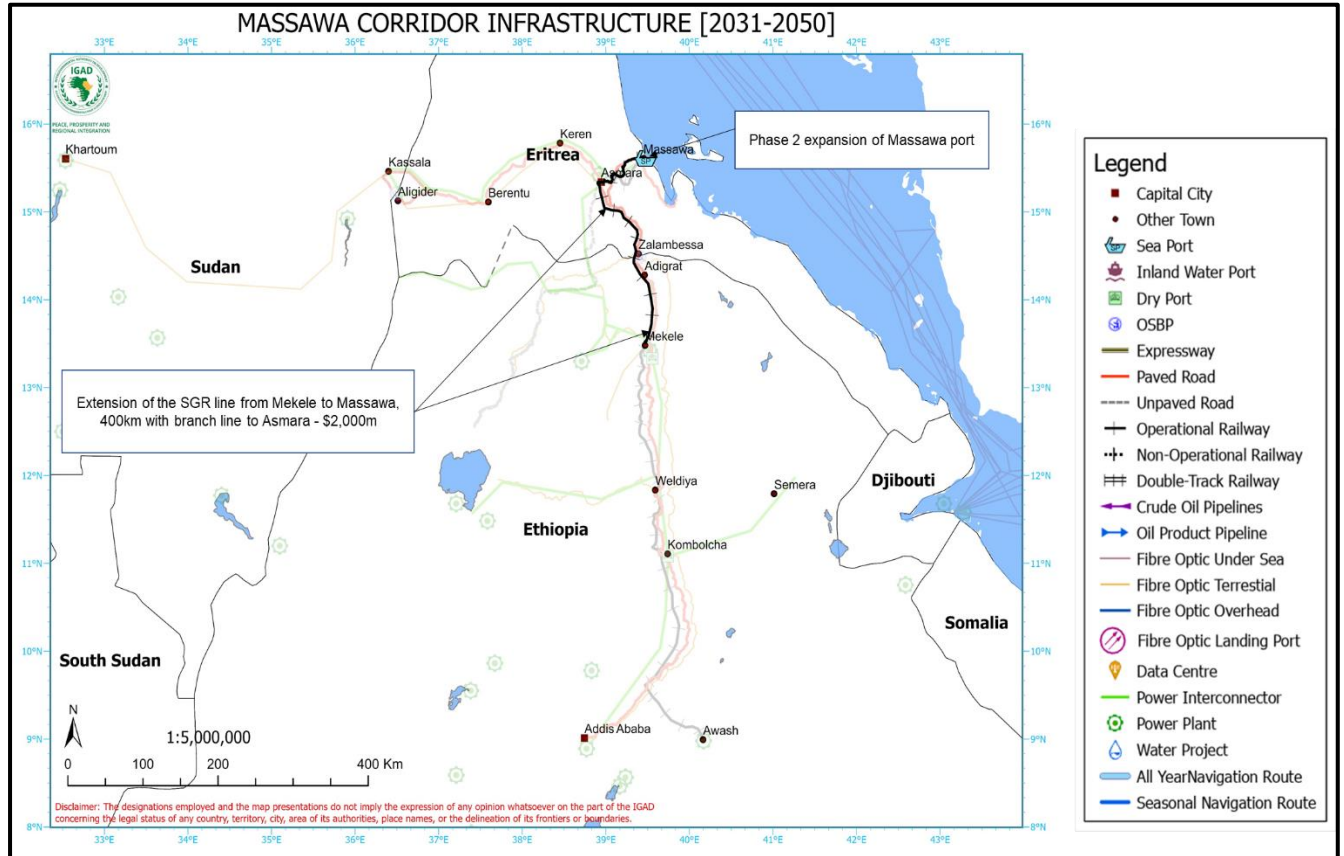


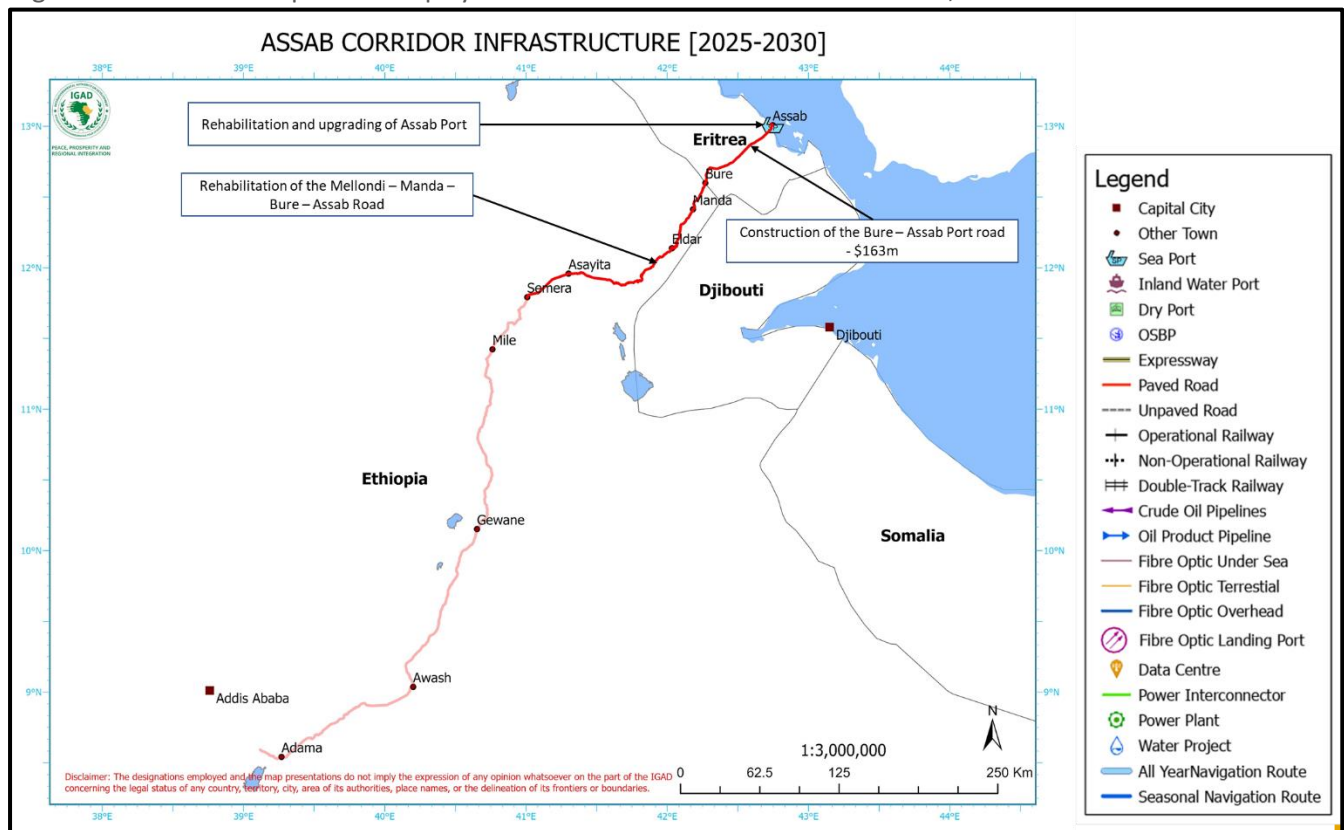


Figure ES.20: Development of physical infrastructure Massawa Corridor, 2031-50



Assab Corridor

Figure ES.21: Development of physical infrastructure Assab Corridor, 2025-2030





Mogadishu Corridor

Figure ES.22: Development of physical infrastructure Mogadishu Corridor, 2020-24

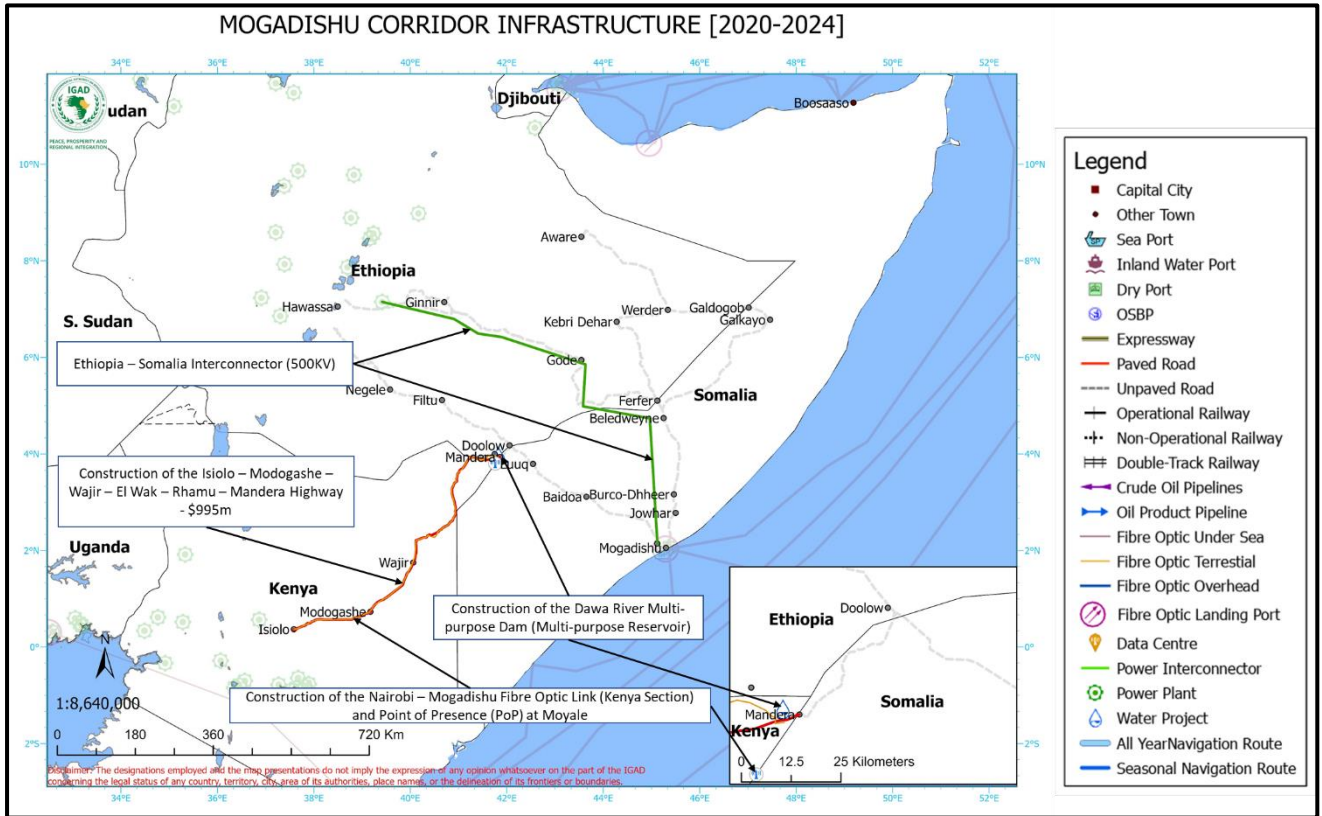


Figure ES.23: Development of physical infrastructure Mogadishu Corridor, 2025-30

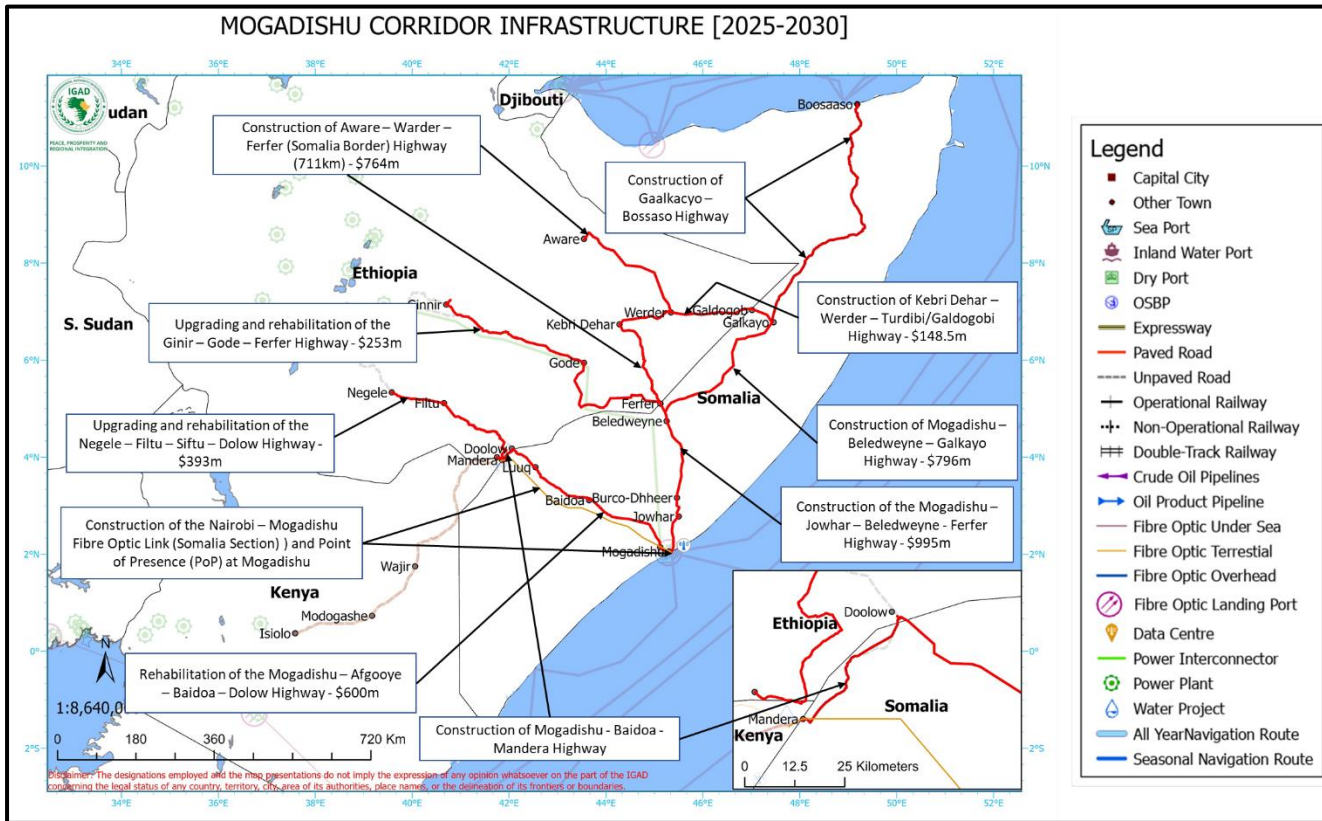
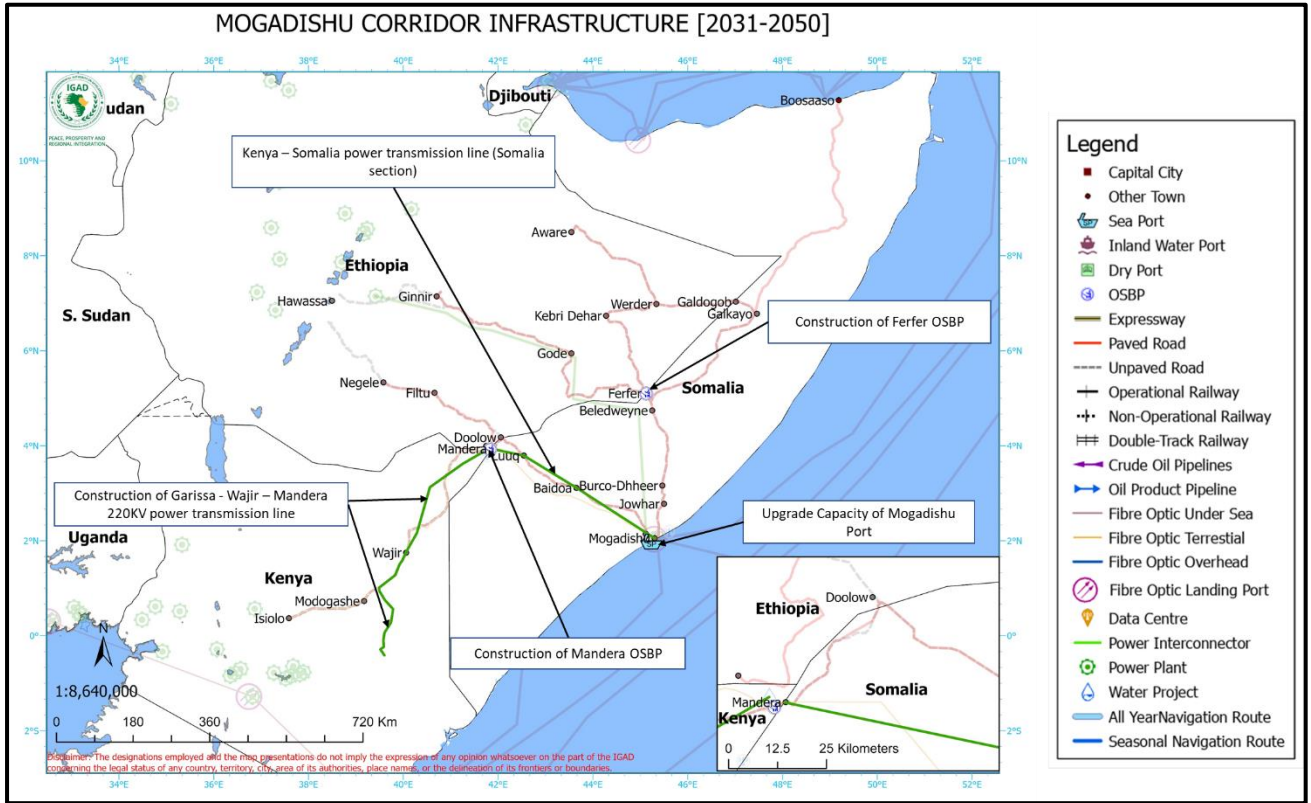




Figure ES.24: Development of physical infrastructure Mogadishu Corridor, 2031-50



Kismayo Corridor

Figure ES.25: Development of physical infrastructure Kismayo Corridor, 2020-24

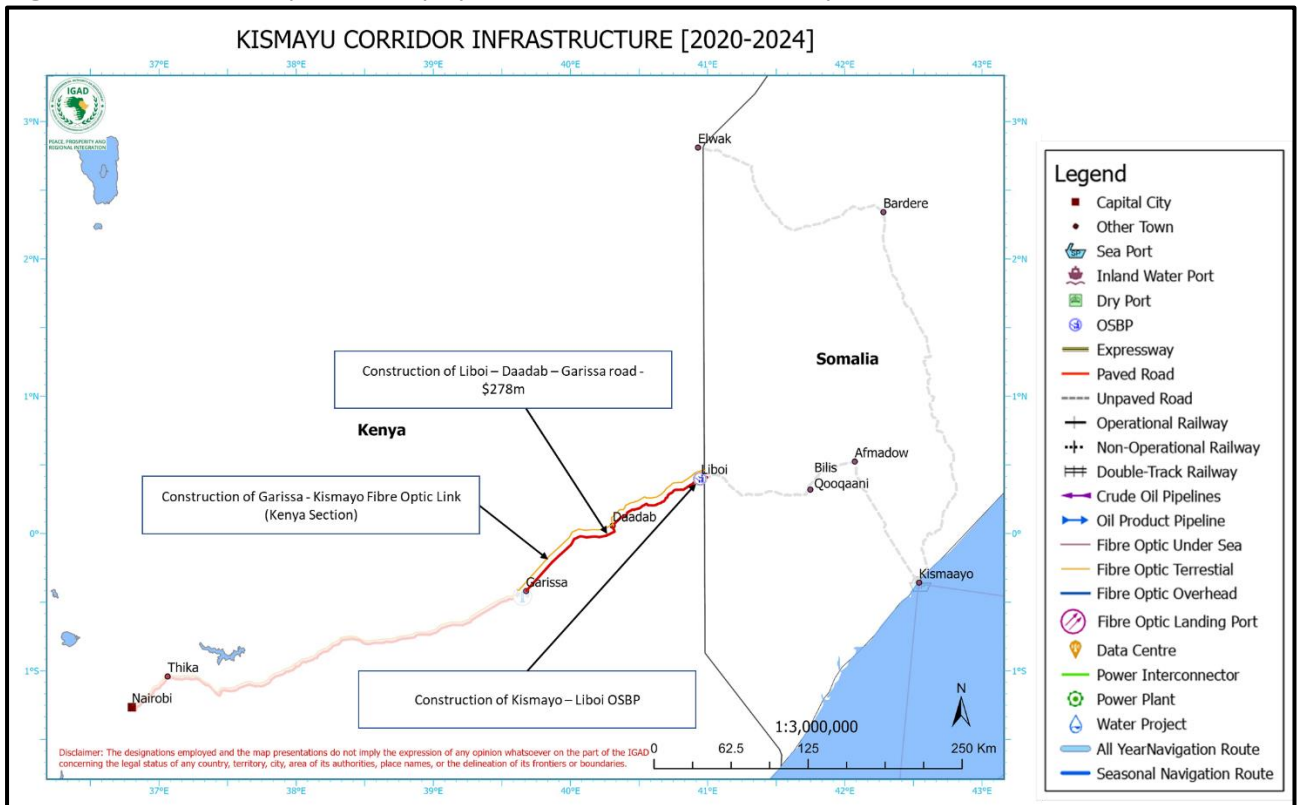




Figure ES.26: Development of physical infrastructure Kismayo Corridor, 2025-30

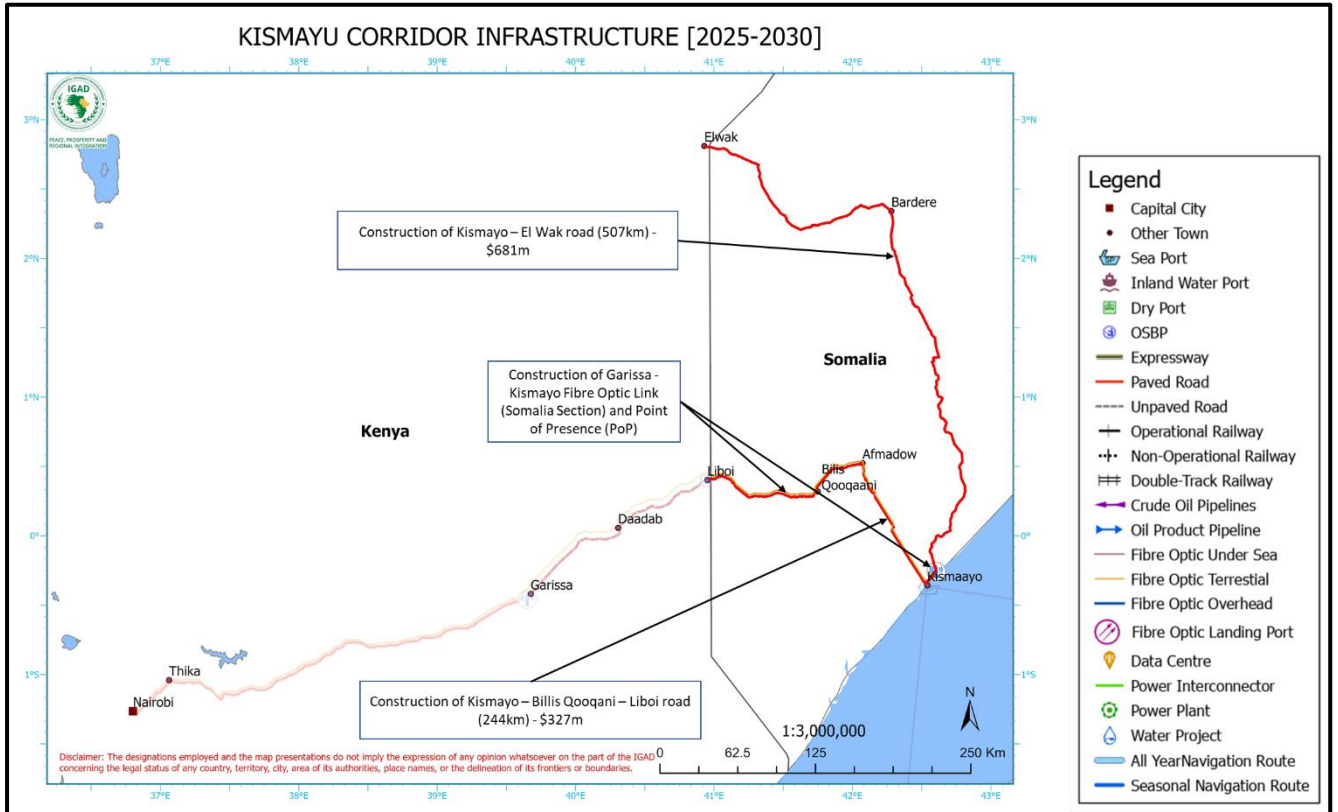
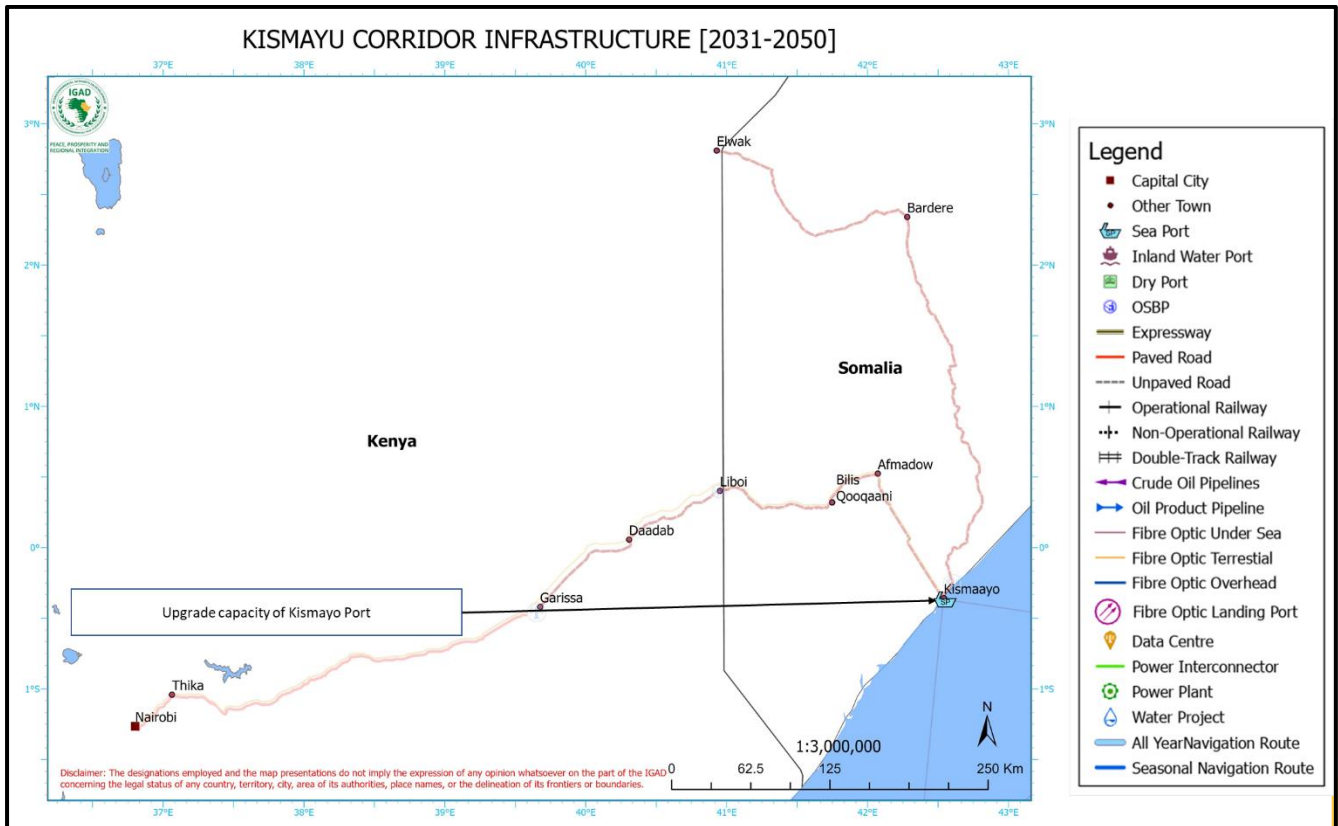


Figure ES.27: Development of physical infrastructure Kismayo Corridor, 2031-50

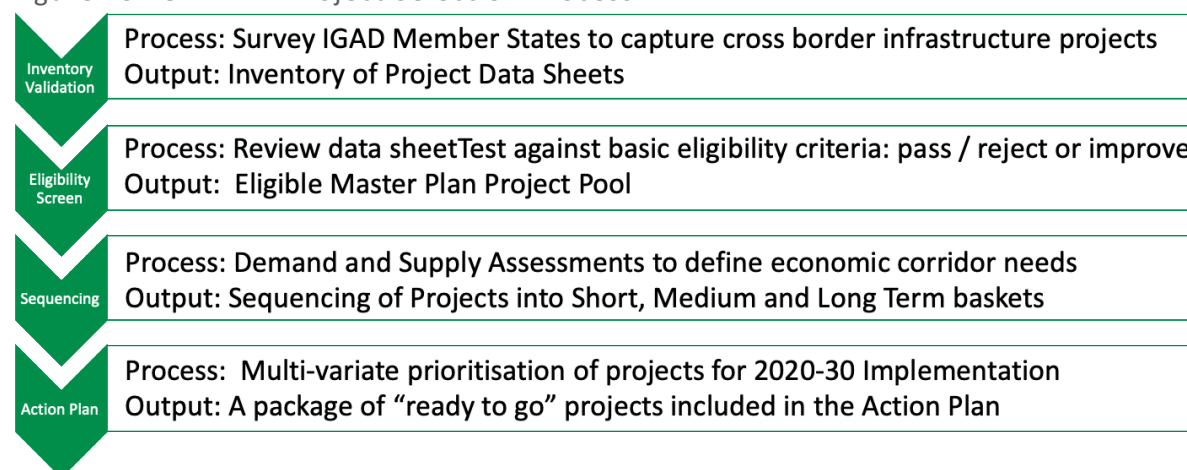


The Action Plan and Implementation Strategy

The Action Plan

The Action Plan comprises a shortlist of high-priority projects to be implemented by 2024. The approach for prioritising Action Plan projects is based on international best practices.

Figure ES.28: IRIMP Project Selection Process



The following projects are prioritised for inclusion in the IRIMP Action Plan.

Table ES.6: IRIMP Action Plan Projects

Project	Sector	Sub-Sector	Cost (US\$ M)	Corridor	Country(ies)	
1	Juba – Nimule Road Rehabilitation	Transport	Road	73	Northern	South Sudan
2	Kampala – Jinja Expressway	Transport	Road	1,000	Northern	Uganda
3	Kisumu – Malaba SGR (Phase 2C)	Transport	Railway	1,230	Northern	Kenya
4	Malaba – Kampala SGR	Transport	Railway	2,638	Northern	Uganda
5	Uganda – South Sudan 400kV Power Transmission Interconnector	Energy	Power Interconnector	300	Northern	South Sudan, Uganda
6	Djibouti City – Hol Hol – Ali Sabieh – Galile Highway	Transport	Road	129	Djibouti	Djibouti
7	Raad – Boma – Kapoeta Road	Transport	Road	336	Djibouti	South Sudan
8	Second Ethiopia – Djibouti 230kV Power Transmission Interconnector	Energy	Power Interconnector	100	Djibouti	Djibouti, Ethiopia
9	El Mujlad – Abyei Highway Upgrade	Transport	Road	120	Port Sudan	Sudan
10	Wau – Gorgrial – Abyei Highway Upgrade	Transport	Road	360	Port Sudan	South Sudan
11	Ethiopia – Sudan 500kV Power Transmission Interconnector	Energy	Power Interconnector	514	Port Sudan	Ethiopia, Sudan
12	LAPSSET Port Phase 2	Transport	Port	1,760	LAPSSET	Kenya
13	Isiolo – Lokichar Highway	Transport	Road	402	LAPSSET	Kenya
14	Juba – Torit – Kapoeta – Nadapal Road Upgrade	Transport	Road	294	LAPSSET	South Sudan
15	Transborder Submarine Fibre PoPs and Regional Smart Hub Facility and Data center	ICT	Fibre Optic Cable	70	LAPSSET Corridor	Kenya, Ethiopia, South



						Sudan, Uganda
16	Nairobi – Mogadishu Fibre Optic Link (Isiolo – Mandera fibre optic link)	ICT	Fibre Optic Cable	35	Mogadishu Corridor	Kenya, Somalia
17	LAPSSET Crude Oil Pipeline	Energy	Petroleum/Gas Pipeline	3,064	LAPSSET	Kenya
18	Nadapal – Juba Fibre Optic Cable	ICT	Fibre Optic Cable	15	LAPSSET	South Sudan
19	Togochaale Border Post and Road Upgrade	Transport	Road / Border Post	50	Berbera	Somalia
20	Berbera – Togochaale Fibre Optic Cable	ICT	Fibre Optic Cable	10	Berbera	Somalia
21	Ethiopia – Somalia Power Transmission Line	Energy	Power Interconnector	1188	Berbera	Ethiopia, Somalia
22	Single African Air Transport Market	Transport	Civil Aviation	8	N/A	All
23	Djibouti Africa Regional Express (DARE)	ICT	Fibre Optic Cable	100	N/A	Djibouti, Somalia, Kenya
24	Sudan - Eritrea 66kv power interconnector (Eritrea Section)	Energy	Power Interconnector	8	Massawa	Sudan, Eritrea
25	Kenya – Somalia Power Transmission Line	Energy	Power Interconnector	192	Mogadishu	Somalia, Kenya
26	Dawa River Multi-purpose Dam	Water	Multi-purpose Reservoir	604	Mogadishu	Ethiopia, Kenya, Somalia

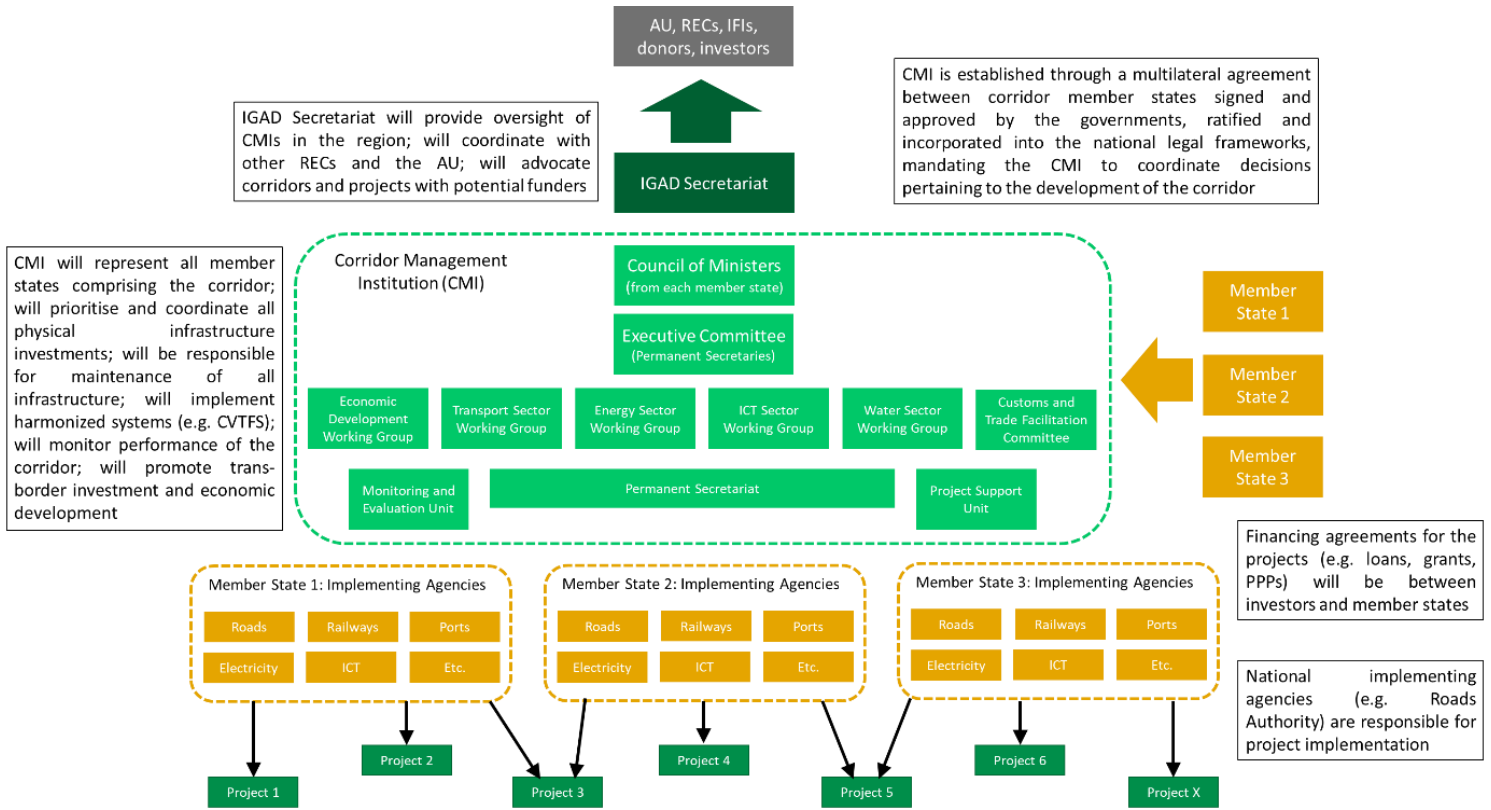
The Implementation Strategy

The physical infrastructure projects that comprise the IRIMP will be **implemented by member states, coordinated** at the corridor level **by a Corridor Management Institution (CMI)**, with the **IGAD Secretariat providing oversight**, advocacy and acting as a facilitator for discussions with donors, IFIs and multilateral institutions including other Regional Economic Communities (RECs), African Union (AU) etc. and building consensus among member states. The proposed structure and roles are illustrated in Figure ES.29 below.





Figure ES.29: Institutional arrangements and roles for Corridor Management Institution





Capacity building of relevant agencies and improving the professional skills agency staff is critical for the successful implementation of the IRIMP. The IGAD region has access to various institutions and manpower within itself or the rest of the world that can be applied to build capacity for its member states. One of the key functions of the IGAD Secretariat would be coordination in identifying capacity requirements in member states and potential institutions that could provide capacity building.

Some of the key actions that the IGAD Secretariat can undertake to support capacity building in the member state line agencies for successful implementation the plan includes the following:

- Promotion of integration and meaningful participation of key stakeholders in policy formulation, planning and monitoring.
- Promotion of sustainability of key institutional actors for continuity through offering government support; and
- Improvement and bolstering of communication channels for systematic and continuous flow of information to all stakeholders.

Financing the IRIMP

Given the limited availability of grant and concessional finance, and the already high sovereign debt levels of IGAD member states, private sector sources should be used to finance infrastructure wherever possible. All feasibility studies should explore options for making a project commercially viable. Where return on investment does not justify a purely commercial model, concessional finance and grants should be used in a blended finance model to reduce risks to acceptable levels so that the projects can be part-funded by private investors, rather than fully funding the project through grant/concessional sources. Having said this, it is recognised that the fragile and developing context of the region presents a barrier to private sector involvement in many projects that would otherwise have a high economic impact. For these projects, national budgets and donor funding will be the preferred options.

Regardless of the financing source, robust analysis is required to demonstrate impact (economic and/or financial) and sustained consensus is necessary to build investor confidence.

Table ES.7: Financing strategy for physical infrastructure projects

Economic Feasibility	Commercial Feasibility	Context	Financing Strategy
Positive	Positive	No barriers and privately-owned infrastructure asset e.g. fibre optic cable, oil pipeline	Private sector
Positive	Positive	Possible barriers that require government intervention and /or public asset e.g. road, port	PPP
Positive	Moderate / insufficient	The project could be made financially viable for the private sector, but there are barriers such as high risk, high cost of capital etc.	Blended finance
Positive	Negative	The project is not suitable for the private sector, but will have a positive economic impact	National budgets and Concessional finance
Positive	Negative	Project will have a positive economic impact, but member state is fragile and unable to borrow	National budgets and grants
Strategic	Negative ROI	The immediate economic impact is difficult to demonstrate, but the project is part of a member state's long-term strategy	Government budget





Monitoring IRIMP implementation: Ensuring quality delivery and safeguards are fully achieved

The IRIMP should be independently reviewed every 5 years, including formulation of a new Action Plan, at least initially. The 5-year update will include reviewing the status of all projects and the progress made in implementing those in the short-term basket and identifying any constraints. A new Second Action Plan will be formulated, based on prioritisation of the medium-term projects, plus any short-term projects that were not implemented, plus newly identified projects.

In addition to the 5-yearly independent review of the IRIMP, progress should be continuously be monitored internally. For the implementation of physical infrastructure projects, data on progress will be collected by the Monitoring and Evaluation Unit of the designated CMI. Each project in the short-term basket will have a Work Plan with activities, timings and responsibilities, against which progress will be recorded and reported in a dashboard accessible to all stakeholders, including the IGAD Secretariat, other RECs involved in the corridor, the CMI, and ministry staff of member states (e.g. those in working groups). Until CMIs are operational, the above roles will be undertaken by the IGAD Secretariat, after which it moves to an oversight role.

Critically, project progress reporting must ensure project safeguards (international standard Environment and Social Impact Assessment (ESIA) requirements) are fully complied with. The IRIMP Regional Consultative Dialogue / Forum held in Entebbe, Uganda (March 2-3, 2020) strongly emphasised the importance of ensuring the IRIMP delivers high quality growth by ensuring climate change and environmental risks are managed, GESI is mainstreamed throughout the project cycle, investments aim to bring youth into the development process and the conflict risks are understood and managed. These developmental objectives are core to the IRIMP and, importantly, are generally a condition of access to international and donor finance. Critically, it is recommended that there is third party monitoring, using CSOs / NGOs and/ or PSOs, of safeguard implementation and compliance.



Introduction to the IRIMP and Approach to Implementing the Study



Introduction to the IRIMP and Approach to Implementing the Study

This IGAD Regional Infrastructure Master Plan (IRIMP) report is the primary output from the IRIMP study, which was implemented by IPE Global in partnership with Africon Universal Consulting on behalf of the IGAD Secretariat and funded by the African Development Bank (AfDB). The report is the result of 24 months of research and is accompanied by *Volume Two: The Evidence Base* as well as additional supplementary material contained in *Annexes*, which are referenced throughout. Together the two volumes and annexes provide the rationale, evidence base and intervention logic to secure the ambitious IRIMP objectives.

The objectives of the IRIMP are to:

- i. Develop a strategic framework for infrastructure development in the Transport, Energy, ICT and Water sectors.
- ii. Facilitate intra-regional and inter-continental trade, and the flow of goods, services, and the movement of people across borders of the region.
- iii. Support regional economic growth that is inclusive, resilient, and sustainable; and
- iv. Reduce isolation and promote regional integration and stability.

The IRIMP aims to catalyse investments in infrastructure in the IGAD region, as outlined in the Terms of Reference (TOR): *“[the] infrastructure master plan will provide an opportunity for Member States, development partners, investors and other stakeholders to **pick regionally accepted and bankable infrastructure projects to fund, invest and support.**”*

The IRIMP not only focuses on projects but, equally important, highlights the need to invest in building sustainable institutional capacity to improve the delivery and management of investments in the long-term. The IRIMP is also about improving the quality of growth and investment by ensuring climate change, social inclusion (bringing vulnerable groups, women, and youth into the development process from design to implementation) and conflict sensitive investment choices are mainstreamed in decision-making and project execution.

IGAD Members States’ Transformation and Continental Ambition

The IRIMP is first and foremost an expression of IGAD Member States’ transformational National Development Plans and priorities; the strategy, master plan and action plan have been developed in close co-ordination with the Member States and their respective ministries and agencies. At the same time, the RECs are key building blocks feeding into Vision 2063, and thus, IGAD is a key part of a bigger picture.

Complementing the member states’ priorities, the IRIMP has also been developed to integrate into wider African Union Vision 2063; a *“blueprint and master plan for transforming Africa into the global powerhouse of the future. It is the continent’s strategic framework that aims to deliver on its goal for inclusive and sustainable development...”*. Central to Vision 2063, is the development of an African Continental Free Trade Area (AfCFTA), the objectives of which are:^[1]

^[1] African Union website. <https://au.int/en/ti/cfta/about>, accessed 06 03 2020. 52 Countries signed (in Niger in July 2019) the African Continental Free Trade Agreement (AfCFTA), an agreement that will reduce tariffs up to 90 per cent among the countries of the continent. The AfCFTA is one of the key priorities of Africa’s Agenda 2063





- Create a single continental market for goods and services, with free movement of business, persons and investments, and accelerating the establishment of the Continental Customs Union;
- Expand intra African trade through better harmonisation and coordination of trade liberalisation and facilitation regimes and instruments across RECs and across Africa in general;
- Resolve the challenges of multiple and overlapping memberships and expedite the regional and continental integration processes;
- Enhance competitiveness at the industry and enterprise level through exploiting opportunities for scale production, continental market access and better reallocation of resources.

Infrastructure and harmonisation of policies and regulations related to integrated transport, communications, energy systems and resource management is critical to AfCFTA success. The IRIMP, through a combination of enabling environment (policy, regulation, institutional development reforms and capacity building initiative) and physical infrastructure investments directly contributes to these continental policy priorities and seeks to link IGAD to its neighbouring RECs to form continental trade-enhancing infrastructure networks.

Further, the IRIMP strategic approach centred on **Economic Development Corridors** (EDCs) is closely aligned to the most recent AU thinking on optimising Africa's growth potential^[2] - *"Africa's Future Priority Infrastructure programme through the formulation and planning of PIDA-PAP 2 needs to reflect this approach centred on inclusive and sustainable infrastructure. ...Therefore, the underlying concept for the planning of PIDA-PAP 2 will have to promote an integrated, multi-sectorial corridor approach that is employment-oriented, gender-sensitive, and climate-friendly and that connects urban/industrial hubs with rural areas."*^[3] IRIMP is corridor-driven and mainstreams working across sectors and focusing on developmental outcomes in line with the SDGs.

The IRIMP is relevant, timely and an essential contribution to Africa's Vision 2063.

The Need for IRIMP: Evidence from Situational and Gap Analysis

The IGAD regional economy has been growing at an average of more than 5% per annum from 2007-2018; nominal economic growth is encouraging. However, **IGAD lags behind the other African RECs across a range of economic development indicators** (see Table 0.1 below); the quality of growth needs to improve in order to achieve the development outcomes as envisaged in the SDGs and Vision 2063. Fragility and the quality of growth are linked; the IRIMP aims to shift the development trajectory onto a more inclusive and resilient pathway.

Increasing trade – both between IGAD countries (intra-regional) and with the rest of the world (inter-continental) – can be a key driver of economic development. **IGAD intra-regional trade flows are low compared to other RECs** but are increasing and projected to reach \$5billion by 2030 from just less than \$3billion today (see Figure 0.1). Moreover, there remains significant potential to boost intra-regional trade through the operationalisation of the African Continental Free Trade Area (AfCFTA) and the removal of tariffs and non-tariff barriers to trade. Intra-regional trade in IGAD is, at present, concentrated between country pairs with well-established connections, such as Kenya and Uganda

^[2] AU (November 2019) Elaboration of the 2021-2030 Priority Action Plan for the AU Program for Infrastructure Development in Africa (PIDA), The Integrated Corridor Approach – "A Holistic Infrastructure Planning Framework to establish PIDA-PAP 2"

^[3] AU (November 2019), The Integrated Corridor Approach – "A Holistic Infrastructure Planning Framework to establish PIDA-PAP 2, p.3/4.





(more than \$1 billion in 2017), but remains relatively small between other country pairs, such as Kenya and Ethiopia, the two largest economies in the region (\$78m in 2017).

Figure 0.1: Share of intra-regional trade as a percentage of total trade by REC; and trade between IGAD country pairs as a share of total intra-regional trade

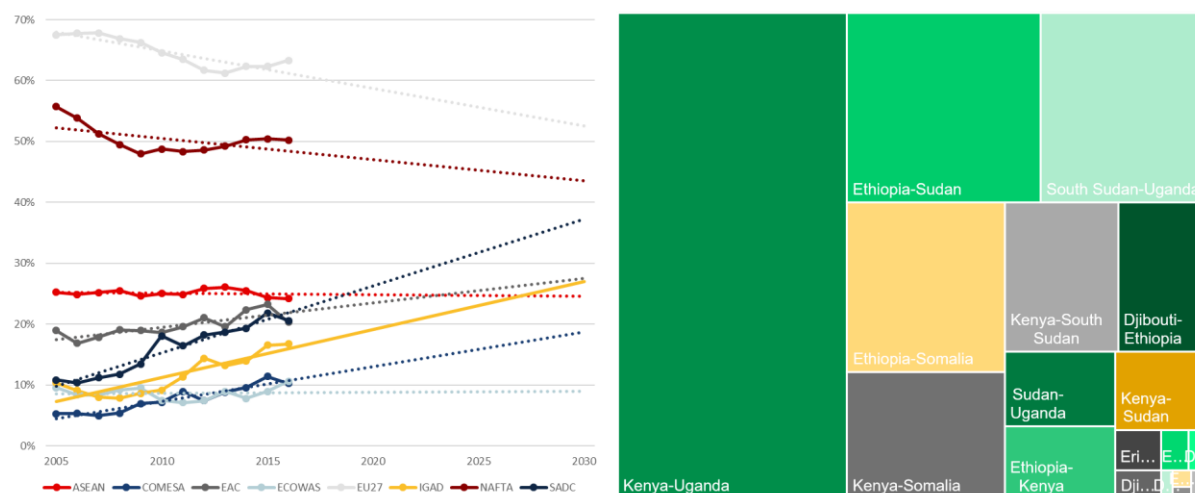


Table 0.1: Economic development indicators for IGAD and comparator RECs, 2017

Member State / REC	Population (m)	GDP (\$bn)	GDP growth (2008-2017)	GDP per capita (\$)	Poverty (%)	Trade Balance (% GDP)	FDI Stock (\$bn)	FDI per capita (\$)	HDI Score
Djibouti	0.97	1.6	5.4	1,572	35	-23.2	2	2,012	0.476
Eritrea	5	2.6	3.2	583	N/A	-3.4	1	192	0.440
Ethiopia	108	81	10.1	768	84	-7.2	19	172	0.463
Kenya	51	77	5.0	1,646	39	-6.3	12	234	0.590
Somalia	15	7.4	2.6	500	82	N/A	2	153	N/A
S. Sudan	13	6.9	11.8	605	92	-13.4	0.00	-1.34	0.388
Sudan	42	107	3.6	2,694	52	-4.5	27	639	0.502
Uganda	44	26	5.8	679	57	-4.2	12	269	0.516
COMESA	548	687	3.5	1,286	46	-4.5	263	480	0.546
EAC	191	180	6.7	967	62	-5.5	46	242	0.495
ECCAS	192	268	3.7	1,435	54	-2.4	100	520	0.520
ECOWAS	377	550	4.8	1,496	60	-0.1	179	475	0.482
IGAD	279	308	5.1	1,118	63	-5.9	74	266	0.482
SADC	352	701	2.9	2,047	47	-2.3	292	832	0.545
Africa	1,287	2,241	2.4	1,787	51	-3.5	867	674	0.526
World	7,633	80,439	3.5	10,656	N/A	N/A	31,524	4,130	0.728

Source: World Bank, World Development Indicators (latest year)

Inter-continental trade is also increasing steadily and is projected to reach \$99 billion by 2030, from \$59 billion in 2017.^[1] The ongoing structural transformation taking place, particularly in Ethiopia, Kenya and Uganda, will also provide opportunities to produce and trade higher value-added products. This potential will only be realised, however, if the barriers to trade are addressed and infrastructure linkages improved; better connectivity and networks to drive productivity and job creation.

[1] For further detail on the economic context of the IGAD region, see the *Volume Two: The Evidence Base*

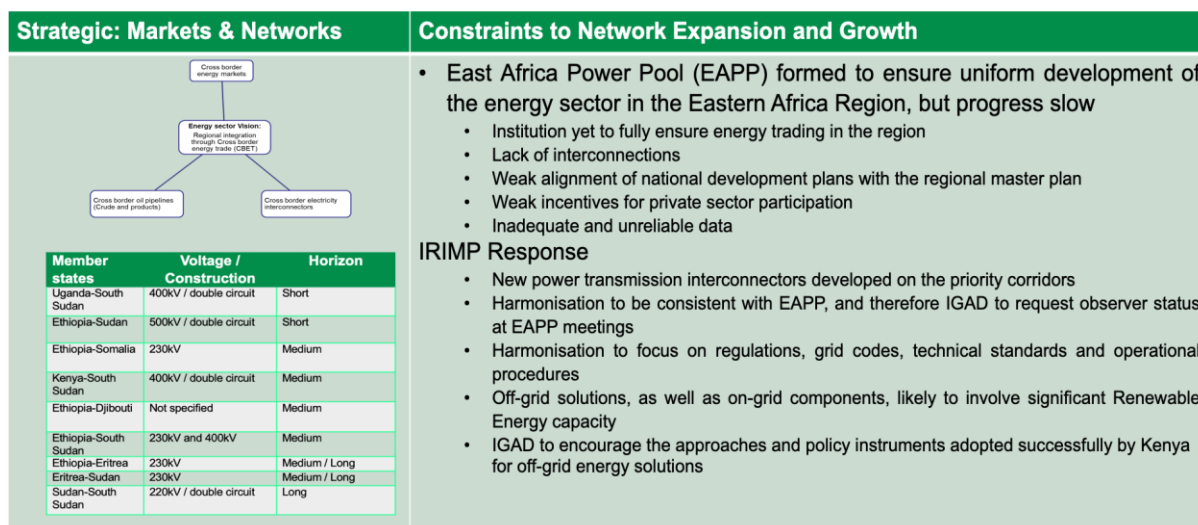




Inadequate infrastructure, both quantity and quality, is one of the main barriers to trade in the region and is slowing the pace of regional integration and growth (more detail is included in *Volume Two*). The bottlenecks are a combination of “software” (policy, regulation, institutional, and plan harmonisation and integration) and “hardware” (the physical assets and their operations) – Figure 0.2 illustrates these key interdependencies. The lack of trans-border infrastructure restricts the movement of goods, services and people; increases transaction costs; limits the effective size of regional markets; reduces the competitiveness of regional products; and makes the IGAD region less attractive for inward investment.

Figure 0.2: Energy Sector: Addressing Constraints to Regional Networks and Trading

Making the Connections



By taking an integrated corridor approach, the IRIMP seeks to address these barriers by identifying a pipeline of trans-border infrastructure projects that are bankable and attractive to investors, and that alleviate key capacity constraints on the major IGAD trade corridors. In the medium-to-long-term, other projects necessary to meet the demands of the growing IGAD economies will be identified, mapped and prioritised.





Scope, Approach and Structure of the IRIMP

Our approach to the IRIMP study has been guided by the TOR, which clearly states the scope of the study to be “regional infrastructure [that] would range from simple projects that involve two Member States to complex ones that involve several or all Member States” while “national dimensions of whatever character (e.g. physical infrastructures, national policies, institutional and regulatory frameworks, technical norms and standards) will be considered only insofar as they have an impact on, or may be affected by, the regional dimensions”. Thus, **the IRIMP has considered only trans-border infrastructure projects, defined as those that involve two or more IGAD member states, or form part of a regional trade corridor** with the potential to connect two or more member states and serve as a conduit for intra-regional and inter-continental trade.

“The IGAD Regional Infrastructure Master Plan will cover the period up to 2050. This horizon is broken up into the following phases: 2019-2024 (short-term), 2025-2030 (medium-term) and 2031-2050 (long-term). The **master plan will mostly cover the short-term period** and will be less detailed for the medium and longer term.” Moreover, the TOR emphasises the importance of prioritising infrastructure projects, with “realistic assumptions on the level of resources that could be available for supporting the development of physical assets”, and further that “the IGAD Regional Infrastructure Master Plan should be developed in a manner to ensure that it is successfully implemented”. The issue of prioritisation was also raised in discussions with potential funders during the Inception Phase², and it was recognised that previous RECs master plans and PIDA PAP Phase 1, have been too broad, with some key stakeholders frequently describing them as “wish lists” rather than clear roadmaps for infrastructure development. As such, the **need to prioritise and focus on fewer and better-quality projects** were key principles in the design of the IRIMP.

The TOR further indicates that the IRIMP will comprise of three components: 1) “establish a **strategic framework** for the development of IGAD regional infrastructure...based on a long-term, social and economic development vision, strategic objectives and sector policies”; 2) “establish an **infrastructure master plan**...over the short, medium, and long-term horizons”; 3) “prepare an **implementation strategy** and processes including, in particular, the improvement of institutional arrangements (such as regulatory and administrative processes); priority infrastructure projects; and financing options including measures for promoting, attracting and sustaining private sector participation in infrastructure development”.

Finally, it was agreed with the IRIMP Steering Committee during the *Broad Sector Overview and Prioritisation Criteria Workshop*³ that the final IRIMP output (i.e. this report) would be presented **spatially, rather than sectoral focussed** as initially proposed in the TOR. As well as physical infrastructure across the four sectors, the IRIMP will also consider ‘economic infrastructure’ defined as: 1) institutional arrangements; 2) harmonisation of policy, regulations and standards; and 3) logistics services. This will enable a more integrated and holistic approach to infrastructure development (as explained below in Chapter 1).

The above context has guided the approach of the IRIMP study team, and the structure of this report, which are illustrated in Figure 0.3 below.

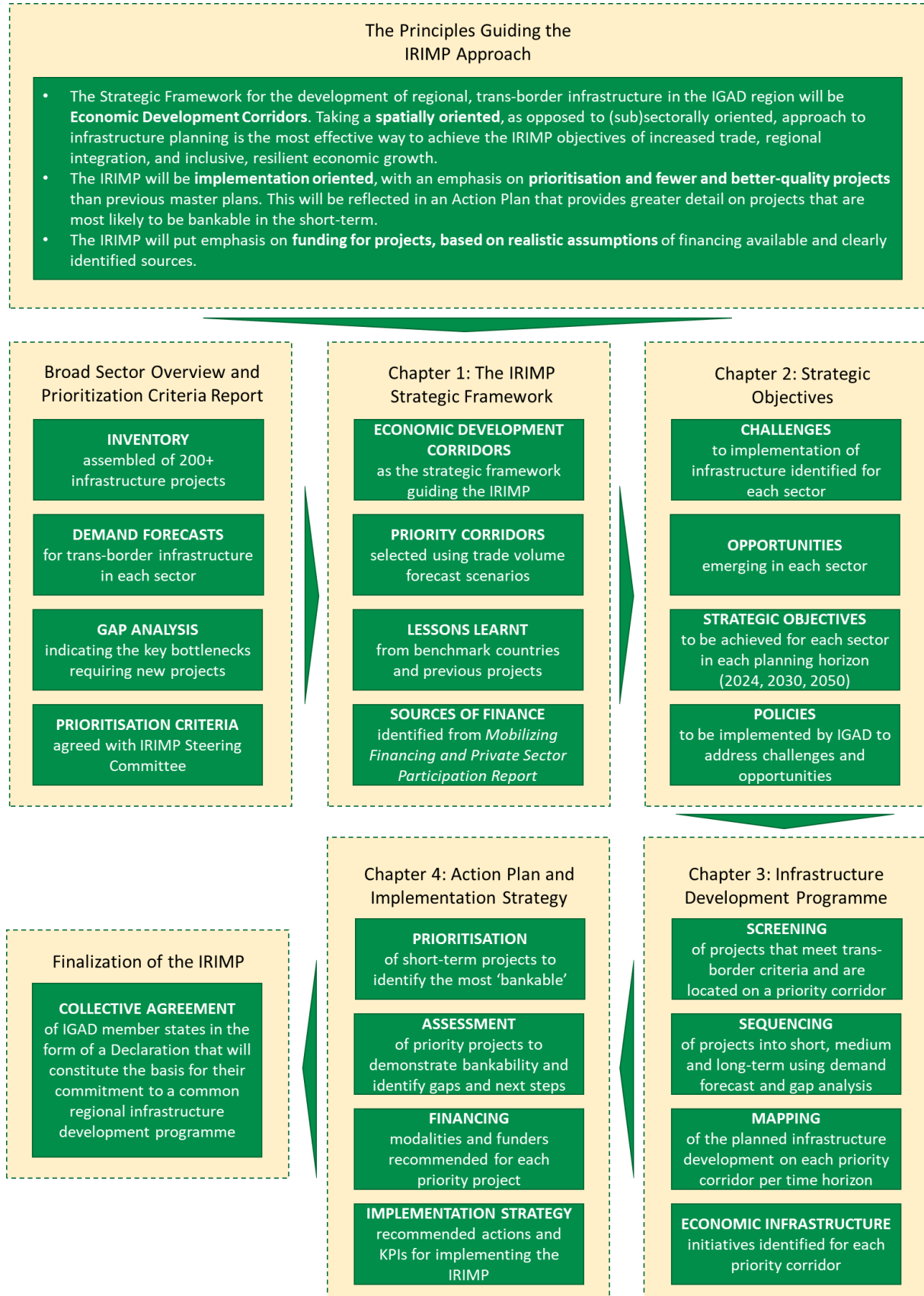
² Including the World Bank, EU, AU, NEPAD and AfDB

³ Held in Mombasa during December 3rd to 5th 2018 to present the findings of the *Broad Sector Overview and Prioritisation Criteria Report* now submitted as *Volume Two: The Evidence Base*





Figure 0.3: Approach to implementing the IRIMP study



Chapter One: The IRIMP Strategic Framework



Chapter One: The IRIMP Strategic Framework

Section 1.1 Introduction

This chapter presents the strategic framework of the IGAD Regional Infrastructure Master Plan (IRIMP). The chapter begins with a description of the IRIMP framework, which is focused on building trans-border Economic Development Corridors (EDCs) that bind IGAD member states together to promote intra-regional and inter-continental trade that supports the development and structural transformation of the regional economy. The framework is informed by international experience. Potential EDCs are identified, and their current status and potential is assessed. An Infrastructure Development Programme that outlines the development of physical and economic infrastructure for each corridor to 2050 is presented in Chapter 3.

The chapter continues with an analysis of the financing context, indicating the likely sources of funding and the challenges that need to be overcome to attract investors for trans-border infrastructure projects. The fiscal headroom of IGAD member states is low; finance for the infrastructure interventions in the IRIMP will need to be sourced primarily from external sources including: IFIs; donors; Exim banks; as well as the private sector. It is important to understand how much funding is available, from where, and for which projects. Implementing the IRIMP will in practice involve prioritising from a large pool of projects, all of which could benefit the IGAD member states, but some of which will have a greater impact than others. It should be implemented in phases. The first phase of high-priority, high-impact projects to be implemented is presented in the Action Plan (Chapter 4).

Chapter 2 discusses the challenges and opportunities in each sector, proposes strategic objectives, and the policies to be implemented to address the challenges and take advantage of the emerging opportunities.⁴

Section 1.2 Building Economic Development Corridors Through the IRIMP

The IRIMP maps out the provision of trans-border physical infrastructure and the implementation of related policy, regulatory and institutional strengthening (economic infrastructure) initiatives from 2020 to 2050. The primary principle guiding the selection of trans-border infrastructure projects for the IRIMP is the degree to which a trans-border infrastructure promotes the development of the corridors that traverse the IGAD region.

The EDC framework is widely used by international development organisations and national governments to marshal and direct resources to promote economic growth and structural transformation. An EDC most commonly contains a transportation corridor (generally a road, railway or waterway) – but is much more than a linear area connecting two countries, regions or cities through which goods and people pass. An EDC is an instrument of development that is used to ensure that the physical infrastructure generates important economic and social development impacts (see Figure 1.2). Policies, programmes, and projects to facilitate trade, improve the business environment, and encourage urban-economic investment transform a transport corridor into an EDC.

A transport corridor is the first step towards an EDC. It is the backbone of an EDC; it defines the geographical space of the corridor and facilitates the flow of goods services and people. On its own, however, a transport corridor rarely leads to wide-spread development and the structural transformation of an economy. The right enabling environment is critical for a transport corridor to become an EDC. Indeed, as demonstrated by experience, the success of an EDC critically depends on

⁴ A full situational analysis containing a comprehensive assessment of the current status of the four sectors can be found in the *Volume Two: The Evidence Base*.





supportive institutional arrangements, and policy and regulatory frameworks that directly stimulate investment, facilitate trade and encourage economic growth – and thus enable the transport corridor to become a fully-fledged EDC.

Building an EDC generally demands considerable political commitment and stakeholder involvement from all levels of government. Often it requires the establishment of a Special Purpose Vehicle (SPV) to co-ordinate, direct and manage the infrastructure and policy-type initiatives required for the success of an EDC, referred to as a Corridor Management Institution (CMI). A CMI is established through a multilateral treaty signed by participating countries. Experience indicates that developing an EDC is best achieved by first designing and implementing policy and regulatory frameworks that promote and govern the development of an integrated multi-modal transportation system along a corridor route. This is likely to require the strengthening of the capacity and capability of government and the appropriate regulatory authorities which should include a thorough understanding of the concepts related to and the principals involved in promoting economic corridors. This process will assist in identifying further wider economic opportunities in the region and create a platform for addressing the challenges and mitigating the risks commonly associated with the development of EDCs.

Table 1.1 below outlines the development of an EDC through four stages, based on a framework developed by the African Development Bank⁵.

Table 1.1: Four-stage development of an Economic Development Corridor

Progress	Infrastructure	Investment	Harmonisation
Stage 1	Basic transport corridor – single trans-border infrastructure (e.g. road, rail, or waterway) linking two economic points	Corridor attracts limited local investment in the form of shops, cafes etc.	<ul style="list-style-type: none"> ▪ No harmonisation of regulations or policies. ▪ Little recognition of the corridor as an instrument for economic development
Stage 2	Multi-modal / multi-sectoral corridor – multiple pieces of infrastructure along the corridor route, such as a road-rail combination or development of power transmission lines, ICT cables etc.	Corridor begins to attract new investment as a result of improved physical infrastructure in the form of manufacturing facilities, hotels etc.	<ul style="list-style-type: none"> ▪ Limited harmonisation. Creation of cross-border trade agreements ▪ Recognition of the importance of the corridor for trade and economic development
Stage 3	Logistics corridor – additional economic infrastructure develops alongside the core physical infrastructure, such as logistics functions (e.g. warehousing; cold storage; trucking facilities)	International investment (FDI) attracted in manufacturing, tourism, tradable services etc., either clustered in specific locations or spread along the corridor	<ul style="list-style-type: none"> ▪ Active harmonisation of regulations covering the movement of goods, services and people as well as investment and tax, regulations specific to corridor sections. ▪ Establishment of institutional framework to manage the corridor and active promotion of

⁵https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Regional_Integration_Brief_-_Developing_Economic_Corridors_in_Africa_-_Rationale_for_the_Participation_of_the_AfDB.pdf





			investment (e.g. mayor's committee / SPV)
Stage 4	Economic Development Corridor – provision of full range of complementary infrastructure and facilities organised through a Spatial Development Initiative (SDI)	Further DI and FDI attracted. Forward and backward linkages established; local value chains developed. With spill-overs into the wider economy. Complementary services and linked sectors develop	<ul style="list-style-type: none"> ▪ Removal of all barriers to the flow of goods, services and people ▪ Full harmonisation of regulations, policies, tax etc. ▪ Free trade area established covering the corridor

The complex nature of corridor development highlights one of the key challenges of implementing EDCs, namely identifying, engaging, working, and coordinating with a wide array of stakeholders. This calls for a clear corridor development strategy and communication plan. EDC initiatives require regional as well as national and sub-national engagement, active participation, and sign off. Bringing different stakeholders together requires careful planning, coordination, and project management. The IGAD Secretariat has a vital role in bringing stakeholders together. Figure 1.1 illustrates the stakeholders that can potentially be involved in the process.

Figure 1.1: Stakeholders involved in EDC development

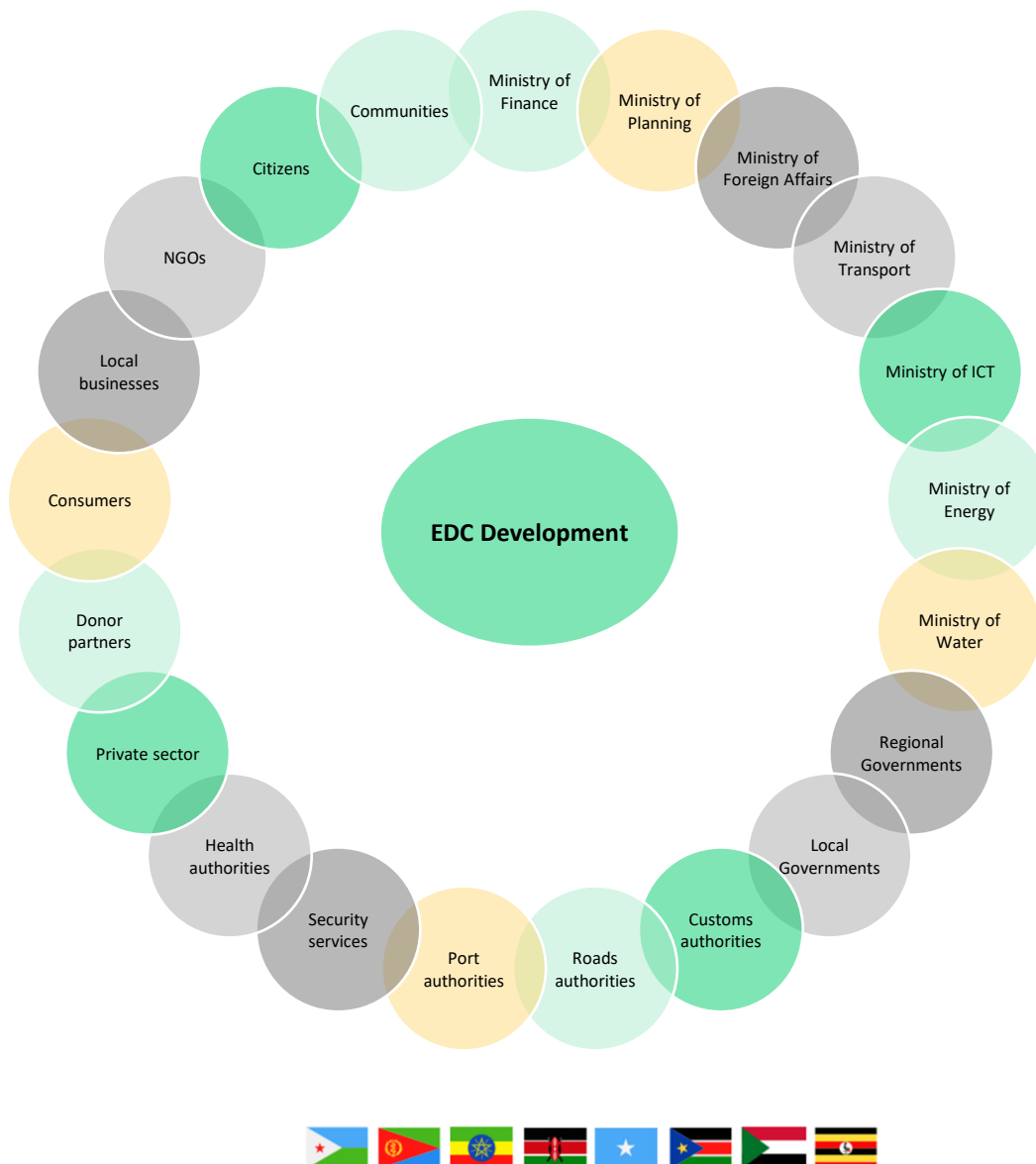
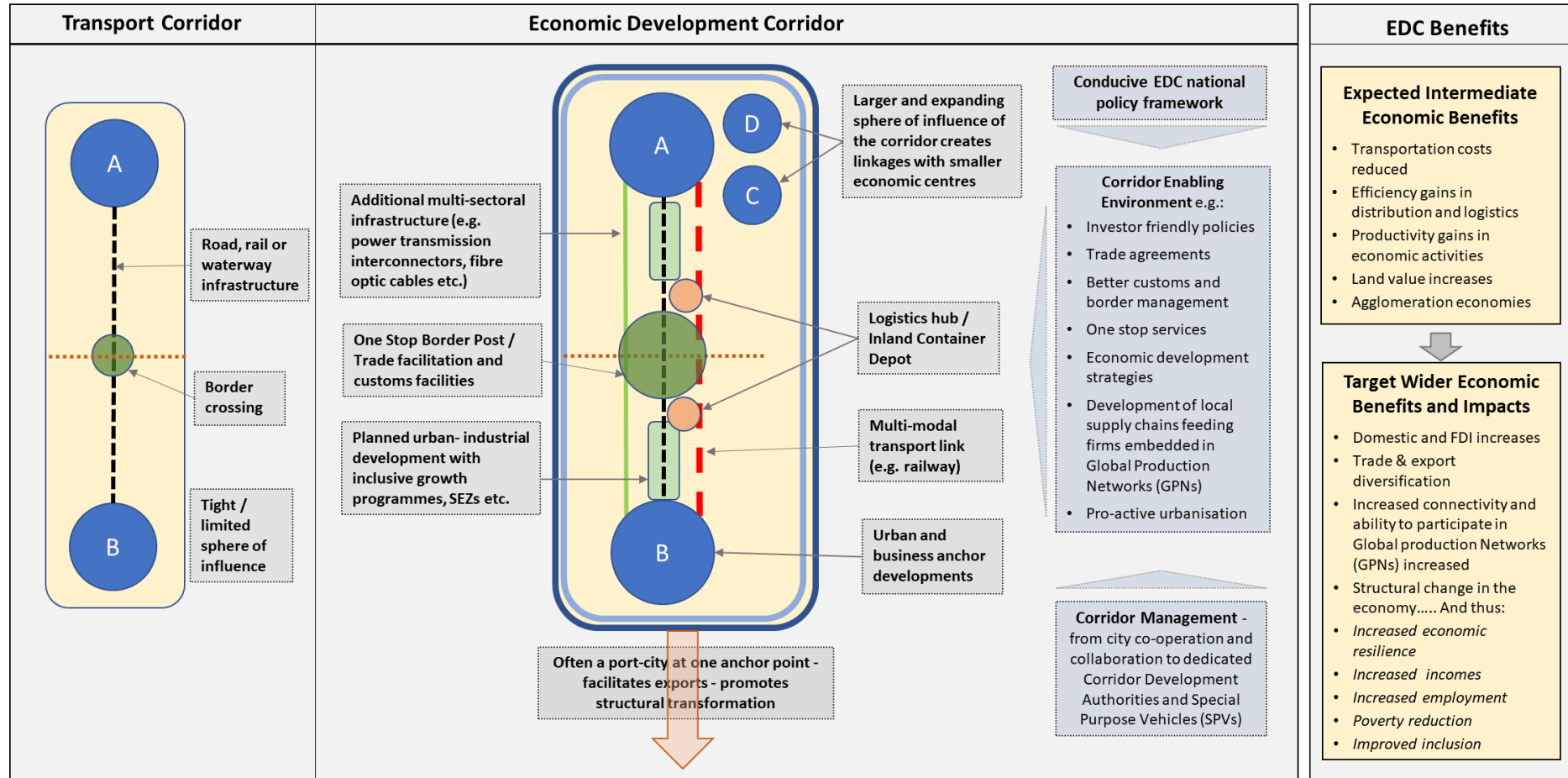




Figure 1.2: Evolution from a Transport Corridor to an Economic Development Corridor



Source: IRIMP study team





Section 1.3 Building Economic Development Corridors: Lessons from International Benchmark Countries

International experience indicates that successful EDCs are characterised by a strong economic development rationale and business case. In the first instance, feasibility studies confirm what constitutes a transport corridor with the potential to become an economic corridor. The increased flow of goods, services and people along a corridor provides the impetus for the removal of barriers – both physical and non-physical – and the emergence of soft infrastructure and institutions required to remove these barriers.

Economic corridors in four benchmark countries and regions were examined (India, the Greater Mekong Sub-region [GMS], the Wavis Bay Corridor in Southern Africa and the Maputo Corridor in Mozambique)⁶. The review demonstrated that it is relatively easy to build a basic transportation corridor, but more difficult to transform a transport corridor into a fully-fledged EDC, requiring successful implementation of the economic and investment policies, programmes and incentives, trade facilitation measures, and bilateral and multilateral trade agreements.

Most successful EDCs are Spatial Development Initiatives (SDIs) characterised by pro-active planning for urban-industrial development along the corridor, and the development of local businesses, particularly local supply chains embedded in global production networks. The skills involved in designing and implementing an EDC exceed those required for the construction of a transport corridor and the need to orchestrate political commitment (across borders) and marshal a comprehensive range of stakeholders, and potential funders and investors, behind an EDC project are generally considerable. **Building an EDC is as much a political mission as it is a physical construction project.**

Nevertheless, the governments and private sector stakeholders of the every one of the benchmark countries wanted to establish EDCs (and turn existing transport corridors into EDCs) as all recognised that it is an EDC, rather than a basic transport corridor, that would be the ‘pathway’ to achieving target economic development and social welfare goals. Furthermore, all recognised that the construction of a transportation corridor was a necessary first step towards a fully-fledged EDC. For regional trade, integration, and development to proceed, be accelerated and become successful, some if not all of the main transport corridors in IGAD must become EDCs. Indeed, a guiding principle of IRIMP is to put in place a plan that strengthens trans-border connectivity and transportation so allowing key transport corridors to effectively and efficiently become logistics corridors and subsequently fully-fledged EDCs.

Section 1.4 Potential Economic Development Corridors in the IGAD Region: Assessment and Prioritisation

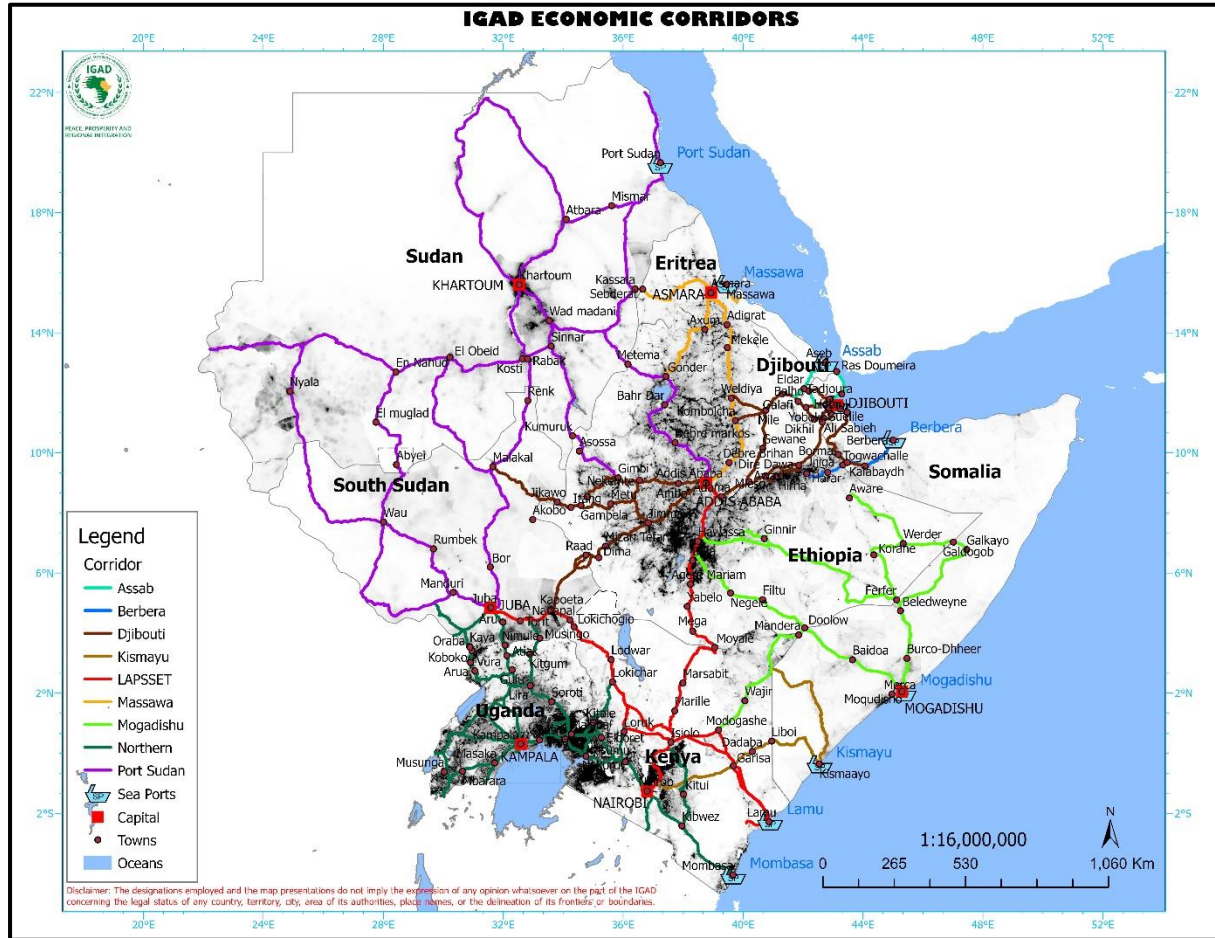
The IRIMP study has identified nine potential corridors of regional significance (illustrated in Figure 1.3 below), defined as one with the potential to connect two or more IGAD member states and serve as a conduit for intra-regional and inter-continental trade. This section will assess the status of each of the corridors, before presenting three options, or pathways, to develop the IGAD corridors, and recommending one.

⁶ Details can be found in *Volume Two: The Evidence Base*.





Figure 1.3: IGAD potential economic development corridors and population centres



Source: IRIMP study team

Table 1.2 presents the results of the corridor assessment against the four-stage framework outlined above (in Table 1.1). At present, however, just three are functioning *effectively* as *regional* transport corridors, and these have not yet become clear drivers of economic development and structural transformation. The Northern Corridor is the most developed and is a functioning logistics corridor, while the Djibouti Corridor and Port Sudan Corridor are multi-modal / multi-sectoral corridors. While the port and connective infrastructure of the LAPSSET Corridor are not fully operational yet, the road and border crossing between Ethiopia and Kenya has been recently upgraded, boosting trade between the two countries. The Berbera Corridor provides access to the port of Berbera for Ethiopia, but capacity is limited, and the road and border infrastructure needs upgrading. The remaining ports and corridors serve their respective national hinterlands but require significant upgrading to function as corridors that promote regional trade.



Table 1.2: Assessment of the status of IGAD corridors

Corridor	Stage	Infrastructure	Investment	Harmonisation
Northern	3	<p>Status: Multi-modal and sectoral corridor with road, rail and pipeline; ICT and power interconnectors; logistics infrastructure including dry ports and OSBPs</p> <p>Gaps: SGR and pipelines end in Kenya; road to South Sudan is poor condition</p>	<p>Status: Private Sector Investment Promotion Programme established in 2017</p> <p>Gaps: Industrialisation along the corridor is limited; few PPPs implemented</p>	<p>Status: Multiple security bonds and customs declarations eliminated; joint verification of multiple Customs documents; harmonisation of standards on axle loads etc. NCTTCA, the corridor management institution established in 1985.</p> <p>Gaps: Transition to customs union and open borders</p>
Djibouti	2	<p>Status: Multi-modal with road and rail infrastructure, as well as a power interconnector and water pipeline</p> <p>Gaps: Missing petroleum pipeline; missing road links to South Sudan</p>	<p>Status: Has attracted further investment in logistics services to the Modjo Dry Port</p> <p>Gaps: Ethiopian industrial parks must be better connected to the corridor to benefit; No strategies or spatial development initiatives in place to promote investment</p>	<p>Status: 2002 Agreement allows permanent access for Ethiopian Customs to conduct inspections at the port and for goods to move inland without escort or transit fee</p> <p>Gaps: No formal institution framework to deal with transit issues; currently dealt with through ad hoc bilateral committees</p>
Port Sudan	2	<p>Status: Multi-modal with road, rail, crude oil and petroleum pipelines, as well as trans-border power and ICT connections</p> <p>Gaps: Most infrastructure needs rehabilitating, particularly the connections to South Sudan; rail is NGR; most roads west of the White Nile River not paved</p>	<p>Status: FDI has been constrained by sanctions on Sudan and insecurity in many sections</p> <p>Gaps: No strategies or spatial development initiatives in place to promote investment</p>	<p>Status: Port Sudan Corridor formally established by COMESA Ministers of Infrastructure in October 2017; Ethiopia and Sudan have simplified tariff regime</p> <p>Gaps: Port Sudan Corridor Authority (PSCA) yet to be formally established, though agreement in principle for its creation</p>
LAPSSET	1	<p>Status: Some infrastructure is in place, including Isiolo – Moyale road, but port is still not functional and road links are not complete. Once complete will be single modal (road)</p> <p>Gaps: Isiolo – Lockichar and Juba – Nadapal missing road links; plans for crude and petroleum product pipeline, rail and ICT and energy interconnectors</p>	<p>Status: Isiolo-Moyale-Agremariam highway has resulted in limited investment, e.g. new abattoir in Marsabit</p> <p>Gaps: Plans in place for a SEZ in Lamu and resort cities in Lamu, Isiolo and Turkana</p>	<p>Status: LAPSSET Corridor Development Authority (LCDA) established; Steering committee for coordination amongst the 3 partner states</p> <p>Gaps: Limited evidence of LCDA coordinating investment outside of Kenya</p>
Berbera	1	<p>Status: Port and roads upgrades are ongoing; no plans for rail or pipeline</p>	<p>Status: Little inward investment due to corridor’s nascent state</p>	<p>Status: Little harmonisation of regulations / removal of barriers, though Somalis can cross the border freely up to Jigjiga</p>



		Gaps: Road link from Hargeisa to Togachale requires upgrading; no ICT or power interconnectors	Gaps: Plans for SEZ in Berbera managed by DP World (UAE)	Gaps: Corridor Development Authority yet to be formed
Massawa	0	Status: Massawa Port is operational, road condition in Eritrea is unknown Gaps: Port and road will require upgrading to handle significant amounts of international traffic, border facilities non-existent	Status: Closure of the border between Ethiopia and Eritrea from 1998-2018 prevented investment. Border with Sudan is open. Gaps: Must first function as transport corridor to attract investment	Status: Ethiopia and Eritrea entered a rapprochement in 2018, but progress has since stalled in formalising relations Gaps: Customs and immigration status and procedures are unclear; borders that were initially opened are now closed
Kismayo	0	Status: Does not function as regional corridor, port has limited capacity, much of the territory outside Kismayo is not under government control, existing trade is unregulated and informal Gaps: Road is unpaved; border facilities need rehabilitation	Status: Security situation in southern Somalia has restricted investment Gaps: Must first function as transport corridor to attract investment	Status: The border between Kenya and Somalia is tightly restricted and customs facilities at the border are non-existent, any cross-border trade is informal Gaps: Need to re-establish customs facilities at the border
Mogadishu	0	Status: Does not function as regional corridor, but is main port for Somalia, existing trade is unregulated and informal Gaps: Majority of road unpaved or in poor condition; no further infrastructure; border facilities need rehabilitation	Status: Limited inward investment due to security situation in Somalia Gaps: Must first function as transport corridor to attract investment	Status: The border between Kenya and Somalia is tightly restricted and customs facilities at the border are non-existent, any cross-border trade is informal. The same applies to borders with Ethiopia. Gaps: Need to re-establish customs facilities at the borders in Ethiopia and Kenya
Assab	0	Status: Status of port is unclear, road condition in Eritrea is unknown, border facilities non-existent Gaps: Port, roads and border will need rehabilitation to function	Status: Closure of the border between Ethiopia and Eritrea from 1998-2018 prevented investment Gaps: Must first function as transport corridor to attract investment	Status: Ethiopia and Eritrea entered a rapprochement in 2018, but progress has since stalled in formalising relations Gaps: Customs and immigration status and procedures are unclear; borders that were initially opened are now closed





The above nine corridors originate from the major operational ports along the Indian Ocean and the Red Sea. Each of the IGAD countries is served by at least one corridor providing access to the sea and linking it with neighbouring countries. Other ports which may be developed in the future may be linked to existing corridors establishing an integrated network that will provide increased choices of routing traffic.

Some future ports include Shimoni and Malindi in Kenya; Baraawe and Bossaso in Somalia; and Suakin in Sudan. These will then have to develop transport links to the border posts or merge with existing corridor routes.

Port or route choices are typically made by cargo owners and / or third-party logistics (3PLs) and shipping lines: governments do not dictate these choices. The port / route choice will be made on the basis of a balance between total through cost, time, service quality and reliability; on reliability this will also consider vessel calls such that if you miss a slot is there another sailing in as short a period of time as possible. It is sensible that the Government of Ethiopia wants to diversify exit ports, for resilience and commercial reasons, but the market preferences of the importers / exporters will be the likely determinant.

The contribution of a corridor to the IRIMP objectives – promoting regional integration, facilitating flow of goods, services, and people, and supporting economic growth – can be measured as the total volume of trade that flows along the corridor.

To forecast future trade volumes in the IGAD corridors, a Trade: GDP multiplier is used to estimate the growth in future trade flows in the IGAD member states that comprise the corridor, which is then converted into freight traffic volume (millions of tonnes per annum). Both intra-regional trade between member states that comprise the corridor and inter-continental trade transiting through the port are captured, as well as traffic from domestic trade (internal to a member state). The detailed method is presented in Annex 1.

A range of corridor development scenarios were tested using the model, based on two variables:

- **Trade volume forecasts:** 1) Optimistic (using member states' target GDP growth rates); 2) Pessimistic (using IMF GDP growth forecasts); and 3) IRIMP (using GDP growth rates estimated by the IRIMP team, between optimistic and pessimistic)
- **Hinterland shares:** the share of inter-continental trade from each member state transiting through a particular port.

Three options for corridor development in the IGAD region are considered below, all estimated using the IRIMP trade volume forecasts for inter-continental trade, but with growth in intra-regional trade between member states dependent on the corridors being developed (i.e. if a corridor is selected for development it is assumed that trade between member states on the corridor will grow at a faster rate than those on other corridors):

- **Concentrated Corridor Development:** Given the significance of the Port Sudan, Djibouti and Northern corridors (they currently account for 92% of inter-continental and 73% of intra-regional trade combined) these will be the focus for development and investment in infrastructure, with less emphasis on developing additional corridors. It is anticipated that intra-regional trade will grow faster between country pairs on focus corridors and will be suppressed in country pairs located on the other corridors.





- **Dispersed Corridor Development:** All nine corridors in the region will be prioritised for development, with investment in infrastructure dispersed between them. It is anticipated that intra-regional trade growth will grow rapidly between all country pairs.
- **Phased Corridor Development:** The Port Sudan, Djibouti and Northern corridors will continue to function as the primary conduits for inter-continental and intra-regional trade in the medium term (to 2030), and the forecast increase in trade volume will require significant investment in infrastructure to meet demand. The development of the remaining corridors will be phased to maximise the impact of investments.

The results of the three scenarios are presented in the tables below.

Table 1.3: Forecast Trade Volumes (millions of tons) – Concentrated Corridor Development Scenario

Corridor	2017		2024		2030		2050	
	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent
Port Sudan	0.37	12.55	0.80	15.54	1.39	21.75	3.98	54.75
Massawa	No data	1.75	No data	2.67	No data	3.99	No data	10.04
Assab	No data	0.00	No data	0.00	No data	0.00	No data	0.00
Djibouti	0.13	18.64	0.80	36.91	0.68	58.22	1.96	146.57
Berbera	0.15	1.77	0.26	3.63	0.38	5.59	1.08	14.07
Mogadishu	0.20	1.75	0.32	2.57	0.47	3.83	1.36	9.64
Kismayo	0.09	0.10	0.15	0.14	0.22	0.21	0.64	0.53
LAPSSET	0.24	0.00	0.31	4.13	0.47	6.73	1.35	16.94
Northern	1.36	30.57	2.77	52.80	5.29	89.34	15.13	224.94

Table 1.4: Forecast Trade Volumes (millions of tons) – Dispersed Corridor Development Scenario

Corridor	2017		2024		2030		2050	
	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent
Port Sudan	0.37	12.55	0.80	14.56	1.39	18.69	3.98	39.73
Massawa	0.0	1.75	-	6.35	-	10.29	-	28.65
Assab	0.0	-	-	3.79	-	8.82	-	29.26
Djibouti	0.13	18.64	0.34	27.14	0.68	34.18	1.96	65.48
Berbera	0.15	1.77	0.33	5.39	0.58	10.85	1.67	34.39
Mogadishu	0.20	1.75	0.42	2.10	0.75	3.13	2.15	7.01
Kismayo	0.09	0.10	0.20	0.47	0.36	1.04	1.03	2.63
LAPSSET	0.24	0.00	0.54	11.43	1.01	28.40	2.90	108.60
Northern	1.36	30.57	2.77	43.11	5.29	66.86	15.13	139.66

Table 1.5: Forecast Trade Volumes (millions of tons) – Phased Corridor Development Scenario

Corridor	2017		2024		2030		2050	
	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent	Intra-region	Inter-continent
Port Sudan	0.37	12.55	0.61	15.24	0.92	19.91	2.65	42.55
Massawa	-	1.75	-	5.04	-	9.53	-	14.50
Assab	-	0.00	-	0.80	-	3.00	-	8.00
Djibouti	0.13	18.64	0.27	33.46	0.44	44.43	1.26	91.59
Berbera	0.15	1.77	0.29	4.10	0.47	7.91	1.33	26.45
Mogadishu	0.20	1.75	0.36	2.71	0.59	4.04	1.69	9.64
Kismayo	0.09	0.10	0.17	0.23	0.28	0.49	0.81	1.75





LAPSSET	0.24	0.00	0.44	7.09	0.75	18.13	2.15	80.12
Northern	1.36	30.57	2.49	49.62	4.45	79.41	12.74	171.85

Source: IRIMP study team⁷

Neither the Concentrated Corridor Development (CCD) or the Dispersed Corridor Development (DCD) scenario represent the optimal growth pathway for the IGAD region. Under the CCD scenario, the trade volumes being handled by the three existing functional corridors will increase rapidly placing significant strain and congestion on the existing physical infrastructure and requiring huge and continuous investment in new infrastructure and upgrades to meet the required capacity. Moreover, this scenario is not desirable politically to member states; those that are landlocked require multiple alternative routes so that they do not rely too greatly on any single neighbouring port, while coastal member states aim to exploit their natural advantage and attract trade through their respective ports where possible. Developing additional ports and corridors will also stimulate competition, improving efficiency and reducing costs for all member states. Finally, the corridors also serve as conduits for intra-regional trade between IGAD member states and it is desirable to develop additional corridors for the purpose of integrating the region, in addition to access to ports.

The alternate DCD scenario addresses the issues with the CCD: congestion will be reduced on the primary corridors; landlocked member states will have multiple options for port access and trade will be dispersed between coastal member states; and multiple ports, thus increasing competition; additional corridors will connect more population centres and further boost intra-regional trade. However, the DCD scenario has its own set of issues. Even accounting for this boost to trade, the total volumes will not be sufficient in the short term to make large-scale investments in all nine corridors viable.

The development of additional corridors should, therefore, be undertaken in phases based on their readiness. Investment in physical and economic infrastructure in the three functioning corridors should continue to be the priority, and will likely generate the greatest economic impact, as these corridors will continue to handle the majority of trade and connect the majority of the population and economic centres in the region. Despite their importance to the region, these corridors still have missing links and require upgrades in physical infrastructure in the short-term. At the same time, it is essential to develop additional corridors to reduce congestion, provide multiple options for port access and connect population centres to further boost intra-regional trade.

It is therefore recommended that the IGAD region follows a Phased Corridor Development pathway, with emphasis on the following:

1. **Transform the Northern, Djibouti and Port Sudan Corridors into EDCs by 2030** that are important drivers of growth, regional integration, and prosperity in the IGAD region.
2. **Develop LAPSSET, Berbera and Massawa into functional logistics corridors by 2030** that have the potential to integrate the region and serve as conduits for intra-regional and international trade.
3. **Complete missing links on the Mogadishu, Kismayo and Assab Corridors to ensure functional transport corridors by 2030.**

⁷ See Annex 1 for detailed methodology and results



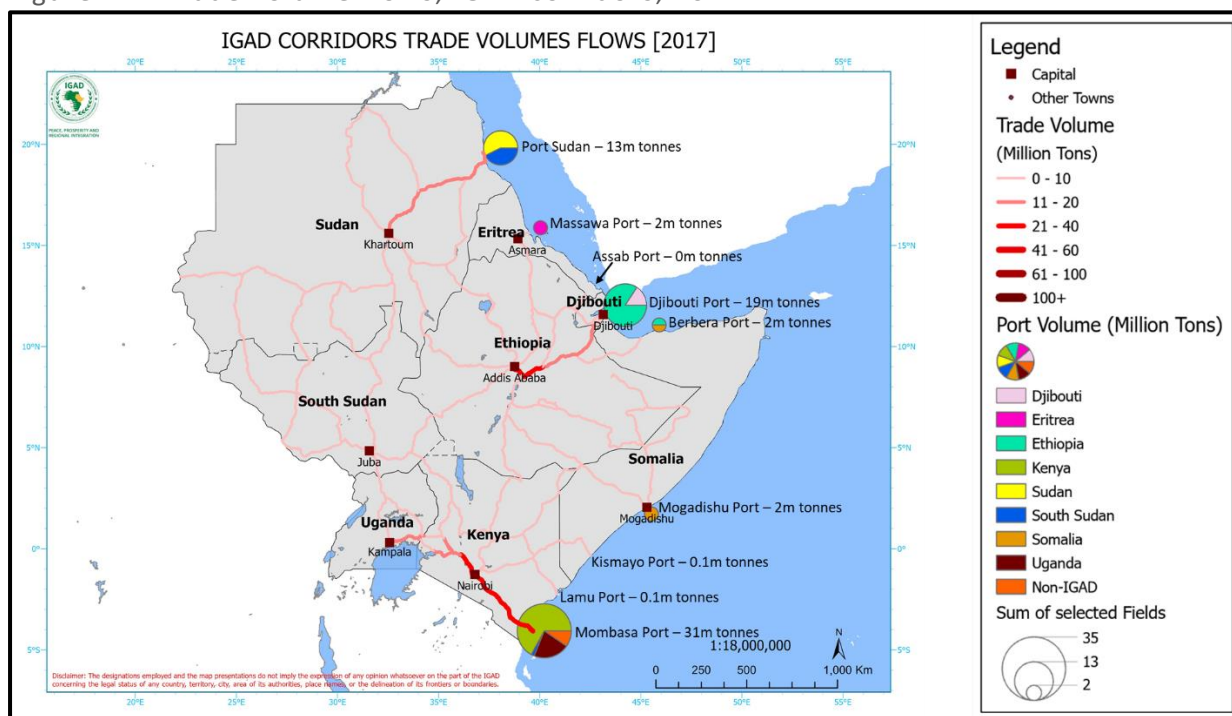


Table 1.6: Phased Corridor Development Scenario

Corridor	2019	2024	2030	2050
Northern	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC	Stage 4: EDC
Djibouti	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC
Port Sudan	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC	Stage 4: EDC
LAPSSET	Stage 1: Transport	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC
Berbera	Stage 1: Transport	Stage 2: Multi-modal	Stage 3: Logistics	Stage 4: EDC
Massawa	Not functional	Stage 1: Transport	Stage 3: Logistics	Stage 4: EDC
Mogadishu	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics
Kismayo	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics
Assab	Not functional	Not functional	Stage 1: Transport	Stage 3: Logistics

The forecast trade volume flows for the IGAD corridors under the Phased Corridor Development scenario in each planning horizon are presented in the maps below.

Figure 1.4: Trade volume flows, IGAD corridors, 2017

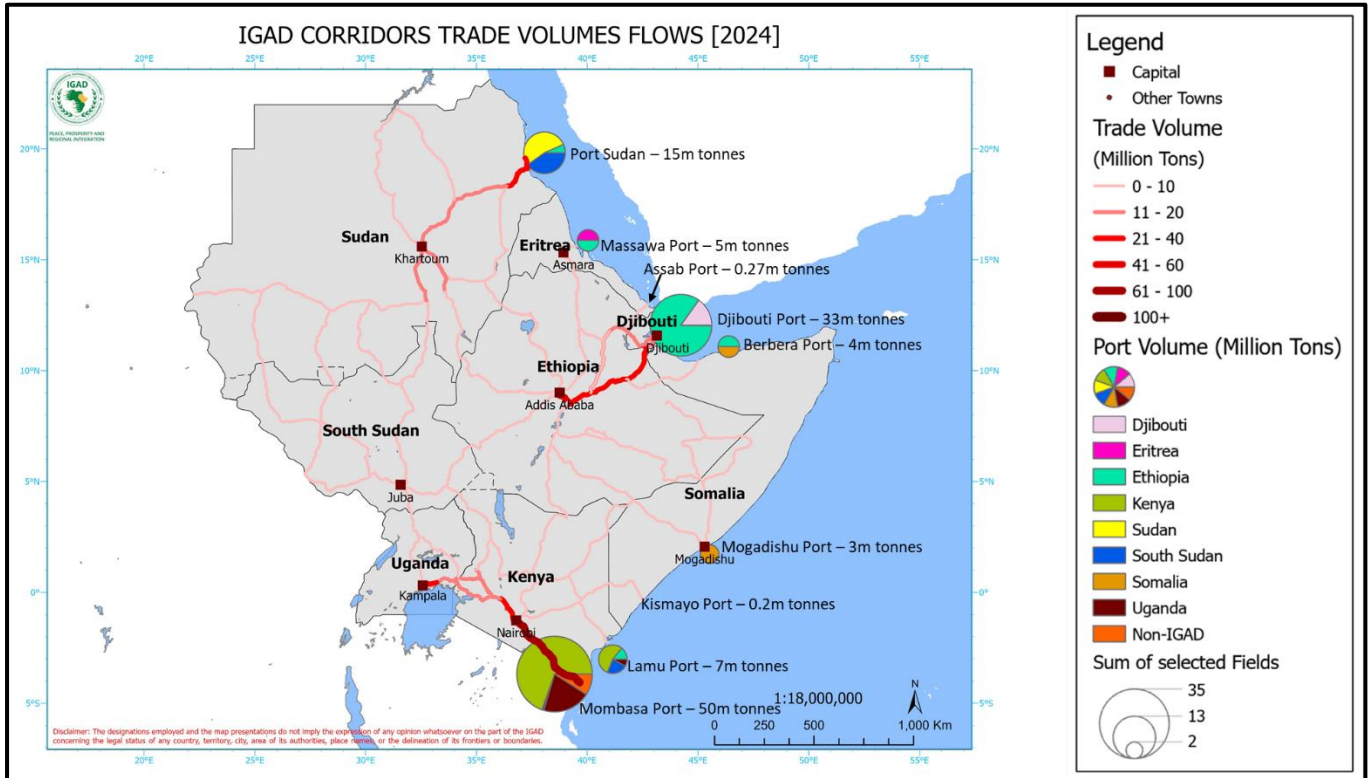


Source: IRIMP study demand forecasts (see Annex 1)



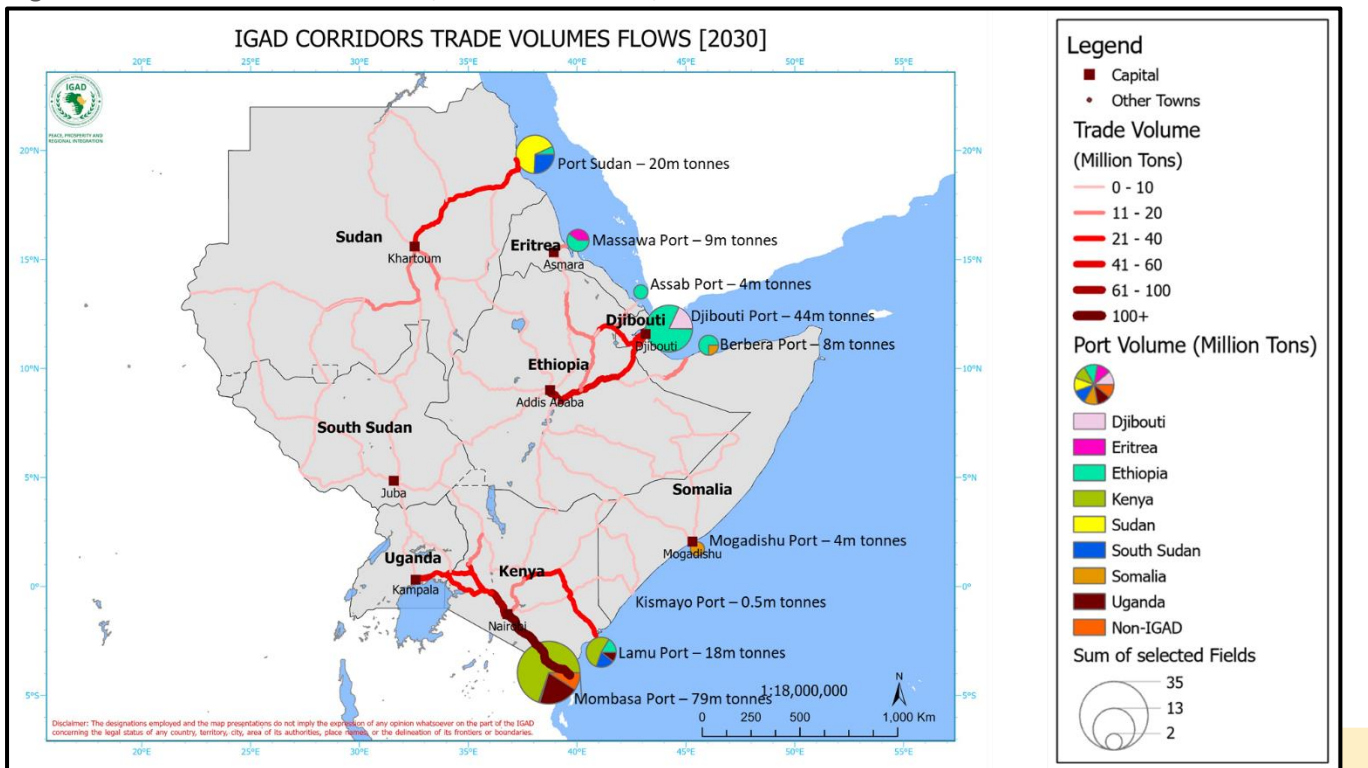


Figure 1.5: Trade volume flows, IGAD corridors, 2024



Source: IRIMP study demand forecasts (see Annex 1)

Figure 1.6: Trade volume flows, IGAD corridors, 2030

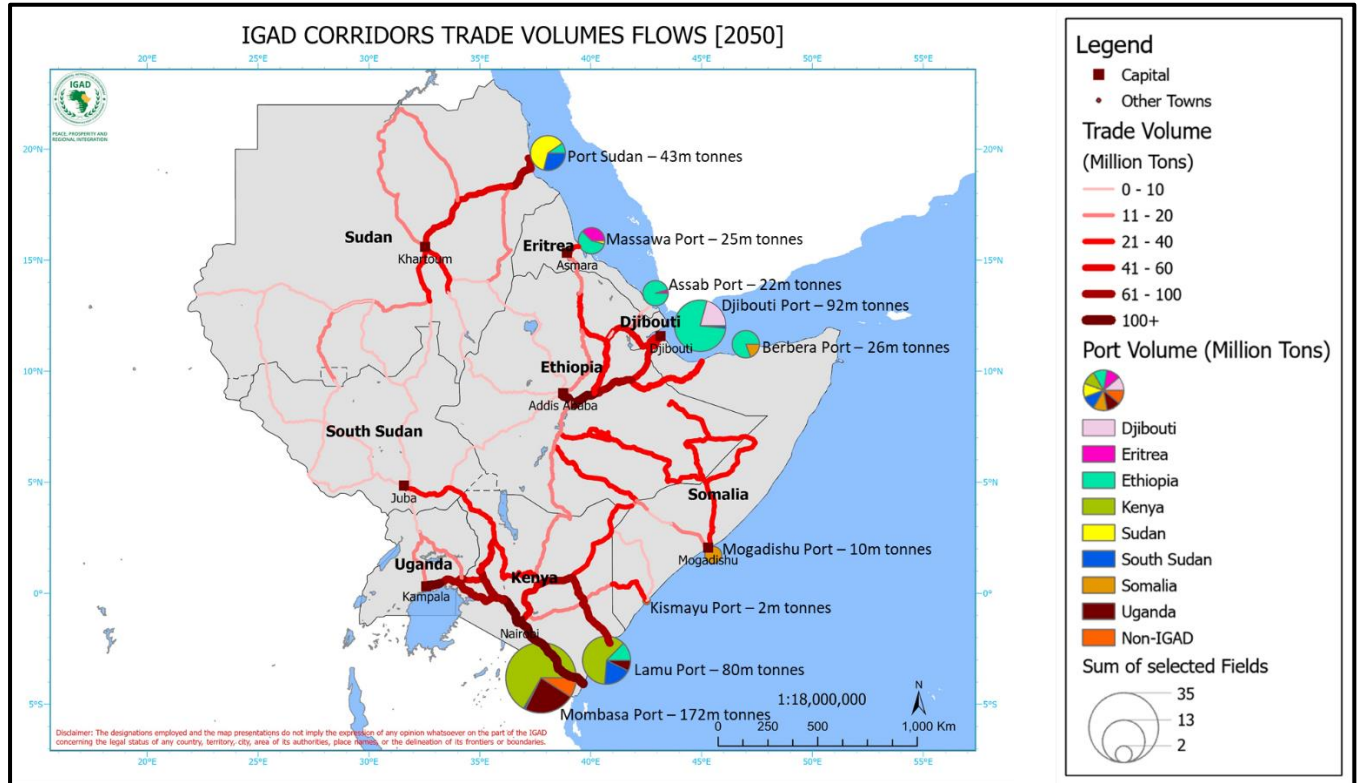


Source: IRIMP study demand forecasts (see Annex 1)





Figure 1.7: Trade volume flows, IGAD corridors, 2050



Source: IRIMP study demand forecasts (see Annex 1)





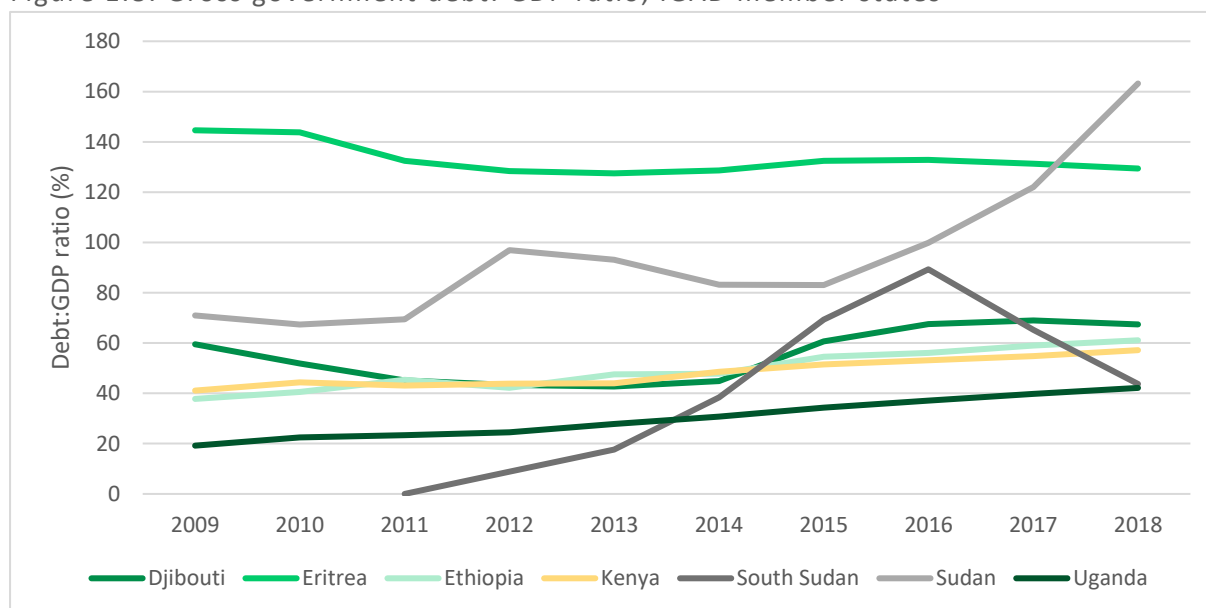
Section 1.5 Infrastructure Financing Context

This section presents a summary of the financing context for infrastructure projects in the IGAD region.⁸ The financing strategy for the IRIMP, including sources of funding, instruments and strategies for promoting, attracting and sustaining private sector participation in infrastructure development, are outlined in Chapter 4 (Section 4.4).

The African Development Bank (AfDB) estimates that infrastructure needs across the continent amount to \$130–\$170 billion a year, with a financing gap in the range \$68–\$108 billion.⁹ To meet this demand, a combination of domestic capital budgets, international donor funding, and private sector investment will be needed. Historically speaking, infrastructure investment has typically been the realm of the public sector, delivered through national budgets and public sector borrowing. However, throughout Africa, public sector infrastructure investment is often supplemented with grant or concessional funding from Multilateral Development Banks (MDBs), such as the World Bank and the AfDB. Further funding comes from bilateral donors: China, Japan, Korea, France, USA, Germany, and other EU institutions have sizeable bilateral lending programs for infrastructure development executed through various agencies.¹⁰

Although concessional finance has been a major source of funding for projects to date, and will continue to be, especially in the short-term, it should be noted that the debt levels of some IGAD member states have risen in recent years and debt: GDP ratios for all countries are now above the IMF recommended threshold of 40%. As such, it may become more difficult to secure additional external debt, even concessional loans, in the short-term.

Figure 1.8: Gross government debt: GDP ratio, IGAD member states



Source: IMF

Since the 1990s, developing economies have increasingly welcomed private sector investment following on from the popularity of this approach across parts of the developed world, including in

⁸ A more detailed assessment is provided in the *Mobilizing Finance and Private Sector Participation Report*

⁹ AfDB African Economic Outlook 2018

¹⁰ OECD Official Development Assistance Database (<http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/infrastructure-finance.htm>)





the UK, US and Australia¹¹. Given the rising levels of government debt and limited fiscal headroom, coupled with the significant gap between traditional concessional financing sources and the infrastructure investment required, there is an urgent need to accelerate this trend to leverage more private sector capital for infrastructure development in the IGAD region. In practice, this can take the form of full public-private partnerships (PPPs), where the private sector enters into a long-term contract to operate or develop public sector assets, typically taking responsibility for all or a significant portion of the financing package and risk and receiving payments for performance in return. Other forms of private sector participation include concessions and management contracts to private sector operators.

The IGAD region, however, faces several challenges in attracting private sector investment, including:

Macroeconomic stability, often termed ‘country risk’, is the result of a complex interrelated set of considerations. Countries have different macroeconomic characteristics, political dynamics, resource bases, export and import profiles, fiscal and monetary policies, all of which determine the risk associated with investment in a particular country – such as exchange risk, economic risks (GDP evolution and inflation risk), transfer risks (difficulties in repatriation of distributions and cash flow to the investor), political risks, social risks, regulatory and legal risks, corruption and sovereign risk. For investors, especially long-term ones, macroeconomic stability is a major factor as it plays a significant role in foreign exchange, inflation and interest rates.

Political stability, resulting from a change in leadership can create a degree of uncertainty about honoring existing contracts and bring about potential radical changes over the full spectrum of the policy and the legislative framework. Changes in leadership can also have a marked impact on the tariff regimes and consequently on private sector profitability. There is also a wider private sector concern that a change of political leadership could lead to cases of breach of contract, and problems with repatriation of dividends. All these factors contribute to creating an environment where the private sector is reluctant to invest, or they will require higher rates of ROI to compensate for the increased risk.

During the past decade a number of African governments became severely financially stressed and had to be bailed out by the donor community through debt forgiveness. This raises concern with the potential private sector operators of governments’ ability to honor their obligations, should PPPs be concluded. In addition, government departments and institutions in Africa are notorious for late payment for consumption, and even non-payment. There has been a tendency in some African countries to resolve problems with unexpected and adverse changes to the regulatory framework. Licenses are often granted and revoked without any apparent reasons. This aggravates the uncertainty of doing business and creates risks while promoting corruption.

It is crucial for the private sector to be confident, that should disputes occur and arbitration does not resolve the issue, the court system allows timeous equitable contract enforcement and that judgement can be obtained and enforced without prejudice. This requires an independent judiciary with sufficient resources and sufficiently staffed to be able to deliver judgements in a reasonable time. Many investors in developing economies resort to international law to protect themselves but this raises the issue of enforceability as a further problem.

¹¹ Private Participation in Infrastructure in Developing Countries Trends, Impacts, and Policy Lessons. Clive Harris, World Bank Working Paper No.5. April 2003.
<https://openknowledge.worldbank.org/bitstream/handle/10986/15124/265260PAPER0WB1on0in0infrastucture.pdf?sequence=1&isAllowed=y>





Unfortunately, corruption is not just a perception but sometimes a reality, and the private sector holds the perception that corruption is rife and that the need to bribe to get things done is pervasive. This makes firms subscribing to their countries of origin's anti-corruption policies and legislation uncomfortable to operate in countries that have a reputation for corrupt practices. It also increases the cost of doing business significantly.

Lack of bankable projects, despite high demand for infrastructure and no shortage of project ideas, many projects in national pipelines are often at a conceptual stage with a lack of ability and resources to nurture the projects to bankability level. Although 29% of all global project preparation funds are dedicated to the preparation of projects in Africa, in recognition of these challenges, very few offer a full comprehensive service from conceptualisation to financial close.

Tariff regimes in fragile states also tend to be below cost-reflective levels, therefore not allowing the private sector to enjoy an appropriate reward on their investments considering the risks over relatively long periods of time. Unreflective tariffs without intervention result in margins that are too low to be attractive to the private sector.

Despite the economic growth that a substantial number of IGAD member states have enjoyed the past decade, affordability is still a real problem with high unemployment, and a substantial number of IGAD citizens are still living below the poverty line. The high poverty levels encourage, understandably, political leaders and regulators to keep tariffs as low as possible, impacting on the potential margins. Affordability becomes a key consideration in achieving full cost recovery for capital investment, whether the investment is financed by public or private means.

Closely associated with poverty are demand-side barriers. Customers are willing to pay for good service, but not for poor service. This demand-side constraint can have a substantial impact on the demand projections and consequently on private sector profitability. This is best overcome through transparency and effective communication regarding service provision and tariff setting.

Although there are strong political commitments in many countries to involve the private sector, the concept of involving the private sector in basic service provision is still new, and there has been very limited domestic development of capacity to involve the private sector. The attitude of many government officials is also not yet synchronised with the political direction given.

Availability of long-term debt at reasonable interest rates is vitally important to the efficient financing of infrastructure. Private equity investors need to be able to leverage their own project investments with debt that is well protected from foreign exchange risk. With thinly traded currencies, such as IGAD member states, the best foreign exchange risk protection is the use of locally denominated debt in the first place.

In some IGAD member states, some form of banking reform has been undertaken in the past decade as part of a more comprehensive reform programme. Some progress with creating domestic fixed income (bond) markets have been made, but in most of the IGAD countries the fixed income market is still in a nascent stage and dominated by short-term government T bills and securities. Despite substantial support from the development partners and initiatives like the African Financial Markets Initiative of the AfDB, the development of bond markets, except for Kenya, are still in an early stage of development. This applies to both primary and secondary capital markets. There is, in the rest of the member states, little sophistication in the capital markets.

The formal structures for aggregation of savings into sizeable pools available for significant investment have not yet been well established. Only about 30% of accounts are savings accounts, and not





necessarily at a bank, but rather through savings clubs (also known as Stokvels and SACCOs). The savings rate is difficult to determine but the World Bank has estimated it at around 15% of GDP. This could potentially mean a huge source of funding for infrastructure.

The weak domestic markets make it difficult for the private sector to raise the necessary domestic debt to augment their equity contributions (which is also difficult to raise on the domestic market). Even if funding can be raised on the debt market it is seldom compatible with the requirement of the infrastructure sector for long term investments.

It is concluded that, although some funding can be raised in some domestic markets, capital raising at the scale required for many trans-border infrastructure projects will have to make substantial use of foreign markets in the foreseeable future. This creates consequential exposure to the additional risk of foreign exchange currency fluctuations if currency swaps are not available. Hedging instruments are not yet generally available, and if available, are expensive and of much shorter duration than the term normally required.

Population densities in the IGAD region are relatively low by global standards and this increases the cost of the provision of infrastructure. It also reduces potential profitability for the private sector. In more rural areas it affects economies of scale and consequently the profitability of a private operator. The higher costs of service delivery affect profitability.

Lack of reliable data makes projections on demand and the nature of demand difficult, which is not only a problem for national planners but also an obstacle for private sector operators considering PPP projects. The inability to do proper market projections on demand and affordability of the services exposes the private operator to severe market risk in terms of utilisation and financial viability. Few countries in the region have a national information system providing reliable, even if limited, information.

Limited human resource capacity has implications at three levels. Government officials are overloaded and stretched just coping with everyday tasks so that little capacity exists to conceptualise and prepare bankable projects. Experienced professional staff are scarce in both the public and private sector and experienced and competent staff in the engineering, legal and financial fields to manage and operate is often in short supply. This further accelerates the need for rehabilitating investment due to neglect of infrastructure maintenance. The unavailability of experienced local staff is among the top ten constraints to private investment in emerging economies. The shortage of skilled experienced staff is exacerbated by a high rate of emigration of skilled staff from many IGAD countries, which also have a long way to go in developing the institutional framework and facilities to encourage effective and efficient functioning of the institutions responsible for infrastructure.

Lack of reliable local partners to implement projects with is a barrier to investment as few international players are prepared to launch operations without acceptable local partners. Finding local partners with the ability to make real contributions, either in skills or financing, is quite difficult as most local partners will often contribute political connections rather than real skills. Choosing political connected partners create a unique risk that they may fall out of favor, with serious negative consequences for the private sector.





Despite the challenges described above, it is important to note the positive conclusion from the B20 infrastructure taskforce, which confirms that *“the investment gap in infrastructure is not the result of a shortage of capital. Real long-term interest rates are low, there is ample supply of long-term finance, interest by the private sector is high, and the benefits are obvious... the main challenge is to find bankable and investment-ready projects.”*

The key focus must therefore be on creating a pipeline of bankable projects with clearly demonstrated economic and financial feasibility, as well as proposing innovative models to involve private investors that address their legitimate concerns regarding risk. **Prioritisation is vital, as significant resources are required to prepare a bankable project and it is important to direct resources to projects which will have the greatest impact, and which have the greatest chance of being implemented – those which are most bankable. The Action Plan in Chapter 4 highlights these projects.**

Section 1.6 Implementing Trans-Border Infrastructure Projects: Lessons from Case Studies

Annex 3 contains a number of case studies of trans-border physical infrastructure projects that have been recently implemented in the IGAD region to learn lessons for implementing the IRIMP.¹² The box below briefly summarises these lessons, while some of the case studies are re-presented throughout Chapter 3.

Trans-border infrastructure projects often have a long gestation period from conception to commissioning and require support at all stages of the project cycle. Their implementation requires the sustained commitment of all member states involved, as well as transnational stakeholders including RECs or regional institutions (e.g. power pools). Funders – especially the private sector – often look for evidence of this sustained commitment when selecting projects to finance or support, which can be demonstrated through ensuring that projects are aligned with the national NDPs, MoUs are signed between participating member states, master plans are regularly updated to review projects, and (where possible) initial project preparation is funded by member states.

Prioritising projects in the form of an Action Plan will help stakeholders (IGAD Secretariat and member states) to focus their efforts and resources on projects that are bankable in the short-term, and will demonstrate commitment to potential funders.

Section 1.7 Mainstreaming Inclusive and Resilient Growth

It is essential that the development of infrastructure in the IGAD region leads to economic growth that is inclusive of all minority groups, women and youths, as well as resilient to the impacts of climate change. This approach is summarised in Table 1.7 below.

¹² The full set of case studies is presented in Annex 2





Table 1.7: Mainstreaming Inclusive and Resilient Growth

Action	Objectives	Climate Change	GESI / Youth	Fragility
Corridors	Develop integrated - multi-sectoral approach focused on jobs and improve the quality of growth Access to finance – leverage to increase standards (IFIs)	Greater resource allocation efficiency to reduce costs / promote GHG reductions	Corridors investment framework prioritise jobs and gender equity. From compliance to empowerment to transformation (new ‘rules’)	Integrate Member States & communities through trade <i>Build in conflict sensitive project design / impact assessments</i> Stakeholder engagement and agreements
Energy	Regional integration through cross-border energy trade / access to reliable & affordable energy – extended service coverage	Mitigation (<GHG): efficiency, access to cleaner sources & off grid - solutions	Access to cleaner, lower cost & reliable sources at HH & enterprise level Safeguards / EIA	Integrate Member States & communities through regional energy systems / partnerships
Transport	Regional integration through cross-border multi-modal transport and ICT networks: connectivity, mobility and reduced logistics costs to increase competitiveness	Mitigation (<GHG): efficiency, modal choices	Project selection to improve inclusive growth / Safeguards / EIA	Integrate Member States and communities through trade & information flows. Partner on project design and implementation
ICT		Efficiency to improve resilience	Safeguards / Access at HH and enterprise level	
Water	Develop sustainable & resilient water resource management systems and practices	Adaptation and resilience	Safeguards EIA	Better resource allocation: sustainable sharing mechanisms



Chapter Two: The IRIMP Strategic Objectives



Chapter Two: The IRIMP Strategic Objectives

Section 2.1 The Transport Sector

The Current Situation in the Transport Sector: Challenges and Opportunities

The IGAD transport system comprises a network of roads, railways, maritime and inland waterways together with ports, civil aviation, inland container depots (dry ports) and border posts that serve domestic, regional and international trade and transport of passengers. For surface transport (i.e. not civil aviation), the corridor approach to the development of transport infrastructure and provision of services is being mainstreamed. The ensuing narrative provides a strategic framework for the development of the transport networks and services in order to attain the strategic objectives laid out for the IGAD region during the three phases of this masterplan.

Challenges in the roads sub-sector

The road network in every IGAD Member State is one of the most important assets usually developed with substantial use of public resources. Due to the high costs of road development and maintenance to ensure preservation of the road assets, states endeavour to adopt appropriate strategies to ensure the optimal allocation of public resources in the road sector. The strategies need to give priority to sections of the road network that provide the maximum economic and social benefits to the public.

The main challenges facing the road sector in the IGAD region are:

- Institutional constraints where road transport facilities under public ownership and management have weak and ineffective institutional structures characterised by lack of capacity, poor corporate governance, and inefficient management.
- Lack of institutional capacities and technical know-how from other relevant stakeholders including financiers, consultants and contractors;
- Inadequate funds for road infrastructure development and maintenance. This is not peculiar to the road mode but also to nearly all modes of transport.
- Road development encumbered by rights of way issues leading to high costs in land acquisition for road construction. This makes the cost of land a substantial proportion of the asset development compared to the cost of road construction budget;
- Participation of the private sector in road development and management is encumbered by lack of proper legal frameworks to enlist the private sector into PPPs and to effectively supervise their operations; and
- Delays in procurement of contractors for design, construction and maintenance of road networks.

Challenges in the railways sub-sector

At the regional level, rail transport is constrained by lack of interstate connectivity, aging tracks and rolling stock, insufficient resources for maintenance, poor tracking of rolling stock (locomotives and wagons), lack of effective intermodal integration and environment related issues such as pollution.

In the region, only Kenya and Uganda; and Djibouti and Ethiopia have interconnected rail networks dating back to the beginning of the 20th Century. Sudan and South Sudan share a connected network that predated the split of the two countries.

The following challenges in the railway's subsector will need to be addressed:

- Harmonisation of technical standards for interoperability in terms of infrastructure, technology standards and operating practices.





- Financing the development and maintenance of interconnected regional rail networks to adequately serve the region;
- Lack of integration with other transport modes and intermodal operability;
- Enhancing regional competition policy for the provision of competitive services by separation of network owner from the operators of rail services;
- Harmonisation of business and pricing policy for a freight transport whose income covers operating, overheads, capital costs and make a return on the investment;
- Harmonisation of policies, rules and regulations to forestall barriers to cross-border transport flows and /or inhibit sub-regional trade integration; and
- Developing and equipping the railways training schools in each country to the required standards establishing regional centre of excellence in rail research, operations and management.

Challenges in the ports and maritime sub-sector

The maritime sector faces a number of challenges across its three subsectors (ports, shipping and inland waterways). The following are the main challenges:

- Low port efficiencies resulting in congestion at berths and terminals and causing delays to vessels and delivery of cargo. Most of the IGAD ports are operated by government owned and controlled port authorities where decisions are centralised;
- Lack of efficient counterpart facilities for ports such as poor roads and rail infrastructure and service providers needed to evacuate or deliver cargo in the ports promptly once it is discharged or required for shipment;
- Transit trade constrained by lack of alternative port choices due to limited inland transport modes such as roads, railways and pipelines;
- Inadequate investment in port infrastructure, equipment maintenance and generally the human capital needed to provide efficient services;
- National shipping lines having primarily been state owned and enjoyed cargo reservation schemes have either been wound up or are currently unable to compete at global levels;
- Inability to acquire, crew and operate vessels because of high capital costs and lack of global network for local shipowners to access sufficient cargo volumes to generate adequate freight earnings to make investment in vessel operations profitable;
- Inland waterways are encumbered by lack of investments in facilities such as lake and river ports, dredging of waterways and provision of navigation aids; and
- Navigation in inland waterways constrained by inability to clear obstructions in the river fairways, straightening of curves, widening and deepening river beds and construction of navigation locks as required.

Challenges in the civil aviation sub-sector

The civil aviation sector in the IGAD region faces challenges due to both internal and external factors. These challenges will need to be addressed so as to meet industry needs during the period of the Masterplan.

- Application of Bilateral Air Service Agreements (BASAs) that restrict the market access for airlines;
- Restrictive BASAs deny operators opportunities to realise economies of scale resulting in high costs of operations inability to make enough returns on investment and provide sustainable services;





- Capital to invest in airports development, procurement of navigation equipment and procurement of aircraft;
- Lack of human capital to manage the industry efficiently from service provision to the regulatory and oversight responsibilities;
- Conditions imposed on type of aircraft, security and environmental standards for developing countries by aeronautical authorities in Europe and North America; and
- Demands on traffic rights over and above those provided under the AU SAAT arrangements.

Issues of intermodal operability and competition

When considering if transport infrastructure is sufficient to meet demand, it is important to consider the cargo split between liquid bulk, dry bulk, general cargo and containers, in addition to the total demand / capacity, as each cargo is more suited to different modes of transport. Liquid bulk is most efficiently transported by pipeline, dry bulk is most efficiently transported by rail, while general cargo is more efficiently transported by road. Containers can be transported efficiently by both road and rail, though effective logistics services are required for rail to be competitive, particularly over short distances. Investments in logistics facilities and services will increase the competitiveness of rail transport for containers versus road, increasing the share of rail over time.

Opportunities in the development of transport sector infrastructure

There are a good number of opportunities available for the development of efficient and sustainable transport infrastructure and services in the IGAD region. Under policy and regulatory frameworks, consensus has been reached earlier at regional and continental levels in the following areas:

- The Corridor Approach to promote regional connectivity and interfacing with the rest of the continent;
- AU and RECs in the region have spearheaded the development and adoption of trade and transport facilitation instruments; and
- RECs are actively promoting the liberalisation of trade and transport in line with standard international conventions.

Under the development of physical transport infrastructure, the following opportunities are already in place:

- There is a good degree of convergence in consensus building towards priorities and coordination in the development/implementation of cross-border projects (including identification, projects preparation and rollout of infrastructure (Trans-African Highways, Regional Railway Masterplans);
- Financing continues to be available through development banks and development partners;
- The region is becoming an attractive investment destination for private investors as they look for good returns;
- There are increasing opportunities for resource mobilisation through PPPs and raising of infrastructure bonds;

Under capacity building both at institutional and human capital, the following opportunities are available in the IGAD Region:

- Support systems for assisting in structuring and building institutional capacities from partners such as World Bank under SSATP;
- Building of capacity to structure PPPs already availed through development institutions such as AfDB, World Bank and many training institutions; and





- Existing national institutions have been developed into regional “Centres of Excellence” and provide training for groups of countries.

The Vision and Strategic Objectives for the Transport Sector

The vision for the transport sector by 2050 is to have its infrastructure fully interconnected, enabling the free and efficient movement of goods, services and people across national borders. All major corridors will function effectively as logistics corridors, and the majority will be economic development corridors that attract investment and drive sustainable and resilient growth.

The strategic objectives will be achieved over time; hence there are three phases with specific strategic objectives directly related to the IRIMP time horizons:

Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
<p>All IGAD member states to have access to at least one fully functioning transport corridor</p> <p>Port Sudan, Djibouti and Northern will be logistics corridors; all links missing in 2019 will have been completed, ports, dry ports, OSBPs and associated logistics infrastructure will be operational</p> <p>LAPSSET, Berbera and Massawa will be functioning transport corridors; all links missing in 2019 will have been completed; ports will have increased their share of trade from neighbouring member states</p>	<p>Port Sudan, Djibouti and Northern will be fully-fledged Economic Development Corridors, facilitating efficient intra-regional and inter-continental trade, attracting inward investment, and driving sustainable and resilient economic growth</p> <p>LAPSSET, Berbera and Massawa will be established as logistics corridors; additional infrastructure will have developed to complement the initial road link; logistics infrastructure and services will be developing; institutional framework (e.g. corridor management institution / corridor development authority) in place to actively manage and develop the corridors</p> <p>Missing links will be completed on Mogadishu, Kismayo and Assab so that they are functioning transport corridors</p>	<p>All IGAD member states will have access to at least one Economic Development Corridor</p> <p>Port Sudan, Djibouti, Northern LAPSSET, Berbera and Massawa will be fully-fledged Economic Development Corridors, facilitating efficient intra-regional and inter-continental trade, attracting inward investment, and driving sustainable and resilient economic growth</p> <p>Mogadishu, Kismayo and Assab will be developed, subject to demand, following the EDC model, and will be at least logistics corridors with established institutional framework</p>

Recommendations for IGAD Transport Sector Policies, Harmonisation and Alignment of Existing Policies

In order to develop an efficient and sustainable regional transport system comprising infrastructure and services, the following overarching principles are proposed in order guide the development of policy in order to facilitate regional integration in the IGAD region:

- Corridor approach adopted and embodied in the development of regional (transboundary) transport infrastructure, provision of transit operations and trade and transport facilitation;
- Regional harmonisation adopted in policy development in the transport sector with the seamless interfaces at the continental level;
- Harmonisation of Regulatory Oversight covering technical and economic regulation; and





- Coordinated capacity building for institutions and human capital.

The IGAD member states have endeavoured to provide adequate capacities in their four modes of transport (road, rail maritime and civil aviation) together with supporting Inland Container Depots (ICDs) and border posts in order to develop adequate capacity to meet regional transport needs. The development of transport infrastructure requires funding through multiple sources which include national capital budgets, development agencies, private investors and various cooperating partners.

Transport infrastructure is largely fixed within a country and investors providing funding either through debt or equity will need to be assured of competitive returns on their investment.

In all the transport subsectors, policy harmonisation, structured institutional frameworks, resource mobilisation and capacity building for human capital are required for the achievement of integrated and sustainable systems in transit and cross-border transport for goods and movement of persons.

The following recommendations are made to provide quality and sustainable transport infrastructure and sustainable services in the IGAD region:

- Development of harmonised regional policy on investment in transport infrastructure;
- Harmonisation of regulations to be applicable regionwide including procedures to govern them across the corridors.;
- Innovative resource mobilisation strategies including the use of PPPs to provide capital and management in new areas;
- Coordination in the establishment of regional institutions such as regulatory associations and corridor authorities plus the promotion of establishment regional service provider associations;
- Coordination and pooling of training institutions to provide training in technical and managerial competencies across the entire IGAD region.

Table 2.1: Results Areas, Strategic Objectives and Strategies

Key Result Area	Subsector	Objectives	Strategies
Policy, Regulatory and Institutional Framework	All subsectors	To develop harmonised policies, regulations and institutional framework to promote cross-border/ transit operations	<p>Harmonisation of policies on transit and cross-border transport for goods and movement of persons.</p> <p>Harmonisation of regulations including procedures to govern transit and cross-border transport.</p> <p>Establishment of regional institutions such as regulatory associations and corridor authorities; and</p> <p>Promotion of establishment regional service provider associations</p>
Physical Transport Infrastructure	Road	To provide adequate regional and cross-border road transport infrastructure	Development of road infrastructure with common regional standards along key Corridors
	Rail	To provide adequate regional and cross-border railway infrastructure	Development of regionally interoperable railway networks along key Corridors





	Maritime and Inland Waterways	To provide ports and inland water infrastructure and facilities	<p>Development of regional ports along the coastlines serving key Corridors</p> <p>Development of regional in navigable lakes and inland waterways</p> <p>Establishment of shipping lines to promote foreign and coastal transport</p>
	Civil Aviation	To provide modern airports, air navigation facilities and means of air transport	<p>Development /modernisation of airports and air navigation facilities in line with ICAO Global Standards</p> <p>Establishment of national/regional airlines</p>
Financing/Resource Mobilisation for project implementation	Road	To mobilise adequate resources to finance road projects	Mobilisation of resources through traditional and innovative methods. Innovative methods include PPPs, Road Annuities, infrastructure bonds
	Rail	To mobilise adequate resources to finance railway projects	Mobilisation of resources through traditional and innovative methods. Innovative methods include PPPs, infrastructure bonds
	Maritime and Inland Waterways	To mobilise adequate resources to finance maritime and inland waterways projects	Mobilisation of resources through traditional and innovative methods. Innovative methods include PPPs, BOTs, lease purchases and infrastructure bonds
	Civil Aviation	To mobilise adequate resources to finance civil aviation projects	Mobilisation of resources through traditional and innovative methods, lease purchase Innovative methods include PPPs, Road Annuities, infrastructure bonds
Capacity Building	Road	To enhance capacity in human and capital, institutions in the road subsector	<p>Capacity building in upstream project preparation, procurement and supervision contractors, PPP off-takers, etc.</p> <p>Capacity building for contractors</p> <p>Building in regulatory/oversight capacities</p> <p>Development of training institutions for road subsector</p>
	Rail	To enhance capacity in human and capital, institutions in the rail subsector	<p>Capacity building in upstream project preparation, procurement and supervision contractors, PPP off-takers, etc.</p> <p>Capacity building for contractors</p> <p>Building in regulatory/oversight capacities</p>





			Development of training institutions for railway subsector
	Maritime and Inland Waterways	To enhance capacity in human and capital, institutions in the road maritime and inland waterways subsector	<p>Capacity building in upstream project preparation, procurement and supervision contractors, PPP off-takers, etc.</p> <p>Capacity building for contractors</p> <p>Building in regulatory/oversight capacities</p> <p>Development of training institutions for water subsector</p>
	Civil Aviation	To enhance capacity in human and capital, institutions in the civil aviation subsector	<p>Capacity building in upstream project preparation, procurement and supervision contractors, PPP off-takers, etc.</p> <p>Capacity building for contractors</p> <p>Building in regulatory/oversight capacities</p> <p>Development of training institutions for civil aviation subsector</p>





Section 2.2 The Energy Sector

The Current Situation in the Energy Sector: Challenges and Opportunities

The current situation in the energy sector of the individual IGAD nations is quite varied. The power sectors in countries such as Ethiopia, Kenya and Uganda are expanding rapidly and are highly dynamic. Countries such as Somalia and South Sudan, however, are characterised by basic generation, transmission, and distribution infrastructure. Here the growth of the sector is greatly inhibited by a lack of human and institutional capacity.

Energy sources greatly vary between the countries of the IGAD region, with hydro potential being significant particularly in Ethiopia and the Nile Basin countries. Within the Rift Valley the wind regime is very favourable for the development of wind-based generation – the Lake Turkana Wind Project in Kenya, for example, currently comprises of 365 wind turbines each with a capacity of 850kW, giving a total in excess of 300MW. Other countries are also planning similar schemes, greater than 300MW, in Ethiopia for example. The Rift Valley is also a favourable location for geothermal power stations, with the sector most developed in Kenya. Oil and gas reserves also exist in the region, most notably in South Sudan but with other locations in Uganda and Kenya now being developed, giving an opportunity for the construction of thermal power plants.

Many countries in the IGAD region have struggled to ensure that their installed capacity – including a margin to ensure reliable supplies – exceeds consumer demand. Major hydropower projects, such as the Grand Ethiopian Renaissance Dam in Ethiopia and Karuma in Uganda, provide opportunities for network installed capacity to get ahead of domestic consumer demand, and thus accelerate economic growth. The risk involved with developing surplus capacity is that there is no immediate domestic market for all the energy produced by the national generation portfolio, and consequently the cost of the surplus capacity is a potential burden to the country and/or domestic consumers, unless export markets can be found and underwritten by appropriate power purchase agreements (PPAs).

Projects such as Grand Ethiopian Renaissance Dam (GERD) and Karuma have been premised on exporting surplus energy, and the revenues from those exports, as agreed in the respective PPAs with export partners, are of fundamental importance to the financing packages for these projects. In the case of Ethiopia, the potential hydropower resources in the country are unlikely to be required domestically for several decades. Several of Ethiopia's neighbours, such as Sudan and Egypt, are dependent on fossil fuelled generation, which is costly, polluting and a major contributor of greenhouse gas (GHG) emissions. It is unsurprising, therefore, that Ethiopia is exploiting the export earning potential of its hydropower resources.

Trading electricity through a regionally interconnected grid provides a range of benefits to end-users in the region, notably due to more reliable and lower cost energy. The benefits are most cost-effective, however, when at least some of the countries have significant energy surpluses with which to trade during the seasonal cycle. A national surplus of supply over demand is more speedily attained and sustained if energy efficiency and conservation (EE&C) constitutes a key element in that nation's energy policies and planning: suppressing demand through investment in energy efficient technologies and practices. It is therefore recommended that IGAD seeks opportunities to promote EE&C in the member countries.

Desert to Power Initiative

The African Development Bank (AfDB) outlined its "Desert to Power Initiative" during the Paris Agreement climate change talks at COP24 in Katowice, Poland, in 2018. The Initiative focuses on solar energy in the Sahel region, which includes four of the IGAD member countries (Sudan, Ethiopia,





Djibouti and Eritrea) and is expected to connect 250 million people with electricity by exploiting the region's abundant solar resource. AfDB recognises that 64% of the Sahel's population lives without electricity, and is a major barrier to development, with consequences for education, health and business. The Initiative aims to develop 10 GW of solar energy by 2025 and supply 250 million people with green electricity including in some of the world's poorest countries. At least 90 million people will be connected to electricity for the first time, thus helping to lift them out of energy poverty. The Initiative has been launched in collaboration with the Green Climate Fund, a global financial resource created by the 194 countries who are party to the UN Framework Convention on Climate Change (UNFCCC), to support developing countries adapt to and mitigate climate change. The programme is designed to combine private sector capital with blended finance.

AfDB is aware that in addition to the access and affordability benefits that should flow from solar energy development across the Sahel, the upscaling of solar will appreciably diversify the energy mix in the region and thus contribute towards climate change adaptation.

Many of the interconnection projects proposed in the IRIMP—especially in the short- to medium-term—are premised on the export of surplus hydropower from projects such as the GERD in Ethiopia and Karuma in Uganda. Although UNFCCC is aiming to limit the global average temperature rise to well below 2°C from pre-industrial levels, climate change from temperature rises in the recent past is manifestly evident. Large-scale solar capacity in the IGAD region, which would operate conjunctively with the region's hydropower, would help mitigate the impacts of significant changes to hydrological regimes resulting from climate change.

In the IRIMP context, if—for reasons of solar resource characteristics, logistics, financing, etc.—solar energy projects under the Initiative are concentrated in just one or two countries, such projects could support the case for additional interconnections in the IGAD region. However, the Initiative is currently in the early stages of implementation and projects under the scheme have not—so far—been at a scale that would impact noticeably on cross-border interconnections. The Initiative is consistent with the broad recommendations of the IRIMP.

The climate change impact challenge

The adverse impacts of climate change are an increasing and urgent concern. Individual countries can contribute towards limiting global warming by favouring renewable generation over fossil fuelled options. Climate change impacts on individual countries will, however, be governed by the aggregated measures adopted by the international community as a whole. Impacts are likely to be wide-ranging, from rising sea levels to more extreme weather events, drier dry seasons, and wetter wet seasons. Mitigation of these impacts will be country-specific and dependent on the trend of evidence in each country. In terms of the power sector and cross-border considerations, however, countries with significant hydropower resources will benefit from interconnecting with neighbours that are more dependent on thermal generation: in drought situations, thermal energy might be imported from neighbours and, in wetter than normal situations, surplus hydro energy may be exported to the same neighbours.

The challenge of renewables and off grid services

As the share of Variable Renewable Energy (VRE) in power systems increases, many countries find that grid stability issues become a barrier to scaling up renewable energy. These issues are not insurmountable but require appropriate investment and management. The cost and emissions reduction benefits of VRE sources such as wind and solar cannot be ignored, however, which throws focus onto measures to manage high rates of VRE capacity penetration. VRE forecasting is thus becoming an essential, cost-effective measure to facilitate greater integration of VRE into the grid.





VRE forecasting is the short-term prediction of future VRE power plant output, along timescales ranging from as short as 5 minutes-ahead to as long as week-ahead. All such forecasting supports system operators in performing dispatch planning to develop a schedule that balances generation with load, while managing appropriate amounts of reserves. With suitable VRE forecasting tools, system operators can make decisions about committing units or reducing the capacity factors of conventional generators while maintaining high-reliability and low-cost generation. Without VRE forecasting, or with less accurate forecasting processes, system operators are less able to adjust the level of production from inflexible conventional generators and must therefore resort to curtailing VRE. VRE curtailment is a risk factor for VRE developers, and excessive curtailment is a disincentive towards VRE investment and consequently presents a brake on the lowering of costs to end users.

As regional network integration advances, and as trading platforms within the EAPP become more developed, the importance of VRE forecasting will become even more elevated. An extensive regional network of well-equipped meteorological stations is essential, as are meteorological institutions equipped with sophisticated weather models. There is a role for IGAD to promote the development of these stations, and institutions able to prepare accurate forecasts from the data flowing from these stations.

More than other renewable energy technologies, it is solar photovoltaics (PV) that is responsible for driving down the cost of generation. A major limitation of PV is that peak demand for electricity is typically during the early evening, after the sun has set and the solar farms are not producing any energy. PV capacity is therefore unable to contribute towards the evening peak demand and other generation sources must be used. Increasingly, energy storage solutions are being adopted to address this timing issue; battery banks are charged from PV sources during daylight hours and discharged during the early evening, when demand for electricity is greatest and the value of the energy is also greatest. The trend is driven partly by the lower cost of PV and also the lower cost of energy storage. Typically, energy storage from batteries adds approximately 50% to the cost of solar energy.

Strengthening off-grid and mini grid services in the IGAD region is another pathway to energy self-sufficiency. IGAD member states need to address a number of issues including: i) where to draw the line between grid expansion and the development of off-grid solutions; and, ii) whether government should limit itself to the regulation of off-grid services, or to also develop and operate these grids. Kenya has elected to maximise the role of the private sector in the development of mini-grids, whilst Ethiopia aims to press for grid expansion, and sees off-grid solutions developed by government institutions as a stopgap measure. A route as adopted by Kenya requires an enabling framework extending beyond the power sector, providing comfort to private sector investors – including entrepreneurial international businesses – that projects will be ‘bankable’.

The importance of cross border trade in energy

The diversity of energy sources across the region, together with the fact that some countries are better endowed with indigenous energy resources than others, is such that cross-border trade has the potential to generate significant benefits and has been of interest to policy makers for the past three decades.

The Eastern Africa Power Pool (EAPP) was established in 2005 by seven Eastern Africa countries, namely: Burundi, Democratic Republic of Congo (DRC), Egypt, Ethiopia, Kenya, Rwanda and Sudan. Later signatories are Tanzania, Libya and Uganda, who joined in March 2010. South Sudan and Egypt are now also members. EAPP is mandated to facilitate the optimum development of energy resources in the region and to ease the access to electricity power supply to all people of the countries in the





Eastern Africa Region through the regional power interconnections. The establishment of new interconnectors is therefore vital to ensure that EAPP can fulfil its mandate.

The majority of IGAD member states are members of the EAPP, which also includes potentially significant players such as Egypt, the DRC and Tanzania, that are not IGAD members. Although the EAPP has made progress in building institutional capacity, progress with facilitating actual energy trade through the Power Pool has been slow. The issues obstructing progress in energy trading in the region include:

- Lack of interconnections.
- Weak alignment of national development plans with the regional Master Plan;
- Weak incentives for private sector participation; and
- Inadequate and unreliable data.¹³

The EAPP Master Plan of 2014¹⁴ identified and prioritised several transmission interconnections across the region, but although consumer demand has continued to grow strongly since that time, many of the large projects upon which these interconnections were predicated have been delayed, often by several years. Consequently, implementation of the various interconnectors has been deferred. The maximisation of the benefits from the interconnectors will be achieved when power is wheeled across the region. This will require the agreement of wheeling charges (essentially rental for the use of third-party transmission assets), and ideally unification of standards and regulatory practices. Regional regulators have already been established across Africa, but this is still at an early stage of development.

The Horn of Africa Initiative (HOAI) launched in early-2019 aims to realise the collective desire of countries in the sub-region (a sub-set of the IGAD member countries, namely: Djibouti, Ethiopia, Eritrea, Kenya and Somalia) to deepen regional integration and promote regional cooperation. The main pillars of the HOAI are closely related to those of IRIMP—regional infrastructure networks, including energy, to ensure an Interconnected Horn, and the promotion of economic and trade integration—and a number of priority transmission interconnection projects have already been identified under the HOAI.

Regional energy interconnections

The IGAD region currently has three power transmission interconnectors, with two further lines under construction (summarised in Table 2.1 below). Distribution lines, which are at lower voltages of 33kV and below, are often used to supply areas across international borders which are isolated from the national grid of the country in which they are located. These are not classed as interconnectors, however, as they do not connect the national grids of the countries.

Table 2.2: Existing and under construction power transmission interconnectors in the IGAD region

Countries connected	Voltage / Construction	Year	Comment
Kenya-Uganda	132kV / Double Circuit	1955	Originally built to allow export of up to 30MW from Nalubaale to Kenya
Sudan – South Sudan	220kV/Double Circuit	2009	Operational and transmitting power between member states
Ethiopia-Sudan	230kV / Double Circuit	2012	Operational and transmitting power between member states

¹³ EAPP (2016) Updated Regional Power Status in the Africa Power Pools Report of November 2016,

¹⁴ EAPP (2014) Master Plan Update, <http://eappool.org/the-master-plan-update-2014/>





Ethiopia-Djibouti	220kV / Double Circuit	2012	Operational and transmitting power between member states
Ethiopia-Kenya	500kV / DC	2020	Will facilitate the evacuation of power from Ethiopia southwards, forming a key link between the EAPP and SAPP networks. Scheduled to be commissioned in April 2020, with a power transfer capacity of 2,000 MW
Kenya-Uganda	400kV / 230kV / Double Circuit	2021	Legal disputes with the contractor have resulted in delays to this line, which is now planned to be commissioned in 2021

The IRIMP study has identified several opportunities to enhance regional energy interconnection in the region, which have been assessed in greater detail as part of the prioritisation process for inclusion in the Action Plan. The key risks to implementing power transmission interconnector projects are: the financing and/or construction of major projects suffer delays; and economic downturns or civil disturbances slow the growth in demand. Consequently, interconnection plans need to be reviewed regularly, and with a higher degree of rigour than some of the regional studies that have advocated major transmission links.

Table 2.3: Potential power transmission interconnectors in the IGAD region

Member states	Voltage / Construction	Horizon	Comment
Uganda-South Sudan	400kV / double circuit	Short	No feasibility studies have been undertaken for this interconnector, though both governments signed an MoU in 2015 committing themselves to the project
Ethiopia-Sudan (Eastern Africa Green Power Transmission Network Project 6 – Guba (Ethiopia)-Khartoum (Sudan))	500kV / double circuit	Short	A feasibility study 2016 confirmed the viability of a 500kV double circuit interconnector, which would complement the existing 230kV interconnector. The new line would run from the Grand Ethiopian Renaissance Dam (GERD) and would have a capacity of 3,000 MW
Sudan-South Sudan	220kV / double circuit	Short	According to EAPP 2014 Master Plan, was to be completed before 2025 with 300 MW capacity. However, little progress in developing project in the intervening five years
Ethiopia-Somalia	230kV	Medium	Connecting Jijiga, Ethiopia to Hargeisa and Berbera, Somalia, project was included in the Horn of Africa Initiative, but little progress has been made to develop the concept. Interconnections between Ethiopia and Somalia remain a priority for the HOAI, and they have highlighted the need for a feasibility study.
Kenya-South Sudan	400kV / double circuit	Medium	Would connect a 100MW hydro power plan at Turkwel to Kapoeta and Juba in South Sudan. Interconnection between Kenya and South Sudan was discussed at a recently meeting between the Presidents of Kenya and South Sudan. At present no MoU exists between the countries.
Ethiopia-Djibouti	Not specified	Medium	The differential between the marginal cost of hydropower energy from Ethiopia and thermal capacity in Djibouti is such that further transmission capacity may be required in the medium term. This second interconnector between the two countries has been identified as a priority by the HOAI.
Ethiopia-South Sudan	230kV and 400kV	Medium	Two interconnectors are proposed: 230kV from Gambella, Ethiopia to Malakal, South Sudan and 400kV from Dedesa Tepi, Ethiopia to Bor and Juba, South Sudan
Ethiopia-Eritrea	230kV	Medium / Long	No progress on implementing the project beyond concept in EAPP 2014 Master Plan. However, HOAI has identified the need for a feasibility study for this interconnector.





Eritrea-Sudan	230kV	Medium / Long	No progress on implementing the project beyond concept in EAPP 2014 Master Plan
Kenya – Somalia	220kv	Long	Feasibility study to be undertaken on the Somalia section. HOAI has identified the need for a feasibility study for this interconnector. The timescale for implementation remains uncertain.
Djibouti-Somalia	Not specified	Medium / Long	HOAI has identified the need for a feasibility study for this interconnector. The timescale for implementation remains uncertain.
Kenya-Ethiopia	400kV	Medium / Long	HOAI has identified the need for a feasibility study for this second interconnector between the two countries. The timescale for implementation remains uncertain. The routing is uncertain at this stage, but likely to be to the west of Lake Turkana.
Sudan - Eritrea 66kv power interconnector (Eritrea Section)	66KV	Short	Development of 66KV power interconnector in Eritrea – an extension of the 66kv power line from Kassala to Aligider. New feasibility studies to be undertaken on the Eritrean side for this interconnector

Opportunities from off-grid energy solutions

The wide range of benefits from interconnecting systems across the region remain valid and generally they should facilitate cheaper and more reliable supplies to customers and to therefore help accelerate the electrification of unserved areas. IGAD countries have electrification targets and Ethiopia and Kenya have ambitious targets for universal access to modern energy. However, whilst both countries recognise that achieving the target will require that a significant proportion of households – those in locations that are remote from the existing grid – will be served by mini-grids or other solutions such as solar lanterns, this is viewed as a very temporary measure in Ethiopia and will be closely followed by grid extension/densification. This subject is highly relevant to the other IGAD countries and touches acutely on the future development of power systems.

One of the key advantages of electrification – whether on or off-grid – is the displacement of kerosene lighting and the consequential reduction of household air pollution, which principally impacts women and young children, and is a cause of morbidity and premature death. The Environmental and Social Management Framework report for the Kenya Off-grid Solar Access Project (KOSAP), in March 2017, highlighted that, in 2009, 70% of the population was using kerosene for lighting, and that *“health risks posed by this indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality, and pulmonary tuberculosis.”* The report added that, *“available data suggest that insufficient illumination (low light) conditions can cause some degree of eye strain, and reading in these conditions over long periods of time may have the potential to increase the development of near-sightedness (myopia) in children and adults.”*

The majority of the IGAD region households use biomass for cooking, especially in remote rural locations that are isolated from the grid. This use of biomass for cooking is often very inefficient and highly polluting, in the household and in the broader environment. Electricity tariffs are high, and the cost of electricity cooking appliances is not affordable for the majority of rural populations. Clean cooking stoves, which are more efficient and less polluting, are a potential solution for further mitigating household air pollution. Initiatives to promote the adoption of these efficient cookstoves should be a key component in the energy policies of the IGAD countries, and some are making great strides in this respect. In Kenya for instance, through the KOSAP project, there is a component for the private sector to invest in clean cooking stoves solutions for households. In addition to the reduction in harmful pollution, efficient cookstoves can help mitigate deforestation and also reduce the time spent by women and children in collecting firewood, or cash from the household budget spent on





firewood or charcoal. Moreover, due to the prevalence of biomass cooking in the IGAD countries, greater penetration of efficient cookstoves has positive implications in respect of reduced GHG emissions for each country.

Both Ethiopia and Kenya recognise the merits of off-grid solutions to providing affordable access to modern energy, and all the welfare and economic advantages this brings to connected communities. Ethiopia see this as a temporary solution pending full grid coverage and propose that the electricity utility and the Rural Electrification Fund provide the delivery mechanism. Kenya, on the other hand, proposes off-grid solutions as a more permanent arrangement, with the private sector – enabled by government policies – providing the delivery mechanism. Kenya already has an excellent track record in harnessing the low-cost disruptive technologies through fleet-footed local and international entrepreneurs backed by venture capitalists and other financiers and is one of the leaders in SSA following a pronounced global trend. This same trend has seen households and communities decoupling or partially de-coupling from utility supplies – notably but not exclusively in Australia – because it is cheaper and often more reliable to do so. As the cost differential continues to swing away from conventional approaches and towards the disruptive technologies, the future shape of the power industry may be very different from that anticipated in the expansion planning studies of just a few years ago.

Most of the IGAD countries recognise that off-grid solutions such as mini-grids, solar home systems (SHS), solar lanterns (that also facilitate mobile phone charging) are a key element, alongside grid expansion and densification, to achieve universal access to modern energy systems and to thus reduce poverty and improve life-chances. Whereas diesel-based mini-grids are a commonplace approach to supplying electricity to remote commercial centres in SSA, the rapid decline in the cost of wind energy, solar energy and energy storage, has forced a revolution in the approach to the provision of off-grid solutions. These technologies, including mobile phone-based payment systems, when combined with entrepreneurship, eager sources of private finance for renewable energy technologies, and the support of national governments, the donor community, and NGOs, are providing considerably more affordable electricity than diesel-based systems. Kenya is one of the leaders in adopting this approach.

The National Renewable Energy Laboratory (NREL) in the USA has a vision of a decentralised, renewable-powered electricity grid. A project currently under development – Autonomous Energy Grids (AEG) – envisions the electricity grid of the future, where output from many decentralised energy sources is managed simultaneously to ensure a secure and consistent energy supply. The concept focuses on smart technology and autonomous communication, based on a series of interconnected microgrids, which communicate with each other and make use of algorithms to continually find the best operating condition in response to constantly shifting energy demand, availability, and pricing. This project is currently mostly theoretical and NREL considers that applications may be more than 10 years away.

A homogenous approach to energy access in the IGAD countries is unlikely in the short- and medium-term. The penetration rate of access provision is also likely to vary appreciably from one IGAD country to another. With the track record of technology leapfrogging in countries such as Kenya, the adoption of rapidly emerging disruptive technologies in the long-term vision for the region should be considered.

Strategic Objectives for the Energy Sector

The energy sector vision for 2050 is a system that is interconnected, harnessing the abundant renewable resources available within the region; affordable, utilizing least cost principles for development and operation within and beyond national boundaries; and reliable, providing a strong





foundation for the continued economic and social development of the region. The IRIMP is primarily focussed on the provision of trans-border power transmission interconnectors and creation of the regional power grid.

The strategic objectives should, however, also recognise that a substantial proportion of households in the IGAD region live in areas that are not served by an interconnected grid. Although grid extension and grid densification should continue to be the aim, particularly in the medium-term, in the long-term emerging technologies mean that achieving universal access to electricity may be better served through alternative solutions.

The strategic objectives for the three time-periods are given below:

Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
<p>New power transmission interconnectors developed on the priority corridors so that IGAD member states are connected to at least one neighbour for bilateral energy trading, although Eritrea and Somalia likely to be exceptions to this in the short-term</p> <p>Surplus capacity is essential for significant trade and timely implementation of projects is essential; IGAD to promote good IPP procurement practices, high levels of transparency, and standardised PPAs</p> <p>IGAD establishes a Roadmap for progressive integration of the regional power system, together with associated interventions to ensure adequate harmonisation at each step in the integration process</p> <p>Harmonisation to be consistent with EAPP, and therefore IGAD to request observer status at EAPP meetings</p> <p>Harmonisation to focus on regulations, grid codes, technical standards and operational procedures, that will facilitate system synchronisation</p> <p>IGAD develops and implements policies recognising that a significant proportion of the population will only gain access to modern energy in the short-, medium-or long-term through off-grid rather than on-grid solutions</p> <p>Off-grid solutions, as well as on-grid components, likely to involve significant Renewable Energy capacity, so IGAD to encourage member countries to prepare Renewable Energy policies</p>	<p>Other trans-border power transmission interconnectors are completed, where clear surplus capacity is available or other interconnection merits have a strong business case</p> <p>The beginnings of a regional power grid are thus created; most IGAD member states can trade with most of the others; a cooperative power pool is formed; independent cross-border energy regulator at the regional level is established</p> <p>IGAD to monitor international progress with interconnecting microgrids using smart technology and autonomous communication, and encourage this approach in the more remote parts of the IGAD region</p> <p>Harmonisation of planning across the IGAD regional power system</p>	<p>Any remaining IGAD member countries are added to the interconnected system</p> <p>The power pool evolves from cooperative to competitive, reducing energy costs in the region; planning for investment in generation and transmission is undertaken at the regional level; the IGAD power pool is integrated fully in the EAPP</p> <p>Adoption of off-grid and leapfrogging technologies, such as Autonomous Energy Grids, to fill the gaps in the regional power grid and achieve universal access to electricity in the IGAD region</p>





<p>IGAD to encourage the approaches and policy instruments adopted successfully by Kenya for off-grid energy solutions</p>		
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Recommendations for IGAD Energy Sector Policies, Harmonisation and Alignment of Existing Policies

Energy trade within IGAD or EAPP would offer a range of benefits that – at a high level – can be classified as political, economic, and social. At a detailed technical level, however, the benefits include: i) emergency situations, when one national system becomes over-strained; ii) sharing spinning reserve across a region or sub-region; iii) sharing capacity margin (reserve margin); iv) contractual exchanges through any one of the markets established by regional power pools; and, v) full integrated planning across the region, i.e. designing system expansion on a least-cost basis for the region as whole, rather than on a national basis.

Cross-border trade between developing countries, such as those in IGAD, usually begins with uni-directional trade exporting power – often exclusively – from an export-oriented generation project to an off-taking utility in another country. Examples of such arrangements include Mozambique to South Africa; Nepal to India; Bhutan to India; Laos to China; Laos to Thailand; Myanmar to China; etc. Omni-directional trade across a region requires considerably more groundwork.

Whilst recognising the many economic and welfare benefits of interconnecting power systems across a region and in trading electricity and ancillary services, experience in developing countries indicates that this is a considerably more complex matter than simply stringing a transmission line across an international border. There are various political, economic, legal and technical factors that need to be taken into consideration. Most developing countries struggle to develop enough capacity to meet rapid growth in indigenous demand and rarely have surpluses been available for export. Major generation expansion projects require support from: a) public institutions such as the multilateral and bilateral development agencies; b) private investors; or, increasingly, c) both sources. In each of these cases it is normally a requirement that the project is demonstrably ‘bankable’. If the project is premised wholly or partially on exports to another country, the financiers will require adequate assurances addressing key risks, typically in the form of treaties and contractual agreements, usually with reference to various technical aspects such as grid synchronisation, compliance with grid codes, metering arrangements, etc.

Harmonisation must progress incrementally. Except where Direct Current (DC) links are provided, interconnected systems need to be synchronised. By itself, this is insufficient, and technical standards need to be harmonised in all the interconnected countries. Without this, anomalies in one country (e.g. frequency rising or falling outside the agreed limits) would have adverse consequences for the other interconnected systems. National systems may also be subject to different legal and regulatory frameworks relating to power supplied through private entities (i.e. IPPs). It is therefore essential that when interconnecting transmission systems, the respective grid codes must be compared and reviewed to understand the underlying principles of individual systems and then the relevant rules need to be harmonised to suit cross-border interconnection and trading. Grid Code harmonisation is therefore an important initial step. More broadly, the incremental creation of a regional power system for IGAD requires incremental harmonisation of regulations, grid codes, technical standards, operational procedures and – ultimately – planning of the regional system. Generally, IGAD needs a Roadmap that establishes a timetable for progressive integration of the regional power system, together with associated interventions to ensure adequate harmonisation at each step in the integration process.





The rapid penetration of significant quantities of intermittent variable renewable energy (VRE) capacity poses challenges for system operators and requires investment in network infrastructure and control systems. Regional interconnection can help to manage the challenges arising from high VRE penetration in some countries, but it is essential that the harmonised standards recognise and address these challenges. None of the IGAD countries is likely to reach VRE penetration levels in the short-term that would create challenges for system operation, but this is a factor that IGAD would need to incorporate into its Roadmap for regional integration and to monitor closely.

A challenge for IGAD is that the membership is broadly a sub-set of the EAPP countries, and whilst it would be prudent for IGAD to support EAPP initiatives to develop cross-border trade, it might also seek opportunities to facilitate trade within the IGAD member countries. However, it is difficult to envisage how the harmonised standards of the IGAD countries would be different from those of the EAPP countries. Close liaison between IGAD and EAPP is essential. One possibility is that IGAD requests observer status at EAPP meetings.

It should also be understood that a significant proportion of the IGAD population will experience few benefits from trans-border interconnections since they cannot immediately be economically connected to the grid. Both Kenya and Ethiopia have recognised that off-grid modern energy solutions are an integral component in achieving their ambitions for universal access. Whilst interconnections contribute towards poverty reduction, there are other solutions – often more cost-effective solutions – for providing affordable access to modern energy and thus improving life-chances and alleviating poverty, especially for low-income rural households and communities. The question for IRIMP, therefore, is whether there are opportunities for IGAD to promote and facilitate these off-grid solutions.

It is recommended that IGAD develops a policy to promote off-grid solutions to improve access to modern energy in unelectrified areas, preferably incorporating the various renewable energy and other enabling technologies. Private sector participation has become the international norm for the development of renewable energy projects of both large- and small-scale. Some countries have an aversion to the private sector, however, and prefer to develop renewable energy projects using conventional public financing. The received wisdom for the near universality of private sector participation for renewable energy projects is that this sub-sector is fast-moving in terms of technology and delivery mechanisms, and successful private entities are generally able to put together lower cost, more efficient and speedier solutions than public sector institutions.

Kenya has recognised this and is in the vanguard for this approach in SSA. Consequently, IGAD might use its influence to encourage private sector participation for renewable energy, drawing from regional success stories such as those emanating from Kenya. Although a majority of the IGAD countries permit independent power providers (IPPs), by no means all of these are contracted in a transparent manner and with the high standards of governance that encourage the participation of international developers and their financiers. IGAD should be proactive in encouraging high – and common – standards for such IPPs.

One suggestion would be for Kenya to provide capacity-building support – possibly in the form of twinning arrangements – to the other IGAD countries on promoting private sector participation in the power sector, particularly in relation to off-grid solutions including mini-grids. Kenya's recent track record in this regard would appear to be exemplary, having facilitated consortia of national and international entrepreneurs, venture capital and other financiers, renewable energy technology manufacturers, etc., to deliver energy access for previously unserved areas.





Institutional and policy frameworks vary across the IGAD region. Some countries remain vertically integrated publicly owned monopolies, with little or no private sector participation in the sector. Other countries are unbundled, liberalised, have an industry regulator protecting all interests, and encourage private sector participation in many aspects of the sector. Similarly, some governments have specific policies and roadmaps on important issues such as renewable energy and energy efficiency, whereas others either fail to develop policies due to inertia or fail to provide the funding to implement these policies due to budgetary constraints. It is more important that IGAD encourages member countries to establish policies in key areas such as renewable energy and energy efficiency, and for the countries to transparently monitor and report on the effectiveness of these policies.





Section 2.3 The ICT Sector

The Current Situation in the ICT Sector: Challenges and Opportunities

The IGAD region is characterised by a marked digital divide. ICT infrastructure, access, internet usage, broadband connectivity and skills differ significantly between member states, rural and urban areas, and also between men and women; currently fewer women use ICT services and applications than men. Bridging the Gender Digital Divide is important to empower women, enhance their productivity in the workplace and improve gender equality.

Furthermore, there is a noticeable lack of cross border ICT infrastructure, and of regional Internet Exchange Points. For example, Ethiopia shares a border with six IGAD member states, but has cross-border ICT Infrastructure connectivity to just two, namely Djibouti and Sudan. Djibouti also has cross-border ICT infrastructure to two countries Ethiopia and Somalia. Kenya, Somalia, Sudan, and Uganda have connectivity to one neighbouring country. Eritrea and South Sudan have no cross-border connectivity to any neighbouring country. Hence there is a high demand for investment in cross-border ICT infrastructure.

In general, the region is characterised by poor internet and broadband connectivity and usage, and the poor utilisation of the submarine cable landing points capacity. There is also disparity among the IGAD countries in terms of ICT sector development due to, *inter alia*, differing policy and regulatory frameworks differing between IGAD member states, varying financial resources available for ICT infrastructure development, a lack of skilled persons, differing financial borrowing and investment conditions, and generally poor planning and security. These factors contributed to the expensive consumer and wholesale pricing of bandwidth and the limited availability and penetration of advanced ICT services and applications, including broadband.

The mobile telephone networks, however, are fairly extensive across the region, and well developed in Kenya, Sudan and Uganda where the market is open for competition. The networks in Djibouti and Ethiopia currently are under government monopoly. The network is fairly well developed in Somalia, driven by the private sector, but is unregulated and associated with a high-risk investment profile. Recent conflict in South Sudan is a major reason for the poor development of its mobile network.

Further investment in the mobile telephone networks of IGAD member states is required. Most exhibit below the world average for mobile penetration per hundred inhabitants. The Africa average mobile penetration rate for 2016 was 80.8 per hundred inhabitants for the year 2016¹⁵; while the corresponding figure for the world was 99.7. Kenya has the same average for Africa. The rest of the IGAD member states have less than the Africa average. The region needs to expand mobile services, especially in rural and underserved areas. Expanding the mobile networks are most likely to be associated with significant positive economic development impacts. The mobile networks enable mobile money, online banking, internet, and e-payment. An example is M-PESA in Kenya, which is universally recognised as a success. Somalia wants to establish a regional hub for the mobile money.

Internet Exchanges

in 2016 the ITU estimated that only some 25% of individuals in Africa use the internet, which is very low compared to the world average of 47%. The IGAD region average for the same year was even lower at around 15%¹⁶. One of the main reasons for this low average is the high cost of the internet and the poor infrastructure in rural areas. Although, the IGAD region has many submarine cable

¹⁵ Source: ITU Statistics

¹⁶ Source: ITU Statistics





landing points, the cost of the bandwidth for internet is high, especially for the landlocked countries. The cost of bandwidth per month in Kenya is \$46.79 and in Uganda is \$68.73.

IGAD member States have Internet Exchange Points (IXPs) except Somalia and South Sudan. Kenya has a regional IXP owned by the private sector. The Internet Service Providers (ISPs) are not all connected to these IXPs. Djibouti Data Centre (DDC) is the first tier 3 carrier-neutral data centre in East Africa with direct access to all major international and regional cable systems (nine) connecting Africa to Europe, Asia, middle East and Australia. DDC also operates the Djibouti Internet Exchange (DjIX) an independent, neutral and open IXP in Africa. The DjIX offers high speed, reliable, and resilient service.

Both DDC and DjIX can act as catalysts in east Africa to enable new applications and services that help to drive development and social well-being in the region. The DDC is used by many international operators such as China Telecom, France Telecom, Google and Facebook. It could become a regional centre for the IGAD region. Ethiopia is also in a good location for an IGAD regional IXP. A regional IXP will keep the regional and local traffic within the region, hence reduce the cost of the internet services.

Broadband Connectivity

The average fixed broadband penetration per hundred inhabitants is 0.67¹⁷ in the IGAD region, which is very poor. The fixed broadband penetration rate for Africa is 0.7 while it is 11.9 for the world. IGAD member states should prioritise the development of broadband connectivity in order to create an effective enabling environment for the establishment of the digital economy and single regional digital market. Improved broadband connectivity most likely will generate enormous social and economic benefits including job creation, and growth of investment opportunities, access to online government services, improved education and training services, and improved national safety and security services.

Fortunately, the governments in IGAD region are supporting the development of software applications and their usage especially for promoting trade, financial services, and enhancing the productivity of SMEs. IGAD member states have also established innovative centres for the youth with ICT for the development of software and other ICT applications. Some of the IGAD member states have gone further and have developed policies to promote the manufacture and assembly of ICT equipment including smart phones.

The demand for broadband connectivity will be influenced by the technology developed which will make a huge transformation. The transformation will come with opportunities, challenges and implications that are not yet fully known. The expected technology development main products are the Internet of Things (IoT), cloud computing, big data analytics and artificial intelligence. When these technologies are deployed new services and products developed for the use of the people which definitely will generate more data volumes and requires more bandwidth and high speed. ICT has a great role in enhancing technology, businesses, and society interaction.

Submarine Cables Systems

The region has a good number of submarine cable landing points which provide international connectivity with enough capacity, which enhance competition and ensure affordable prices for international connectivity and contribute to the reduction of the ICT services prices at national level. Djibouti will have very soon nine submarine cables, Kenya has five submarine cables systems, Sudan four submarine systems, and Somalia has three.

Djibouti has two submarine cable landing stations 5km apart for redundancy. Djibouti submarine

¹⁷ Source: ITU Statistics





landing points can be redundancy for the Mombasa and Port Sudan ones due to the strategic location and ample capacity, while the submarine landing points in Mombasa and Port Sudan be redundancy for each other and for Djibouti and Somalia.

The Djibouti Africa Regional Express (DARE) project can be extended to Eritrea and Sudan while the Gulf to Africa (G2A) cable system can be expanded to Kenya and Port Sudan to enhance connectivity and competition which will contribute substantially to the reduction of the ICT services price. The DARE and G2A will provide complementarily and redundancy for each other as well as for other submarine cables systems.

Prices for digital services

The supply and demand for ICT services has changed over the last two decades. There is a growing demand for data and a decrease in traditional voice and short messages. The innovation of new phone handsets and lower prices has increased the penetration rate for mobile services. However, prices are still considered as one of the barriers to access in Africa. The majority of mobile phones users do not use smart phones. A considerable percentage of the users do not see the need for internet services and some lack the knowledge of how to use it. In addition, the perceived risks from cyber security, privacy, cost and quality of services deter users from using the internet via smartphones. Therefore, there is poor knowledge of internet benefits. The challenges are cost, knowledge, lack of awareness and access to smart phones.

The price of the mobile services basket ranges from \$1.47 for South Sudan to \$12.67 for Djibouti. Djibouti is the most expensive country in IGAD region and above the African average by 33.4%. The Africa average value is \$9.5/month. On average, the prices are less than the average cost for Africa, with the exception of Djibouti. This means that the mobile services in IGAD region cost is affordable to the majority of the citizen. The prices can be sustained or reduced further by increasing the access to mobile services and enhance competition.

Africa has low mobile-broadband prices in USD which is less than the world average at approximately \$8 and \$15 for the prepaid handset-based and post-paid computer-based sub-baskets respectively. Africa is high when compared with the average world for the GNI per capita percentage.

The fixed-broadband services have been on the decline since 2008 in Africa. Most African countries have fixed-broadband prices that are less than 5% of GNI per capita. However, Africa has higher prices than the world average. In the IGAD region, the member states that provide the lowest price in USD for the fixed broadband are Uganda, Sudan and Ethiopia.

The factors that affect prices are the penetration rate, network development, coverage, international and cross border connectivity, connectivity to the submarine cable systems, income of individual hard currency availability among other factors. The government taxes also contribute to the high cost of prices. Taxes can be more than 40% in some countries. Hence it is recommendable to reduce the taxes, increase the connectivity to the submarine cable systems, and increase the cross-border connectivity. The establishment of regional IXPs will also contribute to the reduction of internet prices.

Opportunities

Opportunities for investment in the ICT sector are considerable in the IGAD region. The sector requires around \$1billion of investment in the medium-term to 2030 in order to meet the challenges and ensure that the ICT infrastructure can be a major contributor to the economic prosperity of the IGAD region and the social well-being of its citizens. It is difficult, however, to precisely identify the investment required for the long-term, from 2030 to 2050, due to the rapid change in the ICT sector and increasingly fast pace of technology innovation, though the sums are expected to be considerable.





The private sector has played a leading role in the development of the ICT sector by providing investment, knowledge and management. The types of the private sector investment are Build Own and Operate (BOO) and Build Operate and Transfer (BOT), as well as management. The internal rate of return (IRR) of nearly all ICT projects to date has been positive. The profitability of projects to date has stimulated private sector investment. Further, the sector is not capital intensive in a manner that characterises power generation and railway investments.

The opportunity (and indeed necessity) of establishing a regional ICT network in the IGAD region is clearly apparent. The network would include, Regional IXPs, a regional cyber security cooperation framework, and digital content development. Policies and regulations have to be designed and implemented in order to facilitate and directly promote ICT infrastructure cross borders connectivity. It is also important to pay attention to the capacity building, the transfer of technology and strengthening of relevant institutions. The transfer of knowledge will reduce the cost of constructing the infrastructure and hence contribute to the affordability of the infrastructure services.

Vision for the ICT Sector

It is envisaged that in 2050 the IGAD region will be characterised by *sustainable, seamless, integrated and secured regional ICT networks which will be affordable, reliable, resilience and bridge the digital divide*. The vision will contribute substantially to the achievement of the IGAD region integration objectives, 2063 Agenda and sustainable development goals. The ICT sector in the IGAD region will progressively evolve from one characterised by rapid but uneven growth, poor internet and broadband connectivity and usage, and a digital divide, to a state in which all businesses and the vast majority of the population can access and efficiently use the digital economy, which itself will be an important driver of IGAD's modern and internationally competitive regional economy.

The Vision for the three time-periods is given below:

Short term (2020-2024) Vision	Medium term (2025-2030) Vision	Long term (2031-2050) Vision
The policy and regulatory environment enabling the growth of and improved access to the regional ICT architecture is strengthened, agreed and implemented. Internet and broadband connectivity and usage is significantly improved	Regional ICT infrastructure and cross border links are significantly improved, as is internet and broadband usage which reaches International standards. Private sector investment significantly; all operators agree terms	The digital divide is overcome, and the digital economy is a major driver of prosperity and integration in the IGAD region, which becomes a hub of ICT and digital content innovation of Continental significance

Strategic Objectives to realise the vision are as follows:

- Enhance enabling environment and institutional arrangements towards building digital market;
- Construct and expand regional ICT infrastructure links and networks;
- Increase the usage of ICT services, e-applications such as financial services, e-commerce, e-health, internet services, social media, content development and promote infrastructure digitalisation;
- Develop the IGAD Region Safe Cyber Space;
- Build capacity and promote technology transfer.





Enhance the enabling environment and institutional arrangements

Prevailing ICT policies and strategies in IGAD, developed some seven years ago, need updating and strengthening. Regulations on issues such as licensing, consumer protection, interconnection, spectrum, pricing and competition must be developed. Policies and strategies need to be reviewed in order to facilitate the construction and interconnection of regional trans-border ICT infrastructure, as well as to promote open access and network unbundling.

The IRIMP vision concerning enabling environment will be “*conducive, smart, dynamic and predictable policies and regulations which will stimulate investment for the sector development and encourage new entrants*”. The IRIMP proposals are for IGAD to have regional ICT institutions or committees to oversee the ICT development programmes and activities and make recommendations to the higher levels of government. The national ICT institutions will be established and strengthened to play their roles in implementing the IRIMP and other master plans and programmes.

Construct and expand regional ICT cross borders infrastructure links and networks

There are gaps in the trans-border ICT infrastructure in the IGAD region. The IRIMP envisages that the region will have a sustainable regional network with redundancy and high quality which will have a positive impact on the reduction of prices and be able to cope with the expected significant increase in regional digital traffic. This traffic will be enabled by the establishment of regional IXPs.

Furthermore, it is envisaged that the submarine cable capacities will be substantially utilised; and related benchmarks and targets reached. The existing regional infrastructure links capacities are expected to increase to 100% and the internet network bandwidth to 1000G by 2050. It will have redundancy using ring topology and using the electricity and railways optical fibre cables.

The mobile penetration per hundred inhabitants, fixed broadband per hundred inhabitants and percentage of individual using the internet are expected to increase to 80%, 10% and 40% in the medium-term (up to 2030) and 100%, 60% and 80% in the long-term (up to 2050). Worldwide the trend has been to reduce interconnection charges using regulatory authorities’ controls. Enhanced competition in the sector will reduce the user charges. IGAD region will have competitive pricing in the medium- and long-term plans. The networks and services developed will facilitate the creation and operation of the IGAD’s digital economy, reduce the cost of doing business and enhance region integration.

Increase the usage of ICT services, e-applications such as financial services, e-commerce, e-health, internet services, social media and promote content development and infrastructure digitalisation

ICT is a cross cutting sector which has positive impact on the construction and operation of other sectors. For example, the implementation of the ICT systems and applications such as Intelligent Transport System (ITS) on transport, energy and water will optimise the cost of both construction and operation. ITSs are those in which information, data processing, communication, and sensor technologies are applied to vehicles (including trains, aircraft and ships), infrastructure, operating and management systems, to provide benefits for transport service users.

The latest technological innovations will be embraced in the design, implementation and operations of infrastructure which will reduce the operation and management cost and increase the project life cycle. Therefore, by implementing the medium- and long-term plans, IGAD will have smart corridors and smart infrastructure which will have positive impact on the operation efficiency and increase the lifecycle of the equipment and networks which maximise the profit for the investors.





Develop the IGAD Region Safe Cyber Space

Effective cyber security is crucial for infrastructure which uses the ICT systems and applications. IGAD has a cyber security programme waiting for funding. It is expected that IGAD member states develop cyber security policies, laws, regional cooperation agreements and critical infrastructure information protection instruments as well as creation of related regional systems and institutions such as Regional Cyber Security Centre. Therefore, IGAD will be *“having secured infrastructure and cyber space with strong regional cooperation and involvement of the private sector”*.

Build capacity and promote technology transfer

The capacity building for institutions and individuals is a continuous process due to the rapid technology change in ICT sector. Capacity will be built through the implementation of the programmes and projects. The skilled persons and efficient ICT regulatory authorities will contribute substantially to the development of the ICT sector, reducing the cost of construction and operation and attraction of investors as well as enhancing accountability and transparency.

Technology transfer is important for developing the ICT industry, customisation of technologies to the African environment and reducing the cost of ICT infrastructure development. It is recommended that IGAD member states universities are involved in the development of ICT industry, research and innovation. The transfer of technology will create enabling environment to attract big companies such as Microsoft, Facebook, and Google to the region. The IGAD region will have smart partnerships for technology transfer.

Recommendations

Enabling Environment

The proper enabling environment is crucial to the development of the ICT sector. Therefore, it is important to review the current policies, legislations and regulations as well as develop new ones since the ICT sector is driven by innovation and technology is changing rapidly. The main enabling environment needs to be reviewed or developed as follows:

- Review the enabling environment;
- Develop cyber security policy and regulations;
- Develop regional cooperation agreement on cyber security;
- Establish regional cyber security response team centre (CIRT);
- Carry study on the Public Key Infrastructure protection;
- Establishing a regional mechanism for recognition Certificate Authorities;
- Develop postal policy and regulatory frameworks;
- Develop regional ICT regulations such as competition, licensing, interconnections, digital regulation and infrastructure sharing;
- Establish regional ICT regulatory authority association.





Table 2.4: Summary of Policy and Institutional Options

Summary of Policy and Institutional Options	
Development of Regional ICT and Cyber security policy and regulatory frameworks	Establish an Association for Regulatory Authorities as well as operators and ISPs
Development of Regional cooperation agreement on cyber security	Setting up of Regional CIRT Establishing a regional mechanism for recognition Certificate Authorities
IGAD supports Member States to develop national cyber security, policy, laws and strategies to ensure domestications, harmonisation and regional cooperation	IGAD supports member States to establish national CIRT
Create an enabling environment for infrastructure competition	Stimulate roll-out in underserved and rural areas
Develop regional postal services policies and model bill	Promote Postal services development by developing regulations to create new services and improve the quality of services
<p>Remove regulatory obstacles to investment and competition</p> <ul style="list-style-type: none"> Remove limits on the number of network licenses Encourage the entry of alternative infrastructure providers Remove constraints on the backbone services market Improve the regulation of backbone networks <p>Reduce the cost of investment Facilitate access to passive infrastructure. Promote infrastructure-sharing. And unbundling</p> <p>Reduce political and commercial risks Risk guarantees and political risk insurance Demand aggregation</p> <p>Promote effective competition in the downstream market Promote downstream competition through effective regulation and opening the market for new entrants such as Mobile Virtual Operators (MVO)</p>	<p>Competitive subsidy models</p> <ul style="list-style-type: none"> Provide operator(s) with subsidy to build and operate a network in currently underserved areas of the country. Services provided in these areas on a non-discriminatory basis. <p>Shared infrastructure/consortium models</p> <ul style="list-style-type: none"> Provide operators with incentive to cooperate in the development of backbone infrastructure in currently undeserved areas of the country where infrastructure competition is not commercially viable <p>Incentive-based private-sector models</p> <ul style="list-style-type: none"> Provide operators with an incentive to build networks in currently underserved areas through reductions in USF contributions or sector levies.

Cyber Security

Many Regional Economic Communities (RECs) have developed regional policy, legislations and strategy on cyber security, for example COMESA. These regional models are important for harmonisation and establishment of regional cooperation measures. IGAD should work with other RECs on harmonisation of the cyber security legislations and policies. RECs may need to develop regional cooperation legal frameworks to tackle the cyber-crime, exchange of information and best practices, and protect the Critical Infrastructure Information Protection (CIIP). The regional cooperation framework is a must since cyber-crime has no borders.

At the national level, Kenya, Sudan and Uganda have developed Cyber Security policies, legislation and strategies, Ethiopia has developed policies and legislations such as Certification Authorities, while Djibouti, Somalia and South Sudan have weak policies and legislation on cyber security. Some of IGAD Member States have established some the institutions necessary for the development of cyber security such as CIRT, regulatory authorities, forensic laboratories, and the protection of the critical information infrastructure protection. The capacity building of the staff and awareness of IGAD's





citizen are highly important. There is a need to establish a regional CIRT and framework for the protection of the critical information infrastructure protection (CIIP) as well as having a regional cooperation agreement on technical and judiciary matters.

Regional infrastructure Connectivity

The regional ICT interconnectivity is not sufficient. Djibouti and Ethiopia connected with two countries each. Kenya, Somalia, Sudan, and Uganda connected with one country each. South Sudan is connected by satellite and has no terrestrial optical fibre connectivity with his neighbours. Kenya has optical fibre to the borders with Ethiopia and Somalia. Kenya also has a project to connect with South Sudan. Uganda has an optical fibre to the border of South Sudan. Ethiopia is ready to connect with Somalia and then with the G2A submarine cable. Sudan also is ready to connect with South Sudan. Somalia and South Sudan cross border connectivity will enhance the regional ICT connectivity.

More trans-border ICT connectivity is required to improve network reliability, affordability, competition and maximise the utilisation of the submarine cables capacities. Therefore, the following links are proposed for the short and medium terms plans:

- Expand DARE and G2A submarine cables to connect all IGAD coastal countries;
- Sudan be connected to Ethiopia by two optical fibres;
- Establish Regional IXPs;
- South Sudan be connected by two optical fibres to Uganda;
- South Sudan be connected to Kenya by two optical fibres
- Somalia be connected to Kenya by two optical fibres
- Somalia be connected to Ethiopia by two optical fibres;
- South Sudan and Ethiopia to be connected by two optical fibres;
- Ethiopia and Sudan be connected by optical fibre via Kassala and Humora;
- South Sudan be connected to Sudan by three optical fibres.
- Kenya and Ethiopia connected by three fibre optic cables

IGAD Region Single Digital Market (SDM) Proposal

The proposal of the SDM includes the enabling environment, infrastructure connectivity, data, services cyber security, and digital skills. Some of the recommendations stated above are included in the SDM proposal.

1. Towards IGAD Region Single Digital Market (SDM) -

A. Priority regional digital interconnectivity infrastructure:

i. *Submarine festoon cable along coast*

- i. Extension of DARE cable system (\$80m), based on open access for all, adding missing landings points, branching units and cable extension. Would link Assab/Masawa - Djibouti - Berbera - Bossaso - Mogadishu - Kismayo - Mombasa (approx. 6,400km)
Readiness: Feasibility study largely done. Feasibility for extension to Port Sudan (for redundancy) and Kismayo landing point needed.
- ii. Extension of Gulf to Africa (G2A) submarine cable system (\$140m) from Mogadishu and Bossaso to Djibouti, Assab/Masawa, Port Sudan as well as to Kismayo and Mombasa for redundancy and enhance competition for better quality and affordability

ii. *Terrestrial links and backbone connections*

- a. Djibouti to Ethiopia (\$26m):
 - i. Samara - Galafi - Dikhil – Djibouti





<p>ii. <u>Dire Dawa - Dewelleh – Ali Sabeh – Djibouti</u> - feasibility study done</p> <p>b. Djibouti to Somalia (\$5m):</p> <p>i. <u>Djibouti - Loyada</u> – Borama (\$Xm) – no feasibility study</p> <p>c. Somalia to Kenya</p> <p>i. Kismayo – El wak (\$Xm) – no feasibility study</p> <p>ii. Kismayo – Liboi (\$Xm) – no feasibility study</p> <p>d. Kenya to Somalia / Ethiopia</p> <p>i. <u>NETIP (744 km): Isiolo – (1) Wajia - Madera – Dadaab (2) Mogadishu – Elwa (\$34m)</u> – no feasibility study</p> <p>e. Kenya to Ethiopia</p> <p>i. LAPSSET (1,000km): Lamu - Isiolo – Moyale (\$35m) – no feasibility study</p> <p>f. Eritrea to Ethiopia / Sudan</p> <p>i. <u>Bure-Assab</u>(\$Xm) – no feasibility study</p> <p>ii. <u>Zalambassa-Asmara-Masawwa</u>(\$Xm) – no feasibility study</p> <p>iii. Kassala –Tasany- Asmara (\$Xm) – no feasibility study</p> <p>g. Somalia-Ethiopia</p> <p>i. Mogadishu – Firfir (\$Xm) – no feasibility study</p> <p>ii. Mogadishu – Dollo (\$Xm) – no feasibility study</p> <p>iii. Bossaso – Goldogob (\$Xm) – no feasibility study</p> <p>iv. <u>Berbera-Togo Woji</u>ale (\$Xm) – no feasibility study</p> <p>h. South Sudan - Sudan....</p> <p>i. Rank –Malakal-Juba (\$Xm) – no feasibility study</p> <p>*underlined connections are considered to be more ready for deployment</p> <p>B. <u>Policies and Regulations harmonisation</u>: regional interconnection framework based on open access, spectrum, mobile roaming, , competition, infrastructure sharing, general data protection regulations, regulations of Internet, digital technology regulations and digital media regulations, licensing etc. (\$30m)</p> <p>C. <u>Establishment of Regional ICT Regulatory Authorities Association</u></p>
<p>2. Towards a single regional data market in IGAD Region – safely and cost-effectively storing and exchanging data</p> <p>A. <u>Data Infrastructure (carrier neutral)</u> at landing stations and in major cities</p> <p>i. <i>Regional Tier 4 Data Centre</i> (\$20m)(based in Djibouti) – feasibility study completed</p> <p>ii. <i>National Data Centres in Ethiopia, Somalia, South Sudan and Eritrea</i> (\$70) – to support redundancy - no feasibility studies</p> <p>iii. <i>Regional data hubs / Internet Exchange Point (IXP) / Caches</i> (\$30m) – cloud infrastructure – private data caches - content delivery networks</p> <p>B. <u>Cyber security</u></p> <p>iv. <i>Regional cybersecurity platform</i> (\$50m), focusing on capacity building and information-sharing – establishment of regional CERT</p> <p>v. <i>Regional policy, regulation, legislation and enforcement frameworks</i> (\$20)</p> <p>vi. <i>Harmonisation of cyber crimes legislation and development of regional cooperation agreement on tackling cyber crime</i></p> <p>vii. <i>Development of region public key infrastructure for critical infrastructure information protection platforms and legal frameworks towards establishment of IGAD Root Authority Certification.</i></p> <p>C. <u>Regulatory policy harmonisation and technical assistance (national and regional)</u>: data protection, open data, standardisation (\$30)</p>
<p>3. Towards a single digital service market in IGAD Region</p> <p>A. <u>E-government</u> - Sharing e-government expertise, connecting governments digitally, study tours , visits and exchanges of expertise, information and knowledge(\$20)</p>





<p>B. <u>E-commerce hubs</u> such as online trade points</p> <p>C. <u>Digital financial services</u></p> <p>D. Policy and regional harmonisation and Cooperation between national postal networks</p> <p>E. <u>Cross-border digital payment facilitation</u> (\$30) - Interoperability, lower transaction fees, harmonisation of legislation, convene / facilitate dialogue between operators/ regulators, technical assistance on MAL/Fraud</p>
<p>4. Digital skills</p> <p>A. <u>Regional ICT Academy Network</u></p> <p>The digital competence is a combination of information skills, communication skills, content creation skills, safety skills, and problem-solving skills. Centres of excellence specializing in different topics (R&D, innovation, cyber security, data and training) are proposed to offer basic and advanced skills as well as contribute substantially to knowledge transfer to the IGAD region (\$60m):</p> <ol style="list-style-type: none"> Kenya - Cyber security (i.e. Cyber Security Research Institute) Ethiopia - Advanced ICT Somalia - Digital financial services Djibouti - Data centre and its enabling environment Uganda- Content and its platform development Sudan – Terrestrial and submarine cabling systems Academy South Sudan – Wireless communications <p>B. <u>Expansion of Research & Education Networks (RENs) (\$30m)</u> - Sharing resources and demand aggregation; Access to open educational resources; e-learning</p>

Table 2.5: IRIMP ICT Sector Benchmarks and Targets

	Target	2024	2030	2050
	Growth - enable and foster access to and increased utilisation of ICT services and applications and bridge the digital divide			
1	Mobile penetration per 100 inhabitants	65%	80%	100%
2	Mobile geographical coverage	70%	85%	100%
3	Fixed broadband penetration per 100 inhabitants	5%	10%	60%
4	Percentage of Individuals using Internet	25%	40%	80%
5	Affordability and Reduction of tariffs by	15%	25%	60%
6	The rural areas mobile coverage	65%	75%	100%
7	Percentage of household having access to Internet	15%	30%	60%
8	Gender equality among Internet Users	10%	30%	60%
9	Enabling environments ensuring accessibility ICT services and applications for persons with persons with disability	60%	70%	100%
	Sustainability - Manage challenges emerging from ICT development			
10	Cyber security policy and legislations	0	0	0
11	Establishment of National and Regional CIRTs by	0	0	0
12	Develop PKI regulations, infrastructure and institutions by		0	0
13	Develop Regional Cooperation framework by		0	0
14	Volume of redundant e-waste to be reduced by	30%	50%	70%
15	Green gas emission generated by ICT sector to be reduced by	20%	40%	60%
	Technology transfer and Innovation			
16	Enabling environment conducive to technology transfer	0	0	0





17	Enabling environment conducive to Innovation	0	0	0
18	Smart partnerships of stakeholders in ICT development	0	0	0
ICT Infrastructure Interconnectivity				
19	National Broadband connectivity increased to	200G	400G	1000G
20	Expand and increase the cross-border ICT infrastructure connectivity by	30%	50%	100%

Table 2.6: Implementation Action Plan

Activity	Short-term (2020-2024)	Medium-term (2025-2030)	Long-term (2031-2050)
Review the enabling environment	██████████		
Develop cyber security policy and regulations; Develop regional cooperation agreement on cyber security; Establish regional cyber security response team centre (CIRT); Study on the public key infrastructure protection; Establish a regional mechanism for recognition Certificate Authorities Adoption of Regional One Area Network	██████████		
Establish regional ICT regulatory authority association	██████████		
Develop regional ICT regulations such as competition, licensing, interconnections, digital regulation and infrastructure	██████████		
Develop postal policy and regulatory frameworks	██████████		
Expand DARE and G2A submarine cables to connect all IGAD coastal member states	██████████		
South Sudan connected by two fibre optic cables to Uganda; Somalia connected to Ethiopia by two fibre optic cables; South Sudan connected to Ethiopia by two fibre optic cables; Kenya and Ethiopia connected by three fibre optic cables; Ethiopia and Sudan connected by fibre optic cable via Kassala and Humra; South Sudan connected to Sudan by three fibre optic cables Establish Regional IXPs South Sudan be connected to Kenya by two optical fibres Somalia be connected to Kenya by two optical fibres	██████████	██████████	





Section 2.4 The Water Sector

The Current Situation in the Water Sector: Challenges and Opportunities

The IGAD region is prone to recurrent droughts and dry spells and is one of the most vulnerable regions in the world to climatic variations. The region is affected by a high degree of variability in rainfall patterns, and most likely will increasingly suffer the adverse impacts of climate change. Water resources are scarce across the IGAD region, particularly in Djibouti, Eritrea, Kenya, and Somalia, where water consumption is less than 1,000m³ per person per year or less. Other countries such as Ethiopia and Uganda, which presently have adequate water, will be water stressed by the year 2025. Access to water by some member states is especially limited; in South Sudan only 25-30% of the rural population has access to safe potable water, and only 4% of the rural population have piped water on their premises. A high percentage of the population of the IGAD region (42%) still uses unimproved drinking water sources.

A lack of water will significantly limit sustainable development in the IGAD region. This underscores the need for policies and programmes that will enhance the ability of the region to optimise the use of water resources for residential, agricultural, and industrial uses. This task is ever more urgent given the continuing population growth of the region which has contributed to increasing pressure on water resources and the environment, often resulting in food insecurity, famine, and poverty, and more generally, social, economic and political tensions and disputes. The effective and sustainable management of the trans-boundary surface and ground water resources is required urgently.

There are six trans-boundary basins which are of major significance to the supply of water to the populations and commercial activities of the IGAD region: (i) the dry basins (Ayesha, Danakil and Ogaden), with negligible surface water resources, but important aquifers; (ii) the semi-arid to arid basins (Gash-Baraka and the Juba-Shebelle) characterised by notable irrigation developments; and (iii) Turkana-Omo basin (part of the Great Rift Valley), within which is found considerable economic activities (see Figures 2.1 and 2.2). The bulk of the future water resources to meet the increasing demand will come from projects earmarked for implementation on transboundary water courses or within the trans-border water basins. The results of the IRIMP demand and gap analysis indicates that two semi-arid to arid basins (Juba-Shebelle and Gash-Barka Basin) will be seriously short of water by 2050 and others will become increasingly stressed. Managing these basins effectively is of great importance.¹⁸

IGAD Member States must strengthen strategies and institutional frameworks necessary to effectively manage these depleted transboundary resources. This has hindered economic development and calls for concerted inter-State cooperation creating and implementing transboundary water basin legal and regulatory frameworks. Furthermore, although national policies have been enacted related to biodiversity, environmental and water resources protection, many are not implemented or poorly enforced. There is need for coordination amongst IGAD member states to ensure member states are committed to implementing relevant national and inter-State policies. More specifically accelerated technological transfer is required which will enhance the capacities of individuals, communities and businesses to utilise water resources in the most optimum manner by, for example, extending rain-water harvesting, and by improving agricultural practices and management, thereby reducing dependence on rain-fed agriculture, and relieving stress on the currently limited use of irrigation.

¹⁸ The results of this analysis are presented in *Volume Two: The Evidence Base*





Figure 2.1: Surface Water Basin and Economic Corridors in the IGAD Region

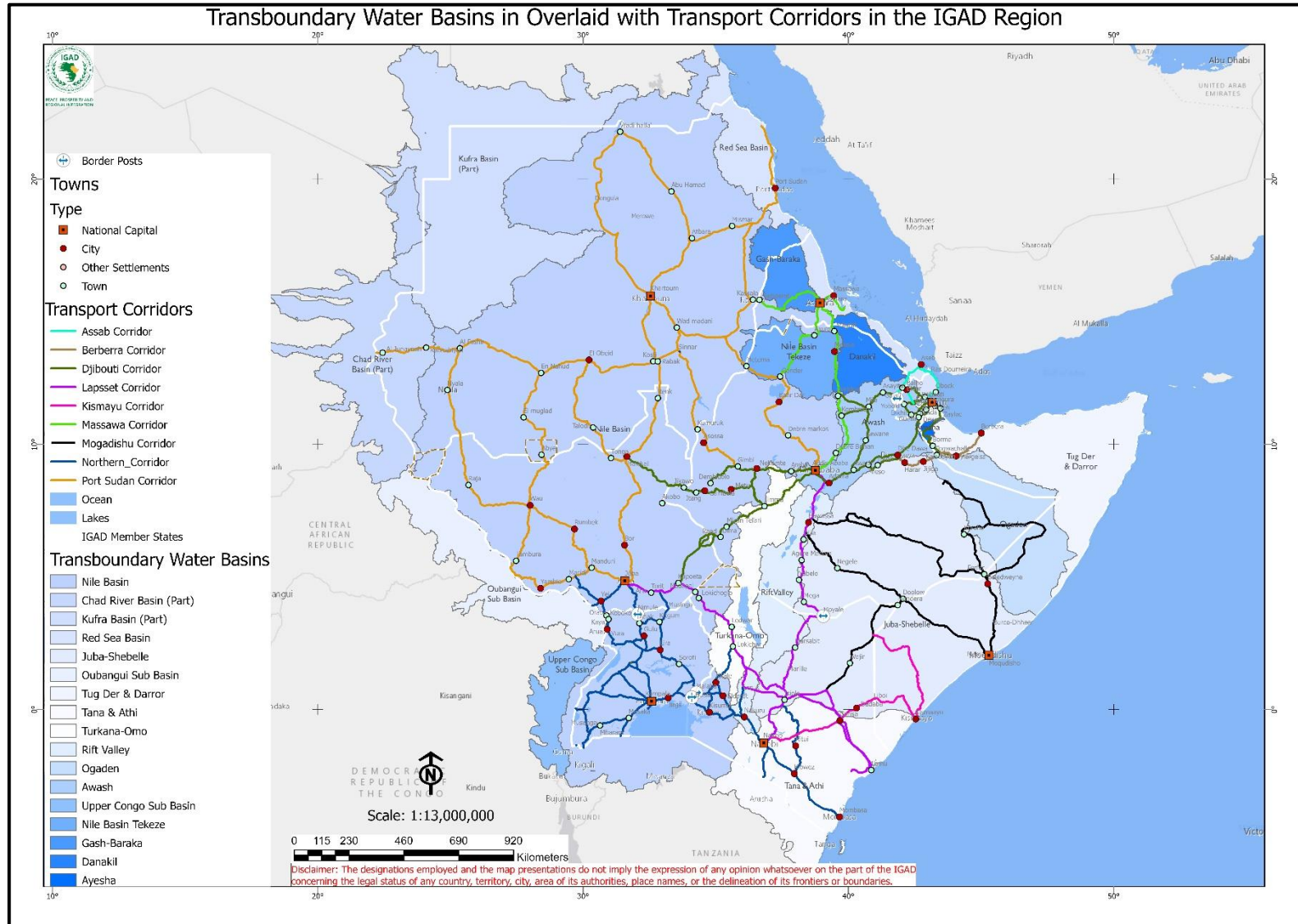
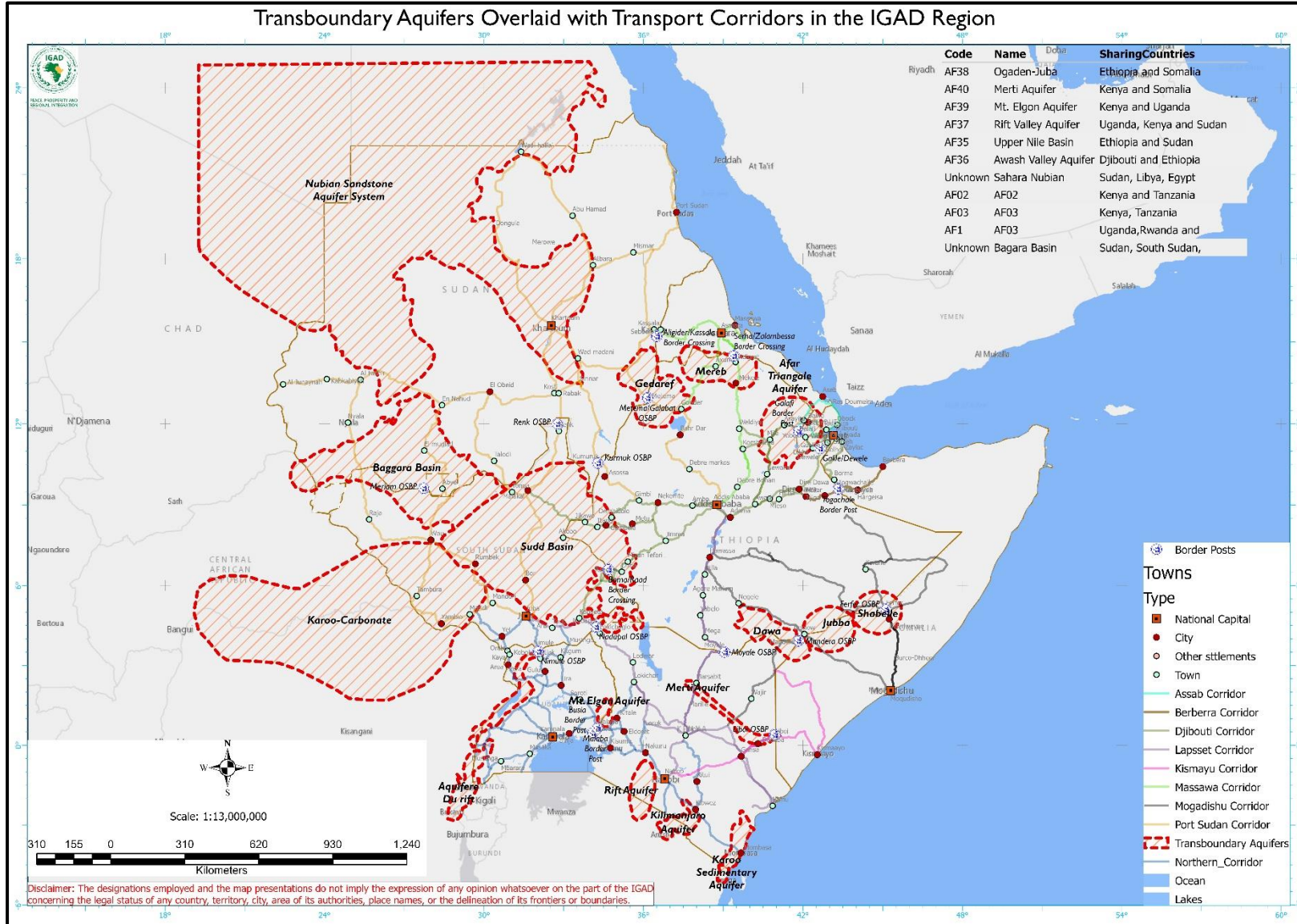




Figure 2.2: Groundwater Basin and Economic Corridors in the IGAD Region





With the growth in population and economic activities, the demand for water has increased rapidly in the region and will continue to increase. Urgent action is needed to improve access to sustainable water resources. IGAD member states must better prioritise water storage infrastructure development, within constraints of competing and urgent calls on national budgets for a range of other development and investment projects. The present situation has led to a prevalence of dilapidated water storage infrastructure, and the provision of few modern projects such as Gibe III and the Grand Ethiopian Renaissance Dam in Ethiopia.

Ensuring the sustainable management of water resources that are adequate to meet the needs of the growing economies of the IGAD member states is a major challenge facing the IGAD region. More specifically there is an urgent need to address the following:

- the need for effective planning for water resources;
- the identification of water source options for the future, including the need to evaluate water availability in watersheds;
- the need to balance equity, efficiency and ecosystem services in water use;
- the inadequacy of legislative and institutional frameworks covering water resources; and
- the increasing financial burden of attending to ageing and deteriorating water infrastructure.

Water Sector Strategic Framework in the Trans-Border Infrastructure Projects

The planning, development and management of water resources are mostly basin based across the IGAD region. The IRIMP study identifies nine potential corridors of regional significance (illustrated in Figure 1.3). These corridors traverse across the region's water basin, thus various water management units' strategic objectives need to be harmonised to meet the corridor objectives. As evident from the old Uganda Railway line corridor, the development of the corridor will ultimately led to urbanisation along the corridor, a catalyst for human settlement, industrialisation and other development that poses a fundamental challenge of delivering safe and sustainable water supplies and sanitation systems along the corridor to ensure emergencies of informal supply system is curtailed.¹⁹ This will ensure a reliable water supply system is in place to boost the economic corridor potential to spur development, thus solving the generic problem of water by matching demand with supply, ensuring that there is water of a suitable quality at the right location and the right time, and at a cost that people can afford and are willing to pay.²⁰ This calls for an integrated resource management where the corridor development includes capacity development for water supply to support the corridor development. This will ensure reliance to informal supply is avoided as it reduces attractiveness of an economic corridor hub.²¹

The proposed Phased Corridor Development crosses different water basin that goes beyond the transboundary water basin (see Figures 2.1 and 2.2). Noting that water is a key determining aspect for economic growth, a requirement of water per capita of 2,400 m³/day is necessary for industrial development.²² Failure to achieve this water per capita threshold will ultimately result in severely constraining food production, ecosystem maintenance and economic development among other needs and uses.

With each member state having its own strategic objective to achieve water for all, there is need to harmonise the strategies for the economic corridors hubs to ensure optimisation for the investment

¹⁹ World Bank 2017, Water Market Partnership.

²⁰ The economic conception of water, W. M. Hanemann, University of California. Berkeley, USA,

²¹ (Gulyani, 2005)

²² The Djibouti City – Addis Ababa Transit and Transport Corridor: Turning Diagnostics into Action, United Nations publication issued by the United Nations Conference on Trade and Development, 2018.





in the corridor. IGAD policies in line with water has been limited to transboundary water, an aspect that need to be expanded to ensure other national water basin are also included to effectively plan for the economic corridors. The catchment areas that need to be harmonised for the corridor development are (see Figure 2.1):

- **Northern Corridor:** water supply (within IGAD region) is mainly from Athi catchment area, Tana catchment area, Rift Valley catchment area, Nile catchment area;
- **Djibouti Corridor:** water supply is mainly from the Nile catchment area and the Awash catchment area. The Ethiopia-Djibouti Cross-Border Water Project is supporting the corridor within Djibouti.
- **Port Sudan Corridor:** water supply is mainly from the Nile catchment area
- **LAPSSET Corridor:** water supply is mainly from the Tana catchment area, Juba Shabelle Daua (Lagdera) catchment area, Rift Valley catchment area (Lake Turkana Basin), Nile catchment area;
- **Berbera Corridor:** water supply is mainly from the Tug Der and Darror catchment area;
- **Massawa Corridor:** water supply is mainly from the Nile catchment area;
- **Mogadishu Corridor:** water supply is mainly from the Juba Shabelle catchment area;
- **Kismayo Corridor:** water supply is mainly from the Juba Shabelle catchment area
- **Assab Corridor:** water supply is mainly from the Red Sea Basin and Awash catchment area.

Institutional Arrangement

The IGAD countries have a range of institutions focused on the development and management of water resources development, and national policies, strategies, laws, and water master plans which have been undergoing regular reform. Many national policies and legal frameworks related to the water sector were updated and revised in the late 1990s and in 2000s as water issues became the subject of increasing national and international concern and debate. Besides environmental concerns and commitment to regional and international organisations to which each country subscribes, the IGAD member states appear willing and ready to collaborate on the development and management of their transboundary water resources. The policy, legal, and institutional frameworks as well as the protocol for information and data sharing and exchange, are similar to that for the joint Transboundary River Basin Organisation (TRBO), and can be applied to a single or more shared river basin resources in the IGAD region.

The development of a TRBO²³ includes the setting up of a transboundary consultative mechanism, the RPSC and the related Working Group at the IGAD level. The proposed framework will be implemented in two stages. Initially, its Coordinating Secretariat will be housed within IGAD Secretariat as a dedicated mechanism for the development and management of the shared river basin resources. The Directorate will gradually be transformed into an independent functioning body, the “Commission” or “Organisation” outside of IGAD Secretariat but within IGAD framework, after a period of five years. The evolutionary process of the institutional framework will also aim at having one single Sectoral Council of Ministers for the TRBO to deal with all projects and programmes in any of the shared river basins. At the national level in all countries there is a government ministry or agency with responsibility for water resources development and management. The following are major institutions in each country:

²³ Lake Victoria Basin Commission (LVBC) and Nile Equatorial Lakes Subsidiary Action Program (NELSAP) spirit borrowed in the idea of TRBO, RBO still exist but all development jointly agreed by sharing member states





Djibouti

The government of Djibouti is aware of the water critical situation and has placed water and sanitation sector policy development and implementation among its priorities. This has translated into important institutional reforms such as the Water Code publication (1996), the establishment of a unified Water Directorate (1999), and a ministries coordination body. The major water actors are:

- Ministry of Agriculture, Livestock Production, and Marine Affairs-Water Resources (MAEM-RH), in charge of policy development and investment planning for water supply throughout Djibouti. The Hydraulic Directorate of the Ministry is responsible of water Resources. The ministry's departments are responsible for rural water supply, village pumping systems and maintenance, and well construction;
- Djibouti National Water and Sanitation Office (ONEAD) is responsible for water supply management and coordination in Djibouti City and other towns. It is also responsible for sewerage and wastewater treatment as well as storm water drainage;
- The Ministry of Health has mandated the Direction de l'Epidémiologie et de l'Information Sanitarien (DEIS) to implement the Ministry's hygiene and sanitation policy;
- The Ministry of Finance, Economy and Planning is in charge of privatisation, and is responsible for investments and the allocation of financial resources.

The key measures to improve the institutional arrangements are: (a) strengthening the capacities of the public water and sanitation utility, ONEAD, so it can exercise its mandate; and (b) defining a clear action plan and responsibilities for hygiene and sanitation promotion.

Current projections for sector finance suggest that substantial increases are necessary to sustain present coverage levels. This is due to a number of governance problems such as insufficient decentralisation combined with unsatisfactory budgeting processes and financial management difficulties. Despite efforts made in recent years, there is still no effective decentralisation because of the lack of political and institutional mechanisms and financial resources at the district level. Some progress has been made with the law on decentralisation that defines regions as local government units. But the sector still lacks appropriate budget allocations to cover investment needs and to fund recurrent expenses.

In the urban sector, the financial situation of ONEAD, is problematic. This situation results from a lack of financial and management autonomy; technical and commercial weaknesses; huge governmental agencies' deficits and over-staffing. The merger of water supply and sanitation utilities has resulted in a greatly increased number of responsibilities for ONEAD. Unfortunately, the company does not have corresponding human and financial resources. A strategic roadmap for the restructuring of ONEAD is necessary if it is to improve its financial performance and to take on its additional duties in providing sanitation services.

At the national level, a move towards a programmatic approach with the development of a Medium-Term Expenditure Framework (MTEF) for the sector, detailing operating and investment expenditure needs, would gain donor and finance ministry visibility and help ensure that sufficient resources are allocated to the sector. In terms of global development assistance, Djibouti receives approximately \$100m annually from donors. Currently, the main development partners in the water sector are:

- The Arab Fund for Economic and Social Development (AFESD), helping with water supply rehabilitation works;





- China, financing a new desalination plant for Djibouti City;
- The European Union, providing institutional support and sanitation facilities, together with the AfDB;

The following are key measures to improve water sector financing:

- Develop a programmatic approach e.g., a MTEF;
- Draw up a strategic roadmap for ONEAD;
- Increase project management capacity and the efficiency of procurement procedures;
- Recognition of the importance of operational and maintenance cost recovery.

Ethiopia

The Ministry of Water and Energy (MWE) is major institution responsible for water and water resources Powers and duties of the supervising body (MWE) The supervising body shall be responsible for the planning, management, utilisation and protection of water resources. It shall also have the necessary power for the execution of its duties under the provisions of this proclamation.

Environmental Protection Authority (EPA). By Article 6 of Proclamation No. 9/1995, for example, the EPA became responsible for protecting the water resources of the country. There still appears to be some overlap between the water-sector regulatory tasks stipulated for MWE and those stipulated for the EPA. A review of the current institutional responsibilities strongly suggests that distinction between the tasks assigned to different institutions must be clarified or the incompatible articles repealed.

Regional Governments Proclamation No. 41/1993 grants regional governments regulatory powers that includes small-scale hydropower. In addition, the following provision of that proclamation empowers the regions to:

- Supervise the implementation within the regions, of purity and sanitation standards prescribed in relation to the water used for various services and sewerage purposes;
- Supervise the balanced distribution and utilisation of region's water resources to various types of services;
- Ensure the implementation of law, regulations and directives issued in relation to the protection, conservation and utilisation of water in the region.

Other Federal institutions directly or indirectly involved in the management of water resources are: Ethiopian Electric Power Corporation (EEPCo), Ethiopian Electric Light and Power Authority, Ministry of Works and Urban Development, Ministry of Health, the Water Supply and Sewerage Authority (WSSA) of Addis Ababa, and the Addis Ababa Municipality.

Subsidiary organisations of the MWE that are engaged in different aspects of water resources planning, development and management, namely: Ethiopian Water Works Construction Enterprise (EWWCE), Water Well Drilling Enterprise (WWDE), Water Works Design & Supervision Enterprise (WWDSE), and the Awash Basin Authority.

Most regional governments have established bureaus of water, mines and energy or bureaus of water resources development. All bureaus have branch offices or departments. Some regions have established such specialised institutions as waterworks construction enterprises, commissions for sustainable agriculture and environmental rehabilitation, and/or irrigation authorities. The Ethiopian





water-resources management policy specifies that urban water-supply services be recognised as autonomous entities. Currently, however, some are autonomous, and others are organised under bureaus or branch offices.

Donors finance numerous projects in water supply and sanitation in Ethiopia – some through the Federal Government and some directly to regions, towns and communities. The donors have established a technical working group (TWG) on water as part of a core donor group called the Development Assistance Group. A Multi-Stakeholder Forum is also supported through the European Union Water Initiative. Despite improved coordination, donors still use different implementation arrangements. Important donors in the sector are the African Development Bank, CIDCA, China, the British DFID, the EU, FINNIDA, AFD from France, Germany (through GTZ and KfW), JICA, the Netherlands, UNDP, UNICEF and the World Bank. There are also about 500 local and foreign NGOs, many of which are active in water supply and sanitation.

Eritrea

Currently, the country is focusing on strengthening its economy by way of harnessing its natural resources. Top priority given to the development of water resources is evidenced by the fact that most development projects are related to water; food security, economic development, drought and flood mitigation. Accordingly, policies pertaining to water resources, food security, environment, and water and drought calamities mitigation have been formulated and put into effect. It is also worth mentioning the remarkable achievements that have been made in terms of water conservation including construction of water storage and diversion structures and groundwater explorations for different uses. For instance, water harvesting structures such as dams, ponds, and wells constructed from 1992-2003 were 84, 314 and 228, respectively.

In Eritrea, water is allocated to users without proper procedures and regulatory instruments. Decisions on water allocation, particularly the siting of the water resources development sites have been made by non-water management bodies because of the absence of legal and regulatory frameworks. In addition, inadequate decisions related to surface and groundwater abstractions were made without adequate data and information and this leads to the depletion of pockets of groundwater in the highlands.

This implies that the root causes of water related problems in Eritrea include highly uneven distribution of water availability, extreme catchment degradation, low investments on water storage and infrastructure, increasing water demand, pollution of freshwater, improper procedures and regulatory instruments, absence of water costs, lack of monitoring, assessment and evaluation of water resources, absence of enacted water resources policy, insufficient legislative and legal framework, inefficient institutional framework, weak financing mechanisms and inadequate professional and technical capacity. In addition, inadequate water conservation practices, inefficiency in water use, water reuse, prevalent system of water rights which gives unlimited ownership of groundwater to the landowner despite the fact that groundwater is a shared resource from common pool aquifers and disassociation of communities in water resources management are also prevalent challenges.

In attempt to address the water related challenges, the Government of Eritrea established the Water Resource Department (WRD) of the Ministry of Land, Water and Environment. This was followed by establishment of national policies pertinent to water resources such as: the Action Plan for Integrated Water Resources Management (AP-IWRM) viz. draft on Eritrean Water Resources Policy; Interim





Poverty Reduction Strategy (I-PRSP); Food Security Strategy (FSS); Agricultural Policy; National Environmental Management Plan (NEMP-E); National Action Program under United Nations Convention to Combat Desertification (NAP-UNCCD); National Environmental Impact Assessment Procedures and Guidelines (NEAPG); Coastal Policy and its Guidance Document; and National Adaptation Programme of Action (NAPA). It is also a member of the Global Water Partnership (GWP) programme that aims at contributing to sustainable development and poverty reduction through Integrated Water Resources Management (IWRM) approach.

To implement these policies on the ground the WRD established a central body with full mandate to study, develop, manage and protect all the national water resources and introduced integrated water resources management approach progressively.

WRD has three divisions and three supporting units:

- The Water Resources Assessment and Information Division have three units - Hydrogeology, Hydrometeorology and Geophysics.
- Water Resources Management and Use Division have three units - development, Water-use management and Water quality control.
- Water Supply Division has three units Rural Water Supply, Urban Water Supply, and Operation and Maintenance.

The supporting units within Legal Service and Water Resource Information Centre. Moreover, the ministry is working to establish an integrated water resources management (IWRM) with an adequate institutional framework and capacity to introduce modern water harvesting technologies, efficient and effective water supply systems, and effective water protection and quality control systems.

Kenya

The Ministry of Water and Sanitation provides policy guidance, capacity building, resource mobilisation, coordination and oversight for the following statutory institutions.

The Water Services Regulatory Board (WASREB) was established under the Water Act, 2016 to regulate water and sewerage services provision, including issuing of licenses, setting service standards and guidelines for tariff and prices.

Water Resources Authority was established under the Water Act 2016 to regulate the management and use of water resources including water allocation, source protection and conservation, water quality management and pollution control as well as collaboration on international waters. WRA is the successor of Water Resources Management Authority (WRMA).

The Water Sector Trust Fund was established under the Water Act, 2016 to provide conditional and unconditional grants to Counties, in addition to the Equalisation Fund and to assist in financing the development and management of water services in marginalised and underserved areas. This includes community level initiatives for the sustainable management of water resources, development of water services in under-served rural areas, development of water services in the under-served poor urban areas, and research activities in the area of water resources management, water services, sewerage and sanitation. Water Sector Trust Fund is the successor of Water Services Trust Fund (WSTF) under the Water Act, 2002.





Water Tribunal (WT) was established under the Water Act, 2016 to hear and determine any dispute concerning water resources or water services. WT is the successor of Water Appeals Board (WAB) that was enacted under Water Act, 2002.

National Water Harvesting and Storage Authority (NWHSA) was established under the Water Act, 2016 to undertake the development of national public water works for water resources storage and flood control on behalf of the national government; and maintain and manage national public water works infrastructure for water resources storage. The Authority is the successor of National Water Conservation and Pipeline Corporation (NWPC) under the Water Act 2002. The Transition from NWPC to NWHSA is still in progress.

Eight Regional Water Services Boards (WSBs) were established under the Water Act, 2002 to manage water and sewerage service provision in their respective areas of jurisdiction. The eight Water Services Boards are: Tana, Athi, Tana-Athi, Lake Victoria South, Lake Victoria North, Rift Valley, Coast and Northern Water Services Boards. The Water Services Boards will be transformed to Water Works Development Agencies in line with Water Act, 2016, once the ongoing studies have been finalised and public consultation undertaken as per the Act.

Kenya Water Institute (KEWI), which was transformed into a semi-autonomous institution in July 2002 through the Kenya Water Institute Act, 2001. KEWI provides training, research and consultancy services in the water and irrigation sector.

Regional Centre on Ground Water Resources Education, Training and Research (Legal Notice No.252 of 18th December 2015). The institution works to build knowledge and information on ground water potential. The institution also undertakes training and research on ground water resources.

South Sudan

Institutional framework in South Sudan National States Ministry of Water Resources and Irrigation (MWRI) in charge of managing water resources and trans-boundary water issues. This includes water policies, legislations, and strategies, planning and designing of water projects, it is concerned with water-trans-boundary issues and the regional and international surface and groundwater cooperation coordination and management

- States Ministries of Water Resources in charge of development of water resources and water utilisation, including states water supply;
- Urban and Rural Water Supply and Sanitation Authorities: Responsible for provision of drinking water supply and sanitation services, WASH programme works under these Authorities;
- Universities are responsible for water Knowledge and research;
- Private Sector: Responsible for consultancy and contracts on water such water well drilling and completion, constructions of dams, irrigation canals, rehabilitation and maintenance of water structures, constructions of water harvesting structures etc;
- Other actors are UN organisations such UNICEF, UNE, UNDP and regional and non-governmental organisations.

Sudan

The water institutional setup in Sudan is:





- The Ministry of Water Resources, Irrigation and Electricity (MWRIE) is responsible of the assessment, development, and management of water resources in the country,
- The Technical Organ of Water Resources Responsible for water policies, legislations, and strategies, this is body concerned with water-trans-boundary issues and the regional and international surface and groundwater cooperation coordination and management
- The States Ministries responsible for water and Irrigation
- State Water Corporations: Responsible for state rural and urban drinking water supply provision
- Universities and Research institutes: responsible for water Knowledge and research
- Private Sector: Responsible for consultancy and contracts on water such water well drilling and completion, constructions of dams, irrigation canals, rehabilitation and maintenance of water structures, constructions of water harvesting structures
- Other actors are ministry of Agriculture and Forestry at federal and state level, Ministry of Investments, Geological Survey, Ministry of Environment, Ministry of Oil and Mining, Etc.

State Water Corporations (15) are responsible for rural and urban water supplies in states (drinking water), they use surface and ground water resources to supply their clients. Meteorological Corporation, responsible for rain and climate forecasting and institutes which are concerned with hydro- power generation, construction of dams and water harvesting structures and also for the implementation with drilling of water wells to supply drinking water through the water supply projects.

The private sector is actively participating in the drilling and construction of dams, reservoirs, water canals, water stations, wells, the storages and the water networks. The Universities and the research institutions are considered the main source providing the required knowledge and staff required for the conduction and progress in the groundwater industry. Research and studies and applied research conducted by the Universities and Research institutions are essential for water development and management in the country. Regional and global organisations active in water and also resources including the trans-boundary are UNICEF, UNEP, WMO, IAEA, Nile Basin Initiative (NBI), Joint Nubian Aquifer Committee UNDP, World Bank, FAO, ACSAD, IGAD, AMCOW and Arab Water Association.

Somalia

In pre-conflict Somalia all water resources were regulated and managed by the public sector, although inadequately operated due to limited financial capacity in the sector. Currently, however, most of the water infrastructure is dilapidated and poorly maintained. The lack of proper water governance and the limited funding has resulted in inadequate services and poor access. Most of the existing institutions are operational in the urban areas with private sector providing the services and the government authorities providing limited regulation. The rural areas are generally underserved mainly as a result of the security challenges and the intermittent communal conflicts to control scarce water resources. Humanitarian agencies, NGO's and the donor agencies are in the forefront in scaling up water access in the rural areas.

The institutions and their responsibilities in Somalia are as follows:

- Ministry of Mineral and Water Resources: responsible for overseeing management of water resources.
- Ministry of Water and Mineral Resources, Somaliland: responsible for overseeing management of water resources in Somaliland region;





- Ministry of Local Government and Rural Development, Puntland: responsible for overseeing water resources in rural areas in Puntland region;
- Mumin Global Services Company: operates water system serving Baidoa;
- Golden Utilities Management Company: operates the Bossaso water system;
- Farjanno Water Company: operates the Jowhar water system.

Uganda

The Ministry of Water Resources and Environment is responsible for the entire water issues in the country including trans-boundary water development and management. Under this institutional framework, the Directorate of Water Development (DWD) and the Directorate of Water Resources Management (DWRM) under the Ministry of Water Resources and Environment are mandated to respect develop and manage water resources in the country. DWD is responsible for water development and water service regulation in urban and rural areas. DWRM is responsible for implementing national water laws, policies, plans and regulations, monitoring water quality and quantity and management of trans-boundary water resources. Since 2012, DWRM is implementing catchment-based water resources Management within the four regional water management zones in the country:

- Victoria Water Management Zone;
- Kyoga Water Management Zone;
- Albert Water Management Zone;
- Upper Nile Water Management Zone.

Nile Basin Initiative

The NBI is a regional intergovernmental partnership among 10 countries namely Egypt, Sudan, South Sudan, Ethiopia, Kenya, Uganda, DR. Congo, Rwanda, Burundi, and Tanzania. The objective of the NBI is: *“To achieve sustainable socio-economic development through equitable utilisation of, and benefit from, the common Nile Basin Water resources.”* The Cooperative Framework Agreement (CFA) is aimed at establishing a permanent institutional mechanism to promote and facilitate cooperation among the Nile Basin States in the conservation, management and development of the Nile River Basin and its waters.

The NBI is organised into three centres: Nile Basin Initiative Secretariat (Nile-SEC); Eastern Nile Technical Regional Office (ENTRO); and The Nile Equatorial Lakes Subsidiary Action Program (NELSAP), whose core functions are as follows:

- **Facilitating Basin Cooperation** (Nile-SEC): to facilitate dialogue, support and nurture cooperation amongst the Nile Basin countries so as to promote timely and efficient joint actions. It focuses on providing and nurturing the Platform for Cooperation; Strengthening Member States Capacity; Strategic Planning as well as Strategic Communication and Media engagement;
- **Water Resources Management** (Nile-SEC): to strengthen cooperative water resources management in the Nile Basin. Key activities under this core function include: Water Resources Analyses, Knowledge Services, Water Resources Assessment, Trans-boundary Policies and Program Technical Support; and capacity development;
- **Water Resources Development** (Led by ENTRO and NELSAP): focuses on promoting multi-country investments with the primary objective of developing the Nile Basin water resources in an equitable, efficient and sustainable manner to reduce poverty, promote economic





growth and integration among countries, increase resilience to climate and water related disasters and reverse environmental degradation.

To achieve the Shared Vision Objective, NBI prepared a 10-year strategy 2017-2027. The 10-year strategy identifies six strategic priorities:

- Goal 1: Water Security;
- Goal 2: Energy Security;
- Goal 3: Food Security;
- Goal 4: Environmental Sustainability;
- Goal 5: Climate Change adaptation;
- Goal 6: Strengthening Transboundary Water Governance.

Framework for Water Demand Management

A strong institutional and legislative framework at all levels of transboundary water resources management is key to successful implementation of integrated water resources management and can help to promote political and economic cooperation between riparian states, transparency and create trust. It is also clearly demonstrated that the role of the river basin organisations is crucial to ensure the proper design, planning, management, and development of transboundary water resources. However, cooperation on transboundary water management is a long process that needs strong political commitment and should include the collection of reliable data and monitoring

Although the existing trans-boundary water basins are often seen as a source of conflict and tension between and among riparian countries, in reality the development of trans-boundary water basins can also serve as a unique vehicle for promoting sub-regional and regional co-operation and thus promote peace, harmony and social and political stability across the region. Transboundary water management is a great opportunity to promote and implement the great objectives and ideals of regional initiatives like the NEPAD or the Millennium Challenge account.

Policies, strategies, and objectives of cooperation and how to achieve them shall be set out in the proposed IGAD Regional Water Resources Protocol (legal instruments) to be signed by the riparian Member States of IGAD to the agreement. This will include agreements on: (a) the Status of the water resources; (b) exchange and sharing of information and data; (c) investment policies; (d) establishment of transboundary organisation(s) for water resources development and management; (e) service providers and IWRM; (f) regulations for water quality; (g) regulations for water quantity; and (h) regulations on environmental standards. The success of the proposed institutional framework will depend upon the Member States' enactment of legislative and policy changes, approval and refining the frameworks, provision of political support, involvement of stakeholders, and guiding the provision of support by development partners.

The policies and legal frameworks for the IGAD countries are given below.

Djibouti

The government of Djibouti is aware of the critical water situation and has placed water and sanitation sector policy development and implementation among its priorities. This has translated into important institutional reforms such as the Water Code publication (1996), the establishment of a unified Water Directorate (1999), and a ministries coordination body. The National Water Master Plan (SNDE), prepared and approved in 2000, is currently being updated. With the adoption in 2006 of a national





integrated water and sanitation policy, centred on the creation of a sole operator — ONEAD — the government of Djibouti addressed the main constraints to the sector development.

In order to solidify progress and achieve reform, economic growth and poverty reduction, the government of Djibouti has developed a (\$341m) programme for economic and social development for the period 2006–2010. This programme will translate the priorities Identified in the Le Cadre Stratégique de Lutte contre la Pauvreté (CSLP — equivalent to Poverty Reduction Strategy Paper (PRSP)) into sector projects. Water supply and sanitation are the first priority with a funding allocation of \$151.4m. In 2007 the Government of Djibouti (in the form of ONEAD) began to implement the Water Supply Master Plan to address weaknesses in the city’s water supply, and to boost its supply capacity through to 2030. As part of the Master Plan, studies were conducted of all aspects of the city water supply, including a comprehensive assessment of the production, storage and distribution facilities, as well as an inventory of water sources and the building of new facilities to ensure that supply will meet projected demands.

In the case of the rural water supply, Government of Djibouti water policy has given priority to thirst reduction. Both National Water Master Plan (SNDE) and the rural water action plan, prepared by the Ministry of Agriculture, Livestock Production, and Marine Affairs-Water Resources (MAEM-RH) and the technical water secretariat, give a high priority to proper management and development of water facilities, to satisfy — in order of priority — (i) domestic needs — especially drinking water, (ii) livestock needs, and (iii) other agricultural needs (such as irrigation). In addition, the Master Plan followed up on previously implemented institutional reforms.

Ethiopia

The basic water related policy document in Ethiopia is the Ethiopian Water Resources Management Policy issued by the Ministry of Water Resources in July 2000. This document sets out management policy on water resources in general and those that relate to water supply and sewerage, irrigation, and hydropower. It also describes policy on various crosscutting issues, including those dealing with groundwater resources, watershed management, water-rights allocation, trans-boundary concerns, and technology, among others.

The overall goal of Water Resources Management Policy is to enhance and promote all national efforts towards the efficient, equitable and optimum utilisation of the available water resources of Ethiopia for sustainable socioeconomic development. The policy focus in improving the causes of adverse impacts among which the following stand out as significant:

- The lack of a sustainable and reliable water resources management strategy.
- Lack of efficient utilisation of water resources.
- Prevalence of unrealistic and unattainable plans and programs.
- Non-objective oriented programs and projects.
- Uncertainties and ambiguities in planning.
- Prevalence of intensive centralism of management that does not focus on rural development.
- Lack of institutional sustainability.
- Lack of operation and maintenance activities of water schemes.
- Ad hoc development practices lacking coherent objectives and continuity.





Proclamation No. 197/2000 declares that: *“All water resources of the country are the common property of the Ethiopian people and the State.”* It gives Ministry of Water Resources (MoWR) the authority to allocate and apportion water to all regions regardless of the origin and location of the resource. The proclamation lists a wide range of regulatory tasks among MoWR powers and duties

The water sector is identified as one of the three sectors that will be supported during the current Country Strategy for Development Cooperation with Ethiopia (2013–2016).

There is strong national water supply and sanitation policies and key agencies have clear roles and strategies. National policies are set by the Ministry of Water and Energy (MWE), formerly the Ministry of Water Resources (MWR), for water supply, and by the Ministry of Health for sanitation. In 2006 the government adopted a Universal Access Plan (UAP) to achieve 98% access for rural water supply and 100% access for urban water supply and sanitation by 2012.

Kenya

The National Water Resources Management Strategy (NWRMS) 2006, is the principal policy framework for Kenya’s water sector reform process. The NWRMS sets out four policy objectives:

- to preserve, conserve and protect available water resources and allocate it in a sustainable, rational, and economic way.
- to supply good quality water in sufficient quantities to meet the various water needs, including poverty alleviation, while ensuring safe wastewater disposal and environmental protection.
- to establish an efficient and effective institutional framework to achieve a systematic development and management of the water sector; and
- to develop a sound and sustainable system for effective water resources management, water supply, and sanitation development.

The NWRMS implementation measures have implications for groundwater management as it relates to:

- identifying the availability and vulnerability of groundwater resources.
- developing the institutional, capacity, and financing arrangements for groundwater management;
- supporting integrated water resources management; and
- considerations for groundwater quality management.

The legal frameworks for the Mara River Basin between Kenya and Tanzania (including the establishment of a trans-boundary water resources users’ association) and for the Sio-Malaba-Malakisi River Basin Policy recognises that Kenya has shared water resources, no specific proposals for the management of shared groundwater resources are included in the policy objectives. In 2009, the Ministry formulated a draft policy paper on shared water resources (MoWI 2009d) that did not give particular prominence to shared groundwater resources. Currently, there are efforts to develop cooperative frameworks between Kenya and Uganda. In both these cases, the catchment area has been defined on the basis of surface water catchment areas, and not on the basis of groundwater basins. There are no arrangements under way to develop a cooperative framework for the management of shared groundwater resources, such as the Merti, which is shared with Somalia.





As this review of policies and laws shows, the Water Act and the Water Resources Management provides guidelines together with other sectoral laws, such as the Physical Planning Act, include specific groundwater provisions. Notwithstanding that the common law has dealt with groundwater as a private resource. On the contrary, the Water Act has dealt with it as a public resource vested in the state and subject to control by the minister, as is the case with surface water. Legislation specifically regulates the construction of wells and boreholes. There are rules regulating wastewater discharges insofar as it affects groundwater and groundwater pollution.

These provisions form a sound basis for managing groundwater resources. However, the key weakness is that GCAs have not been designated anywhere in the country (except for NAS, which dates from before the enactment of the Water Act). There are, however, significant weaknesses in the implementation and enforcement of the legal provisions and guidelines. In a number of cases, the guidelines duplicate each other, particularly those made under the Water Act and the ones made under the Environmental Management and Coordination Act. The implementing agencies lack the institutional capacity to discharge their statutory mandate adequately. Furthermore, the priority given to groundwater, in contrast to that given to surface water, has been low. At the same time, there are limited inter-sectoral coordination mechanisms. This limits opportunities for cooperation, coordination and information sharing between the various implementing agencies.

In summary, Kenya's policy framework recognises groundwater as an important land-based resource. However, the treatment of groundwater in policy statements is cursory. Groundwater is dealt with under the general umbrella of water resources, and its significance is muted. No specific policy statements are made that would facilitate the sustainable use and management of groundwater resources. These shortcomings are reflected in the priority given to groundwater in the actual management of land-based resources, where surface water has a far higher profile.

South Sudan

The Water Policy 2007, formulated by the Ministry of Water Resources and Irrigation (MWRI) of South Sudan builds on a number of basic principles including:

- recognition that water has social, economic and ecological value in all its competing uses;
- integration of decision-making processes relating to water resources management on the basis of hydrological boundaries;
- separation of institutional roles relating to water resources management from those relating to resource development and service delivery;
- decentralisation of responsibility to the lowest appropriate administrative level; and
- participation of water users in decision-making processes surrounding planning, development and management of water resources, delivery of water and provision of sanitation services on equitable and sustainable basis.

The policy document addresses specific issues in relation to three main sub-areas of water policy – Water Resources Management (WRM); Rural Water Supply and Sanitation (RWSS); and Urban Water Supply and Sanitation (UWSS) – and establishes guiding principles and objectives in relation to each. As such it represents an important first step towards the establishment of a comprehensive regulatory framework for rational management and utilisation of water resources in South Sudan and provides a foundation for future development of more detailed strategies, setting out the institutional, administrative, technical and financial arrangements for policy implementation.





The Government of South Sudan recognises the scale of the challenge ahead, because effective management and use of water resources requires significant investment of financial and human resources in addition to sensitisation of the population on the importance of water, including equipping them with the necessary knowledge and skills to manage it properly. Intensive efforts are required to build capacities in different areas such as water resource assessment and monitoring, research and development of appropriate technologies, disaster management, environmental protection, and trans-boundary co-operation.

Water issues affect each and every citizen and the development of this policy ensured extensive consultation among a wide range of stakeholders at different levels of government including those from other sectors, as well as private businesses, nongovernmental actors and community groups. However, conclusion of a policy document is just a beginning; and the next step is to develop detailed Strategies and Acts to enable implementation of this Policy. Successful implementation will depend on continued collaboration among different arms of government and coordination between government and non-governmental partners; and active involvement of communities/beneficiaries.

Sudan

The National Water Resources Policy (1999) encourages the assessment, development and the management of the surface water and groundwater, including trans-boundary as a major water resource to be utilised for the socio-economic development of the country. The policy addresses issues of wise use, water conservation, trans-boundary rivers and aquifers, water pollution, and the water information management and exchange, the introduction of the integrated approach in water management especially in ground and surface water relations and interactions.

The Water Supply and Sanitation Strategy and Policy (2012-2018) are formulated, updated and now ready for endorsement. They address issues regarding water utilisation for use in drinking purposes. The Integrated Water Resources Management (IWRM) Policy and Strategy are in process and they consider water as major factor for the integrated natural resources management. To apply the IWRM approach the government with assistance from UNEP, UNICEF, UNESCO-Chair of water, JICA and the academia and research institutes are applying several projects that apply the IWRM approach including some groundwater basins in Darfur, Gash basin, Bara basin and others.

The Water Resources Act 1995 covers the required legal issues required for water. Also, regulations such as the Groundwater Abstraction Regulations 2017, the Surface water Abstraction 2017 and the Irrigation and Drainage Water regulations, 2017 is established and applied to control the groundwater development and management. The water allocations, permits licensing system for abstraction, construction and use is applied to regulate and organise the water abstraction and use for all beneficiaries' especially for big agricultural schemes and water supply fields to ensure equity, regulate completion avoid conflicts also to avoid water misuse, groundwater mining and water pollution.

Somalia

Somalia's policy and legal framework for the water sector is limited. Somalia has a Water Policy, National Water Strategy and Water Act 2004. Generally South-Central Somalia has no effective institutional or oversight authority. Policy and regulation on water is limited. The Programme of Action for climate change adaptation which was crafted in 2015 proposed the development of policy and institutional framework for the water sector in Somalia. This is awaiting funding by the donor community.





Uganda

The Constitution of the Republic of Uganda, 1995 clearly outline that the management of water resources is the responsibility of the Government and the state holds these resources in trust on behalf of the peoples. The Water Act Cap 152: 2000 mandates the Ministry of Water the duty to promote the rational management and use of the waters of Uganda and allow for the orderly development and use of water resources for various purposes.

The Water and Environment Sector consists of two sub-sectors namely the Water & Sanitation (WSS) sub-sector and the Environment & Natural Resources (ENR) sub-sector. The Water and Sanitation Sub-Sector comprises of Water Development, Water Resources Management, Rural Water Supply and Sanitation, Urban Water Supply and Sanitation, and Water for Production. The Environment and the Natural Resources Sub-Sector comprises Environmental Management; management of forests and trees; management of Wetlands and aquatic resources; and Meteorology; Weather and Climate Change.

With effect from July 2008, the Water and Sanitation Sector Working Group (WSSWG) was merged with the Environment and Natural Resources Working Group (ENRWG) to form the Water and Environment Sector Working Group (WESWG). The WESWG provides policy and technical guidance for the sector. It comprises representatives from all key sector institutions (Government, Development Partners and NGOs).

The two key pieces of legislation governing water management in Uganda are; The Water Act, Cap 152, and The Environment Act. Others are; The Water Policy. The main regulations under The Water Act are the Water Resources Regulations (1998) and the Waste Discharge Regulations (1998). The main regulations under The Environment Act are: The Environmental Impact Assessment Regulations (1998); The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations (1999); and The National Environment (Waste Management) Regulation (1999).

Other frameworks

The Nile Basin Cooperative Framework Agreement has been signed by six member countries that include Kenya, Ethiopia, Tanzania, Rwanda, Uganda and Burundi. Sudan, Egypt and Democratic Republic of Congo have not. Four out of the six countries that have signed, have also ratified it. It is worth noting here that six IGAD member countries that include Kenya, Uganda, Ethiopia, Sudan, South Sudan and Eritrea are members of the Nile Basin Initiative and therefore bound by the provisions of the Nile Basin Cooperative Framework Agreement.

This framework deals with the rights and obligations arising from the principle of equitable and reasonable utilisation and lists the factors that would be used in determining the equitable and reasonable entitlement. This framework came into being through negotiations from June 2005. The Nile River Basin Negotiation Committee was established by the Nile Council of Minister. The negotiation Committee negotiated all the 39 articles presented in the Nile River Basin Cooperative Framework Agreement.

The detailed outcome of the negotiations lays emphasis on the importance of the Nile river to the economic and social well-being of the peoples of the states of the Nile River Basin; desire to strengthen co-operation in relation to the Nile River, a great and vital resources that binds the nations of the Nile together; realisation that the Nile River, its natural resources and environment are assets of immense





value to all the riparian countries; a framework agreement is necessary to govern the member states relationship in regard to the Nile River Basin in order to promote integrated management, sustainable development and harmonious utilisation of the water resources of the Nile river basin; mutual interest to establish an organisation to assist the member states in the management and sustainable development of the Nile River Basin for the benefit of all; and the existence of the global initiatives for promoting co-operation on integrated management and sustainable development of water resources.

Water demand in the IGAD region

The demand for water in the IGAD region is expected to increase significantly (see Table 2.7)²⁴. For example, irrigation water requirements become increasingly significant; a four-fold increase from around 38km³ in 2019 to some 146km³ in 2050. Furthermore, total annual water withdrawals for the industrial sector in the region are projected to increase from about 1.9km³ in 2019 to 2.3km³ in 2024 to reach about 3.1km³ in 2030, with an increase of 64% the base year 2019. Between 2030 and 2050, withdrawals are projected to reach 7.3km³, an increase of 288%.

The water demand analysis also shows the trans-boundary basins that will become stressed. In the Juba-Shebelle Basin, for example, water demand for agriculture will grow from 62.5% in 2019 to 77.9% in 2024, 108% in 2030 and 125% in 2050 causing serious demand deficit in 2050 as this would require more water than is available in the basin surface water resources. Clearly whichever way one looks at the situation, the pressure on water resources in the IGAD region likely will be immense in the coming years.

Table 2.7: IGAD total projected water demand

	2019	2024	2030	2050
Domestic demand (km ³)	4.6	5.2	5.7	8.0
Livestock (km ³)	4.4	5.0	5.6	8.9
Irrigation (km ³)	37.7	46.4	62.0	146.3
Others (industry, tourism, etc.) (km ³)	1.9	2.3	3.1	7.3
IGAD total (km³)	48.6	58.8	76.4	170.5

Source: IRIMP Volume 2: The Evidence Base

The Water Sector Strategic Objectives

The overarching vision is to ensure *the provision of adequate water for the growing economies of IGAD in a manner which is environmentally sustainable and directly and positively contributes to the water, energy, and food security nexus*. While the need for improved access to clean water is felt in every member state, the IRIMP will focus strategically on the *transboundary water basins that require transboundary interstate agreements concerning shared use of water resources for mutual social and economic benefit*.

It is envisaged that the water sector in the IGAD region will progressively evolve from a state characterised by deficits, and vulnerabilities and stresses to one that is able to provide adequate water for all future demands and in a manner that is environmentally sustainable and fully takes into account possible adverse impacts of climate change.

The Vision for the three time-periods is given below:

²⁴ Details of water demand and supply projections are given in *Volume 2: The Evidence Base*





Short term (2020-2024) Strategic Objectives	Medium term (2025-2030) Strategic Objectives	Long term (2031-2050) Strategic Objectives
Inter-state agreements concerning the sharing and use of water related to trans-boundary water resources are agreed and enshrined in related policies, regulations and laws of the relevant member states.	At least half of all trans-boundary water basins are internationally recognised as being managed sustainably and are providing sufficient water for the relevant members' states.	All trans-boundary water resources are managed in a sustainable and regenerative manner, and able to provide adequate water for each member state.

The groundwork for achieving the vision has been laid. The IGAD region is moving towards good water governance which is a key underpinning for sustainable development. The IGAD member states have been progressively taking practical steps towards improving water governance systems at both the national and regional levels by strengthening relevant institutions in all water subsectors by improving institutional coordination, integrating policies, minimizing duplication of efforts and wastage of resources, and by strengthening institutional capacities and capabilities.

The policies of the member states promote industrial development, including irrigation, and aim to increase access to safe drinking water. This makes freshwater, whether surface or underground, a focal issue in government strategies. The IGAD region Water Resources Policy has proposed measures to be undertaken and investments to be targeted to reduce the problems in the deficit areas of Ethiopia, Kenya, Somalia, Djibouti, Eritrea, Sudan, and Uganda. The private sector will become a key player in the water sector as realistic values are attached to freshwater.

Recommendations for IGAD Water Sector Policies, Harmonisation and Alignment of Existing Policies

It is recommended that IGAD member states commit to water policy reform that will ensure adherence to the Integrated Water Resources Management (IWRM) principles, and which would facilitate private sector participation. This is in-line with the outcome of the IGAD first Meeting of the Ministers of Water Resources on 21 January 2015 in Addis Ababa, Ethiopia, at which approval was given for the adoption of IGAD Regional Water Resources Policy. Further the ministers urged the IGAD Secretariat to take the necessary steps for the development of the Water Protocol for the implementation of the regional policy, and it was recommended that the IGAD Secretariat establish a Unit to follow up the implementation of the regional water resources policy, and to ensure the development of the Water Protocol and sustainable water resources management in the region.

The IGAD Regional Strategy Implementation Plan entails funding and institutional arrangements of the programmes; transitioning from medium-term to annual action plans; and monitoring and evaluation framework that will avail the required policies, legal and institutional frameworks for the successful implementation of the Plan.

Progress has been made. At the time of writing, IGAD member states were seeking to harmonise national laws and policies with the national development agenda on Water Resources. Impact assessment need to be completed, however, to ensure that policy interventions meets the national development agenda on Water Resources with respect to taking appropriate steps to sustain and manage water resources, in conjunction with other resources, and to ensure that there is public participation in programmes. The specific recommendations of IRIMP are as follows:

- Formation and strengthening of a Transboundary Basin Management Unit;





- Sharing data, including: hydro-meteorological; river flows; population; biodiversity; and economic activities data of the basins;
- Understanding the cultural practices of the basin population;
- Technological transfer of the international best practice in river basin management.

Formation of a Transboundary Basin Management Unit

Management of a transboundary basins requires a common information sharing desk. This can only be achieved via a transboundary basin management unit that will ensure there is data sharing, management, and planning. This will be achieved via providing the necessary transboundary water resources National and Regional Policies, Strategies and Institutional Frameworks or has outdated ones, harmonisation of the policies and programmes, domestication of the policies and programmes in each respective state and ensuring adherence/ enforcement. These will result in regional cooperation in sustainable water resources management established and institutionalised; policy and legal frameworks in water resources programme improved; regional and national institutions for water resources management in the region strengthened and the regional water resources management information systems and observation networks strengthened/developed that will help in achieving the gaps as listed below.

Hydro-meteorological data of the basin

The Hydro-meteorological data of the basin is known to have major quality issues. They thus need to be documented, assessed, and rectified to enable future plans for rehabilitation of the Hydro-meteorological monitoring stations that are not currently functional. There is need to increase the number of stations for better representation. These will give a working basis to enable merging with radar altimetry data for modelling purposes.

River Flows

The existing gauging stations of the basin need to be documented, assessed and rectified, rehabilitated and where the station is not near each other as tributaries joins the main river, there is need to increase the number for better representation to enable data collection and compilation future usage.

Groundwater Resources

The existing data for the transboundary aquifer groundwater monitoring stations within the river basins in the IGAD region need to be documented, assessed and rectified, rehabilitated and where the station are not near each other, there is need to increase the number for better representation to enable data collection and compilation at least within the planning, study and design stage and there after maintained for future usage. It is thus recommended to establish key stations for monitoring groundwater levels to improve on the reliability on groundwater data.

Population and economic activities

There is an urgent need to document and update the trans-boundary basins population complete with the existing economic activities, with data collected through a basin population census. The data for the current economic activities within the basins complete with accurate basins population will facilitate in planning for the basins sustainable resources utilisation that will ensure equitable sharing.

Biodiversity census

A census of biodiversity is also recommended to help accurately compute the required environmental flow for the basins. These needs to be assessed for proper planning not only for utilisation of the basin resources like planning for dams (fish passage, flooding by reservoir, silt movement, etc.), but also for conservation planning on how to ensure sustainable usage of the biodiversity.





Climate change

Climate change data is a major gap as the available information is not catchment specific. There is a need to assess the basin-specific climatic change trend for the proper planning not only for utilisation but also for conservation planning and disaster management. It is thus recommended to ensure there is a continuous observation of the metrological data at the key stations to improve the reliability of the data on climate change trend.

Technology transfer

The knowledge and technology gap between researchers and the population of the basins is quite wide, rendering the studies undertaken ineffective and unable to benefit the intended beneficiaries. There is thus an urgent need to build capacity and to transfer the knowledge and technology to the field officers and natives of the basins through various available options like integration of conservation units in school curriculum, program sponsorship in national media and seminars. Water harvesting and storage technology will ensure that adequate water is available to all IGAD member states. These includes rainwater harvesting at domestic level via water storage tanks, water

Cultural practices

The cultural practices of the populations of the basins need to be studied for understanding the required technology that will be culturally acceptable by the people for a sustainable utilisation of the resources. There is thus need for consultative engagement with the basins population to document the diverse culture of the population. These will help when planning to include the people's way of conservation in the proposed mitigation measures and technology.

The Way Forward

There exists huge potential for the development of water resources in the IGAD transboundary river basins. Development of this nature should focus on prudent management of the water resources to address the problems of both extremes that includes too much or too little water. This must involve infrastructure rehabilitation and the re-establishment of national and regional institutions for water management. With regard to floods, an integrated flood management approach should be adopted in the transboundary river basins. The integrated flood management approach would reduce the effects of flooding while at the same time preserving the natural resources of the flood plain. Transboundary issues arising from the use of water from the Rivers Basin should also be addressed through an integrated and holistic approach.

These National and Regional Policies, Strategies and Institutional Frameworks will facilitate Member States to draft legislations for water resources that meets the national development agenda on Water Resources and ensures there is an integrated water resource management plan that applied at all times, be mindful of the environmental factors that affect water resources, preserve water resources appropriately by preventing water pollution and preserving native ecosystems, take appropriate measures to address flooding and drought (both in communicating quickly to nations sharing a water resource and in working to eliminate or prevent harm to a water resource and the population dependent on it), ensuring there is reasonable openness to the international community of information related to water resources and their usage, particularly in those cases where nations sharing a water resource may be impacted by intended plans and finally by ensuring the transboundary water resources are utilised in an equitable manner that make reasonable efforts not to cause harm to one another by the ways in which the water is used. Reasonable consideration of such factors as past customary usages of the resource and balancing variant needs and demands of all bordering nations will thus be addressed.



Chapter Three: The Infrastructure Development Programme



Chapter Three: The Infrastructure Development Programme

Section 3.1 Introduction

This chapter presents the proposed infrastructure development programme (IDP) for each of the nine IGAD corridors: Northern; Djibouti; Port Sudan; LAPSET; Berbera; Massawa; Mogadishu; Kismayo; and Assab. The civil aviation sector is presented separately at the end.

The IDP is presented as a series of annotated maps illustrating the current status of physical infrastructure on the corridor, and the physical infrastructure projects that are proposed for each time period (to 2024, to 2030, to 2050). Following each map is a table providing more detail on each project to be implemented during that planning period.

Alternatively, the IDP is presented by sector, rather than by corridor, in Annex Two.

The majority of the projects in the IDP are sourced from the IRIMP project inventory²⁵ which was assembled during the first phase of the project. These projects have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. Where capacity gaps were identified, and there was no existing project in the inventory to address the gap, a new project has been proposed – this is particularly the case in the final planning period (2031-2050), which can be considered more of a long-term vision for the development of each corridor.

The IDP also recommends economic infrastructure initiatives to be implemented in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. These are presented as a table following the physical infrastructure development programme for each corridor.

²⁵ Project data sheets for all projects in the inventory are presented under separate cover





Section 3.2 Northern Corridor

Status	Stage 3 – Logistics Corridor
Total length of corridor	2,550 km (IGAD region only)
Countries served	Kenya, Uganda, South Sudan, (non-IGAD: Rwanda, DRC, Burundi)
Distance from capital to port	Nairobi, 486 km; Kampala, 1,138 km; Juba, 1,615 km
Total population within 50km	130 million
Total intercontinental trade	30.57 million tonnes (27.64, IGAD)
Total intra-regional trade	1.36 million tonnes (IGAD only)
Transport infrastructure	Port, roads, railway, oil products pipeline
ICT, energy, water connections	Existing 132kV power transmission interconnector from Kenya-Uganda, new 220/400kV interconnector under construction, fibre optic cables between Kenya and Uganda. Being an existing network, several augmentation and rehabilitation projects are lined along the various hubs for water supply like the Kocholia and Nyimur among others in the medium term.

The Northern Corridor links the busiest port in the IGAD region at Mombasa to a vast hinterland of approximately 130m people covering Kenya, Uganda and South Sudan, as well as Rwanda, Burundi and eastern DRC. The multi-modal, multi-sectoral corridor is the most advanced in the region, and is the only one to have a functional trans-border Corridor Management Institution (CMI), the Northern Corridor Transit and Transport Coordination Authority (NCTTCA), formally established in 1985 by the Northern Corridor Transit and Transport Agreement to oversee the implementation of the agreement, to monitor its performance and transformation into an economic development corridor. It serves as a model for the development of the other IGAD corridors.

Achievements of the NCTTCA include: Elimination of multiple security bonds and multiple customs declarations; interfacing of Customs Systems and joint verification of multiple Customs documents; reduction of blockages such as roadblocks and introduction of high-speed-weigh-in-motion systems to reduce multiple weighbridges; harmonisation of national customs laws; domestication of polices such as the implementation and effective monitoring of EAC Vehicle Load Control (VLC) and COMESA Trade Facilitation Instruments; and mobilisation of funding for rehabilitation of major highways.

Recent investments in the corridor have seen the upgrading of road segments in Kenya and Uganda to regional corridor requirements; OSBPs constructed at Malaba, Busia and Nimule-Elegu; construction of SGR Phase 1 from Mombasa to Nairobi, completed in 2017 at a cost of \$3.6billion and ongoing construction of Phase 2A to Naivasha; and expansion of Mombasa port container terminal. Nonetheless, gaps in the corridor infrastructure remain, including the extension of the SGR network and the petroleum products pipeline from Kenya to Uganda, and the urgent rehabilitation of the road from Nimule to Juba.

The IRIMP study has identified a number of projects related to the Northern Corridor in the inventory. These have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1. The data in these summary tables are presented below in a series of annotated maps illustrating the proposed development of the corridor infrastructure in each planning period to 2050. Following each map is a table providing more detail on each project to be implemented during that planning period. The final section provides recommended economic infrastructure initiatives in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services.





Case Study 1: Busia One Stop Border Post

The Busia border crossing, located 430km north west of Nairobi and 200km east of Kampala, is the busiest in East Africa with around 900 vehicles crossing per day in 2011. To streamline and accelerate the border crossing process, the decision was taken to construct an OSBP with the MoU signed between Kenya, Uganda and the sponsor TradeMark East Africa in 2013. Construction started in 2016 and completed in 2018 at a cost of \$12.9m. The facilities provided include office buildings, roads and parking yards, cargo verification bays, scanner shed, passenger sheds, targeting booths, warehouse and canopies, ICT networks and hardware, furniture, and institutional support to the border agencies.

The impact of the project has been immediate with border crossing times from Uganda to Kenya reduced from 1 hour 26 minutes to 39 minutes, and Kenya to Uganda reduced from 14 hours 20 minutes to 3 hours 40 minutes. Increased efficiency has resulted in an increase in revenue collected, with the Uganda Revenue Authority reporting a 40% increase.

Important lessons can be learned for application to other IGAD corridors. First, with an OSBP a relatively small investment in physical infrastructure of just \$12.9m can have a big impact on reducing journey times. However, it is not so much the physical infrastructure but the 'economic infrastructure' underpinning them in the form of harmonised and simplified entry and exit procedures, agreements for joint processing of documents, and cooperation between border officials and agencies that make this possible. Both are required for an OSBP to be successful.

Case Study 2: Sio-Malaba-Malakisi Basin Transboundary Water Project

The Sio-Malaba-Malakisi (SMM) basin, shared between Kenya and Uganda, faces constraints from reduced water quality and quantity in large parts of the river catchments. Despite the potential for development and investment, the basin remains underdeveloped, limiting economic growth. Based on the request from Kenya and Uganda and upon meeting the selection criteria, the SMM basin was selected as a demonstration basin under the project *Strengthening Transboundary Water Governance and Cooperation in the IGAD region*.

A memorandum of understanding was signed in 2015 by Kenya and Uganda with NELSAP on the integrated management and development of the transboundary water resources of the SMM river basin. The two parties developed an investment framework and a road map for development of a fully-fledged SMM investment plan. A first Sio-Malaba-Malakisi basin stakeholders' workshop was held in May 2017 in Kenya, attended by representatives from national and local government authorities, working in water, environment, energy and agriculture, as well as representatives from water users' associations and NGOs active in the Lake Victoria and Nile Basins. Two further workshops were held and a portfolio of 12 sub-projects have so far been identified, with a total cost of just less than \$200m, including the Angololo dam and Malaba cross-border irrigation scheme.

Mobilizing finance for the projects has so far been a challenge. Overall, however, the project has been successful as a forum for engaging stakeholders from both countries to agree a framework for cooperation in managing the transboundary water resources. This model could be replicated in other transboundary basins in the IGAD region.





Photos of infrastructure on the Northern Corridor, clockwise from top left: Border crossing at Busia OSBP; Phase 2 of the Mombasa port expansion; SGR train carrying containers from Mombasa port to Nairobi; Phase 1 of SGR line between Mombasa and Nairobi





Figure 3.1 Current status of physical infrastructure on the Northern Corridor, 2019

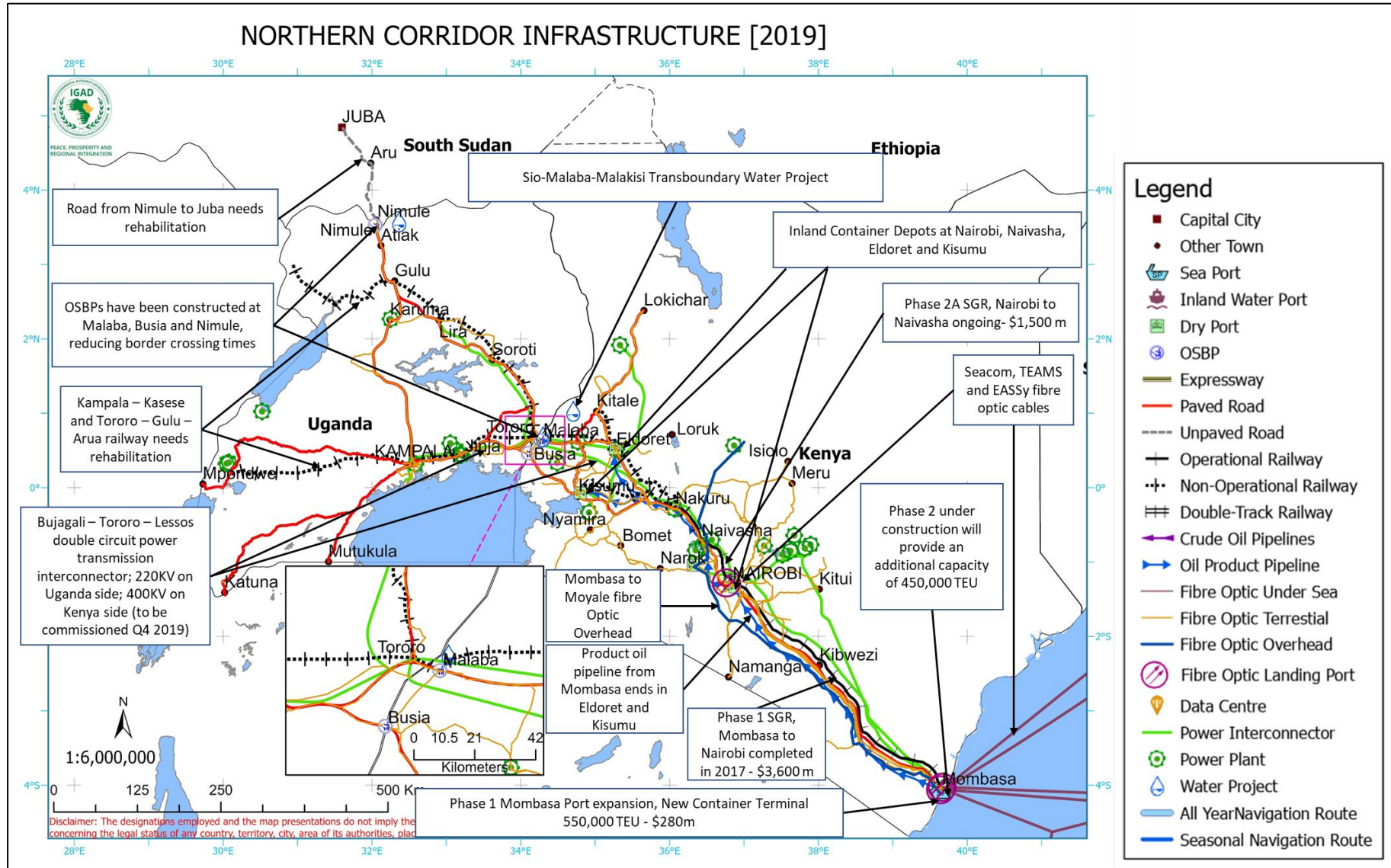




Figure 3.2: Development of physical infrastructure on the Northern Corridor, 2020-2024

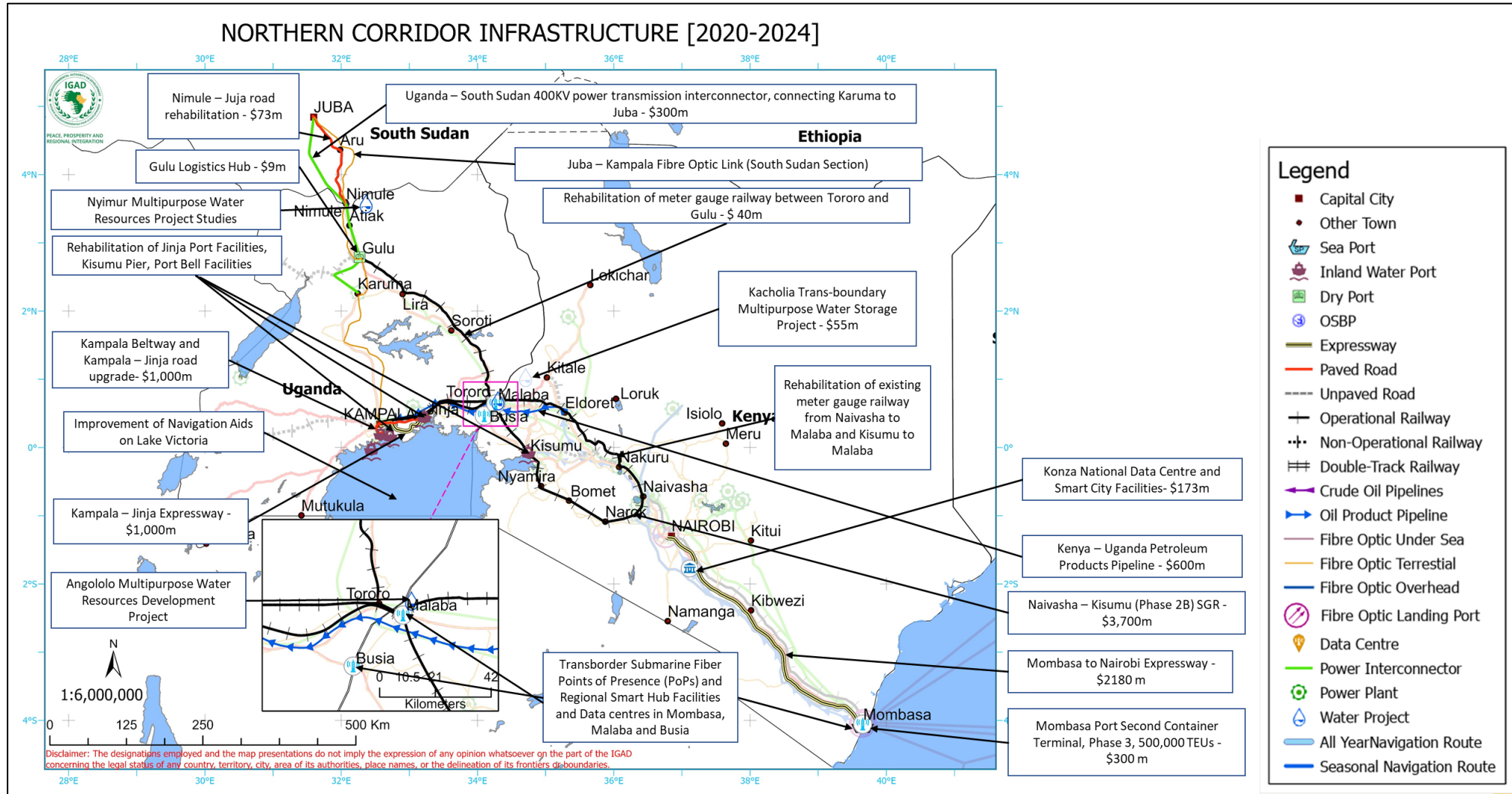




Table 3.1: Planned physical infrastructure projects on the Northern Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPN01	Mombasa Port Second Container Terminal, Phase 3	Sea Port	The second container terminal is being built on 100ha at Kilindini Harbour to relieve congestion at the main port. The project is being built in 3 phases, phase 1 was completed in 2016, the second is ongoing and the third will commence upon completion. Phase 3 will add a further 500,000 TEUs of capacity, bringing the total capacity of the second container terminal to 1.5m TEUs.	S2B Feasibility	300	Concessional finance – loan from JICA	Kenya Ports Authority (KPA)	Completion of Phase 2
TRDN02	Mombasa – Nairobi Expressway	Road	The planned Nairobi-Mombasa Expressway will feature four lanes, which will be expandable to six lanes. The road starts at Gitaru along the Nairobi–Nakuru Highway, approximately 24 km northeast of Nairobi City centre. It continues in a general southeasterly direction, through Ngong, Ongata Rongai, Kisaju and Isinya to rejoin the existing Nairobi–Mombasa Road, just north of Konza. The highway passes through nine Kenya counties to end in the city of Mombasa at the Changamwe Roundabout, a total distance of about 525 km.	S3B Transaction Support & Financial Close	2,180	PPP – loan from US Exim Bank	KeNHA	Finalise contracts and commence construction work
TRAN03	Naivasha – Kisumu (Phase 2B) SGR	Railway	Phase 2B of the Kenyan SGR line, measuring 262 km, passes through Naivasha, Narok, Bomet, Nyamira to end at Kisumu. The design of the project includes upgrading the port of Kisumu.	S3A Project Structuring	3,700	Concessional finance – loan from Chinese Exim Bank	Kenya Railways Corporation (KRC)	Financing modalities to be addressed between China Exim Bank and GoK
EPPN04	Kenya-Uganda Petroleum Products Pipeline (Uganda Section)	Petroleum/Gas Pipeline	This project involves the extension of the petroleum pipeline from Eldoret to the border with Uganda and on to Kampala, approximately 340 km. In November 2014, the International Finance Corporation, an arm	S3A Project Structuring	600	Concessional finance – IFC loan	Kenya Pipeline Company; National Pipeline	The project was to be developed jointly by GoK and GoU, with each





			of the World Bank, pledged to lend US\$600 million towards the construction of the Eldoret-Kampala section of the project.				Company Uganda Limited	responsible for the section under its geographical jurisdiction.
TRDN05	Kampala – Jinja Expressway	Road	The Kampala–Jinja Expressway, also known as the Jinja–Kampala Expressway, is a proposed four-lane toll highway in Uganda, linking Kampala, the capital and largest city of Uganda, with the town of Jinja 77 km to the east. The project will contribute to key strategic transport priorities for the region and help meet the objectives of regional integration, socio-economic development and investment in transportation infrastructure outlined in key national policies such as the Uganda Vision 2040, the National Development Plan II (2015/16 – 2019/20) and National Transport Master Plan.	S3B Transaction Support & Financial Close	1,000	PPP and loan AfDB	UNRA	Award of contract
TRDN06	Kampala – Jinja Highway	Road	Rehabilitation of 75 km of existing Kampala–Jinja road to widen and strengthen the carriageway. The road forms a critical section of the Northern Corridor, linking landlocked East African countries with the Port of Mombasa.	S2A Pre-Feasibility	7	Government funds	UNRA	Review the feasibility of the project alongside the Expressway
TRDN07	Kampala Outer Beltway	Road	The Kampala Outer Beltway, also known as the Kampala Outer Ring Road, is a planned 101 km road circumnavigating Kampala.	S3A Project Structuring	1250	PPP	UNRA	Review recently completed feasibility study, structure financing modalities
TRAN08	Rehabilitation of Meter Gauge Rail Between Tororo and Gulu	Railway	Rehabilitation of the 375 km meter gauge line between Tororo and Gulu. The line is not currently operational.	S3B Transaction Support & Financial Close	40	Donor grant – EU grant of \$26.8m	Uganda Railways Corporation	Work due to commence in 2019





TDPN09	Gulu Logistics Hub	Inland Container Depot	The proposed developments include the container yard; railway siding; container freight station; warehousing complex; vehicle holding area and traffic flows; access roads, truck stop (parking); administration building; container light repair workshop; customs office; perimeter wall; security gate and guardhouse.	S2B Feasibility	9	Donor grant – funding from DFID and EU	TradeMark East Africa	Feasibility study to be conducted in 2019 and work to start in 2020
TRDN10	Nimule – Juba Road Rehabilitation	Road	This 192 km road was originally paved and upgraded to regional corridor standards by USAID in 2011. However, due to the civil war and a lack of maintenance the road is now dilapidated and requires rehabilitating.	S1 Project Definition	73	Donor grant	South Sudan Roads Authority	Full feasibility and detailed costing to be undertaken
TIWN11	Rehabilitation of Jinja Port Facilities	Inland Port & Waterway	Rehabilitation of the Jinja Port Facilities. Jinja port is in very poor condition with most of the rail wagon link span planking deteriorated and fendering systems completely decayed. The water depth was said to be 4m. The general cargo berth mooring facilities (quay wall and bolders) are damaged and the quay pavement is very poor.	S1 Project Definition	3	Government funds	Ministry of Works and Transport Uganda	Full feasibility and detailed costing to be undertaken
TIWN12	Rehabilitation of Kisumu Pier	Inland Port & Waterway	The rehabilitation and renovation of the port is meant to allow bigger vessels to dock in Kisumu to enhance trade with neighbouring countries. The work being undertaken include construction of 1,000-capacity container yard and rehabilitation of the Kisumu pier by Kenya Ports Authority to make the port the hub of trade in East Africa.	S2A Pre-Feasibility	30	Government funds	Kenya Ports Authority	Full feasibility
TIWN13	Rehabilitation of Port Bell Facilities	Inland Port & Waterway	Rehabilitation of the Port Bell facilities. Port Bell has a Roll on - Roll Off (RoRo) rail wagon link-span and a general cargo berth. Its meter gauge rail infrastructure is in poor state but still functional; however, the port has no rail accessibility, as encroachment on the	S1 Project Definition	3	Government funds	Ministry of Works and Transport Uganda	Full feasibility and detailed costing to be undertaken





			connecting rail line prohibits trains from entering the port.					
TIWN14	Improvement of Navigation Aids on Lake Victoria	Inland Port & Waterway	Establishment of navigational aids such as light houses, lightships, buoys and radar beacons on the Lake to improve the safety of shipping.	S1 Project Definition	25	Donor grant	Kenya Ports Authority	Funding to be identified
EPIN15	Uganda – South Sudan Interconnector (400kV)	Power Interconnector or	Also known as the Karuma–Juba High Voltage Power Line, is a planned double circuit transmission line of 400kV, connecting the high voltage substation at Karuma, in Kiryandongo District, in the Western Region of Uganda, to another high voltage substation at Juba, South Sudan. The line is approximately 190 km in Uganda, running from Karuma to Olwiyo and on to the border at Elegu. In South Sudan it runs 190 km from Nimule to Juba.	S2A Pre-Feasibility	300	Concessional finance	Uganda Electricity Transmission Company; South Sudan Electricity Corporation	Full feasibility to be undertaken
IFON16	Juba-Kampala Fibre Optic Link (South Sudan Section)	Fibre Optic Cable	This proposed fibre optic cable linking Juba to Kampala, approximately 630km, was featured in PIDA PAP 2020.	S1 Project Definition	19	Donor grant	South Sudan Ministry of Telecommunications and Postal Service	Full feasibility to be undertaken
WMRN17	Kocholia Trans-boundary Multipurpose Water Storage	Multi-purpose Reservoir	This project is to develop a multi-purpose dam and reservoir primarily for irrigation at Kocholia.	S2A Pre-Feasibility	55	Concessional finance – AfDB and Korea Keim Bank	Kenya State Department for Irrigation; Nile Basin Initiative	Full feasibility to be undertaken
WMRN18	Nyimur Multipurpose Water Resources Project Studies	Multi-purpose Reservoir	The core scheme of the project consists of a 26 m head dam and reservoir on Nyimur River and five (5) modules of irrigated lowland rice of approximately 5,105 ha. A mini hydropower plant with a capacity of 350 kW is included in the dam component	S2B Feasibility	2	Donor funds	Nile Basin Initiative (NBI)/NELSAP Coordination Unit, Governments of Uganda, and South Sudan (Ministries of Water and	Project structuring (financial structuring plan)





							Natural Resources)	
WMRN19	Angololo Multipurpose Water Resources Development Project	Multi-purpose Reservoir	The project consists of a proposed 30-metre-high dam with a reservoir capacity of 43.0 million cubic metres that will supply potable water to 20,000 people and irrigate 3,300 hectares (1,180 Ha in Kenya and 2,120 Ha in Uganda). The dam will generate 1.75MW hydropower.	S2B Feasibility	1.65	Donor Grant - African Development Bank/ African Water Facility NEPAD-IPPF and Financing from Governments of Kenya and Uganda	Ministries of Water and Natural Resources – Kenya and Uganda	Project structuring (financial structuring plan)
IFON20	Transborder Submarine Fibre Points of Presence (PoPs) and Regional Smart Hub Facility and Data centre	Fibre Optic Cable and Data Centre	The project will promote inter-connectivity infrastructure at the border points which will comprise of 400 Gbps PoPs and Smart Hub data centre in Mombasa are currently unavailable. The project interconnection will contribute to the Trans – African ICT highway Cape to Cairo, Northern Corridor and LAPSSET corridor.	S1 Project Definition	70	CONCESSIONAL FINANCE	IGAD Member States Ministries of ICT	Full Feasibility to be undertaken
IFON21	Konza National Data Centre and Smart City Facilities	ICT Data Centre	The Konza Technopolis will be a sustainable, World Class technology hub and a major economic driver in IGAD region	S4B Construction	173	Konza Technopolis Authority; Ministry of ICT	IGAD Member States Ministry of ICT	Commissioning and operationalisation
IFON22	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies





Figure 3.3: Development of physical infrastructure on the Northern Corridor, 2025-2030

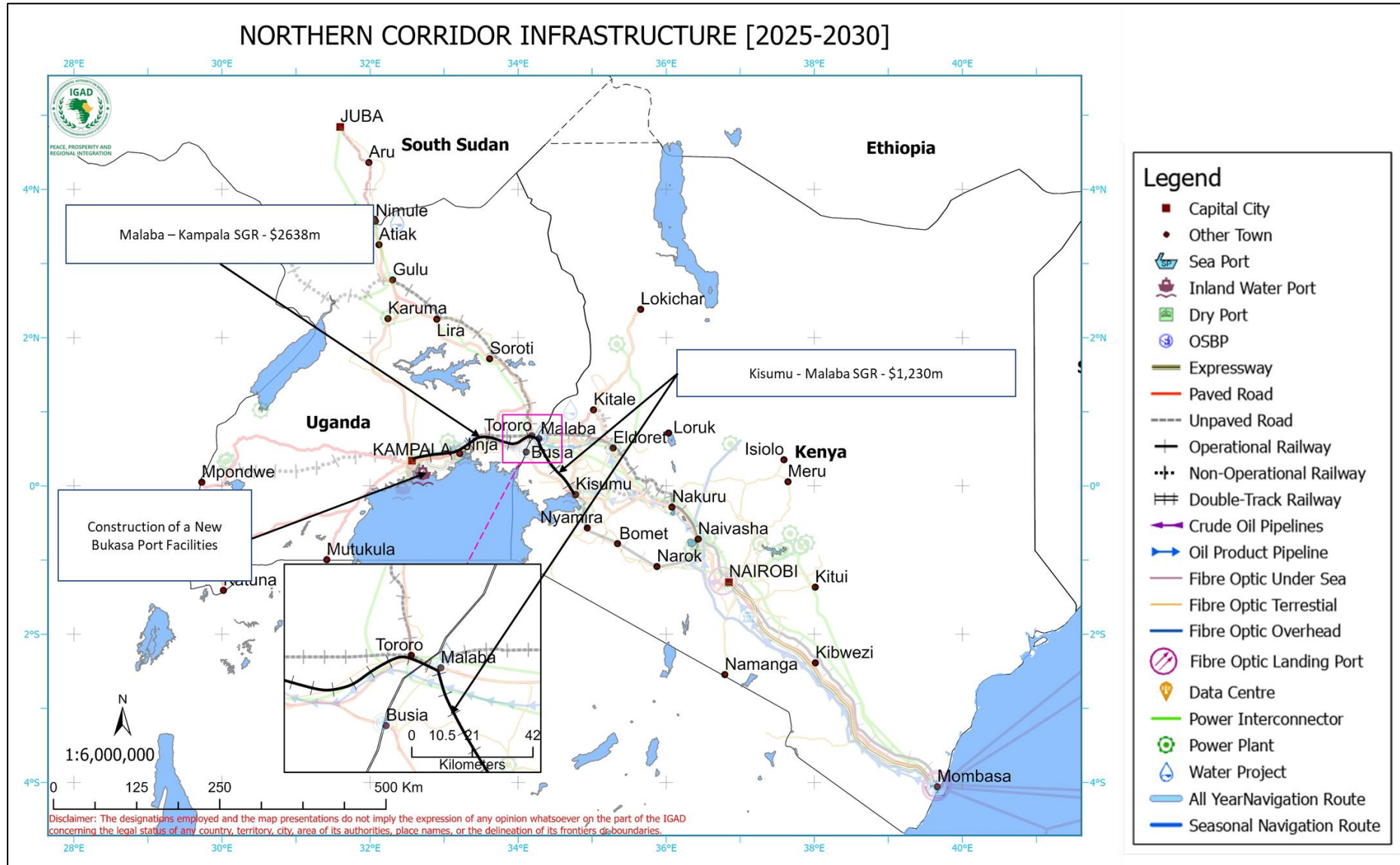




Table 3.2: Planned physical infrastructure projects on the Northern Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAN23	Kisumu – Malaba (Phase 2C) SGR	Railway	The 107 km line will stretch from Kisumu to the border with Uganda at Malaba via Yala and Mumias.	S3A Project Structuring	1,230	Concessional finance – China Exim Bank	KRC	Financing and construction for the project is predicated on co-construction with the Malaba – Kampala section in Uganda
TRAN24	Malaba – Kampala SGR	Railway	Also referred as the Eastern Line, would stretch from the border with Kenya at Malaba, through Tororo and Jinja, to end at Kampala. The total distance is approximately 215 km.	S3A Project Structuring	2,638	Concessional finance – China Exim Bank	URC	To be constructed at the same time as the Kisumu – Malaba section in Kenya
TIWN25	Construction of a New Bukasa Port Facilities	Inland Port & Waterway	The construction of Bukasa port will not only see the construction of a port terminal, but also intermodal rail and road infrastructure to create an East African interstate logistics hub	S2A Pre-Feasibility	180	Government funds	URC	Feasibility study





Figure 3.4: Development of physical infrastructure on the Northern Corridor, 2031-2050

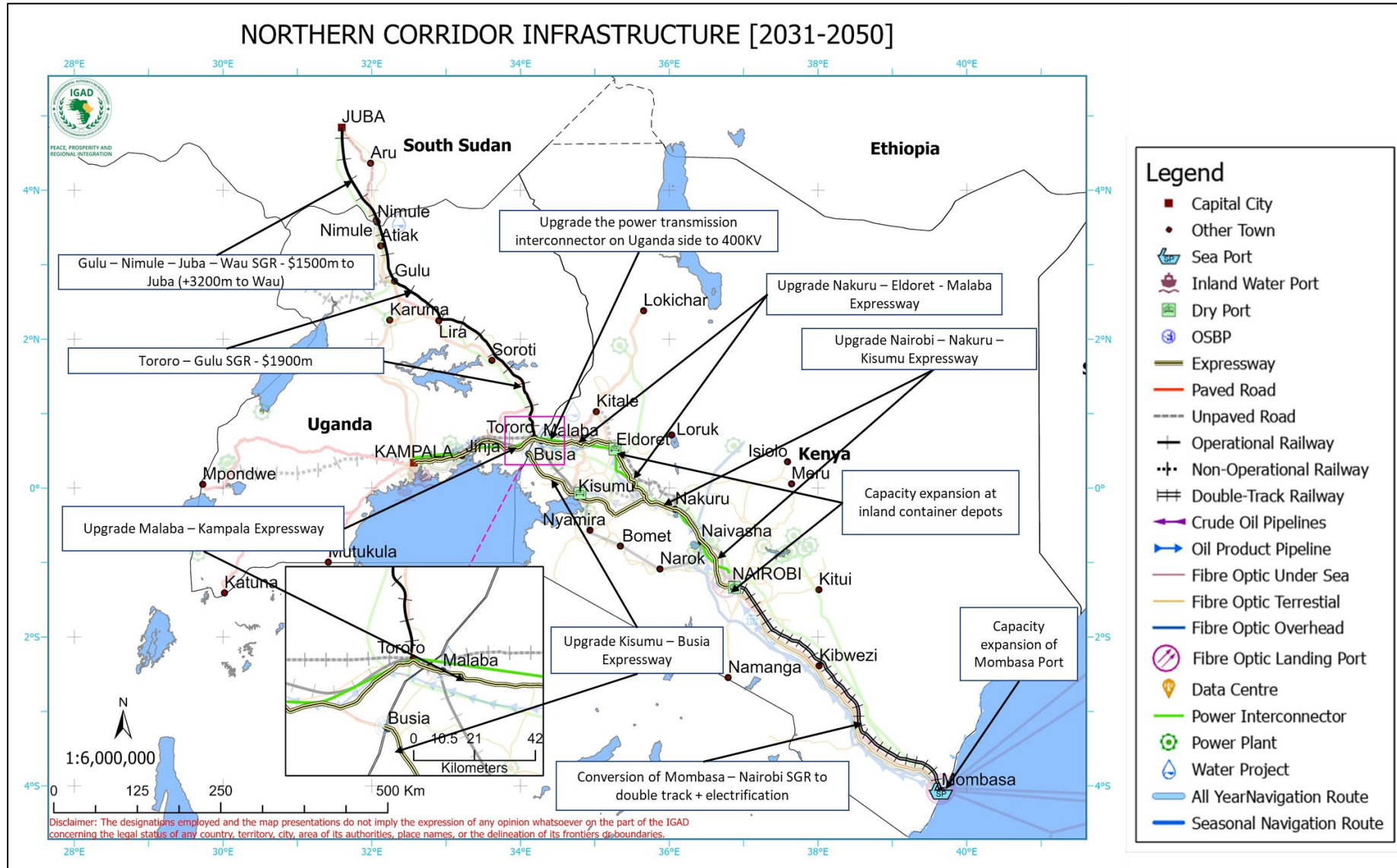




Table 3.3: Planned physical infrastructure projects on the Northern Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAN26	Tororo – Gulu SGR	Railway	Standard gauge railway project. Also referred to as the Northern Line, would extend from Tororo, and go through Mbale and Lira to Gulu, a distance of approximately 375 km.	S2A Pre-Feasibility	1,900	Concessional finance – China Exim Bank	Uganda Railways Corporation	Full feasibility, await completion of other SGR lines
TRAN27	Gulu –Nimule – Juba – Wau SGR	Railway	Standard gauge railway project from Gulu, one spur will continue north to Elegu for 107 km in Uganda, and on to Nimule and Juba in South Sudan, 200km. A final stretch of 650 km will end the line in Wau.	S2A Pre-Feasibility	4700	Concessional finance – China Exim Bank	Ministry of Transport, South Sudan	Full feasibility, await completion of other SGR lines
TRDN28	Nairobi – Nakuru Expressway	Road	In the long-term horizon the road from Nairobi to Nakuru will need to be upgraded to dual carriageway.	S1 Project Definition	1256	Concessional Financing	KeNHA	Long-term vision project to be further developed in future IRIMP revision
TRDN29	Nakuru – Kisumu Expressway	Road	In the long-term horizon the road from Nakuru to Kisumu will need to be upgraded to dual carriageway.	S1 Project Definition	1464	Concessional Finance	KeNHA	Long-term vision project to be further developed in future IRIMP revision
TRDN30	Kisumu – Busia Expressway	Road	In the long-term horizon the road from Kisumu to Busia will need to be upgraded to dual carriageway.	S1 Project Definition	968	Concessional Finance	KeNHA	Long-term vision project to be further developed in future IRIMP revision
TRDN31	Nakuru – Eldoret – Malaba Expressway	Road	In the long-term horizon the road from Nakuru to Eldoret to Malaba will need to be upgraded to dual carriageway.	S1 Project Definition	2320	Concessional Finance	KeNHA	Long-term vision project to be further developed in future IRIMP revision





TRDN32	Malaba – Kampala Expressway	Road	In the long-term horizon the road from Malaba to Kampala will need to be upgraded to dual carriageway.	S1 Project Definition	1128	Concessional Finance	Uganda National Roads Authority (UNRA)	Long-term vision project to be further developed in future IRIMP revision
TRAN33	Conversion of Mombasa – Nairobi SGR to double track + electrification	Railway	In the long-term horizon the SGR from Mombasa to Nairobi will need to upgrade from single track to double track and should also be electrified.	S1 Project Definition	100	Concessional Finance	Kenya Railways Corporation	Long-term vision project to be further developed in future IRIMP revision
EPIN34	Kenya – Uganda upgrade on Uganda side to 400kV	Power Interconnector	When demand is sufficient, the power transmission interconnector should be upgraded to 400kV on the Uganda side; it is currently 220kV	S1 Project Definition	520	Concessional Finance	Uganda Electricity Transmission Company	Long-term vision project to be further developed in future IRIMP revision
TSPN35	Expansion of Mombasa Port	Sea Port	Mombasa port will need to upgrade capacity to meet demand in the long-term.	S1 Project Definition	380	Concessional Finance	Kenya Ports Authority	Long-term vision project to be further developed in future IRIMP revision





Economic Infrastructure Development Initiatives: Northern Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Northern Corridor into a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

The Northern Corridor is the most advanced of all IGAD corridors in terms of infrastructure and also institutional arrangements, harmonisation, and logistics services – it is at Stage 3 (see Section 1.4). Significant progress – particularly in comparison to other IGAD corridors – has been made across several areas including: harmonisation of National Customs Laws and Instruments; interfacing of customs systems and joint verification of multiple Customs documents; reduction of corridor blockages such as police checks, border crossings and weighbridges; Implementation of the Regional Customs Transit Guarantee (RCTG) and Single Customs Territory (SCT) declaration regime; and efficient monitoring of performance against key indicators. The initiatives recommended are required to transform the corridor from Stage 3, an effective logistics corridor, to Stage 4, an economic development corridor.

Table 3.4: Economic infrastructure initiatives for the Northern Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Development of SEZs at key locations	Sites for potential SEZs have been designated in Mombasa, Naivasha and Machakos in Kenya, with further sites in Nakuru and Kisumu identified. Uganda has identified 22 potential sites for industrial parks with development ongoing at Busia, Jinja and Kampala	<ul style="list-style-type: none"> All member states to develop a regional body tasked with the promotion of special economic zones along the corridor Select the sites with the highest economic development potential, undertake feasibility study and identify investors to develop SEZs 	2024	All member states Investment and trade ministries and agencies
Adoption of SMART Corridor systems	Northern Corridor has made good progress towards implementing the international SMART corridor approach including those noted above. However not all corridor member states are at the same level in terms of adoption of the systems and investment in the ICT infrastructure	All member states to adopt the SMART corridor systems	2024	NCTTCA, member states
Adoption of Green Corridor approach	Green Corridors aim at reducing environmental and climate impact while increasing safety and efficiency by ensuring complementarity between the modes. NCTTCA has developed the Northern Corridor Green Freight Program whose ultimate goal is to reduce fuel consumption and emissions	Promote use of low sulphur fuels and more efficient engines; promote long-term shift from road to rail; vehicle checks to ensure trucks are regularly maintained and meet emissions standards; Streamline transport activities by actions such as optimizing routes, consolidating loads and reducing empty runs	2024	NCTTCA, member states





Section 3.3 Djibouti Corridor

Status	Stage 2 – Multi-sectoral Corridor
Total length of corridor	2,600 km
Countries served	Djibouti, Ethiopia, South Sudan
Distance from capital to port	Djibouti, 0 km; Addis Ababa, 759 km; Juba, 1,769 km
Total population within 50km	30 million
Total intercontinental trade	18.64 million tonnes
Total intra-regional trade	0.13 million tonnes
Transport infrastructure	Port, roads, railway
ICT, energy, water connections	Ethiopia – Djibouti power interconnector (60 MW); Ethiopia – Djibouti water pipeline (100,000 m ³ a day); fibre optic connection; Djibouti – Somalia 230kv interconnector in the long term

The Djibouti Corridor links the ports in Djibouti to the hinterland of Ethiopia via road and standard gauge railway, with plans to extend the corridor to Juba, South Sudan. The combined Djibouti Port and Doraleh Container Terminal in Djibouti has the second highest throughput in the IGAD region (after Mombasa). It is the primary port for Ethiopia and accounts for 95% of the country’s total imports and exports. The Djibouti Corridor connections between Djibouti and Ethiopia are multi-sectoral encompassing multi-modal transport links (road and SGR), as well as a power transmission interconnector (230KV), fibre optic cables and a water pipeline.

The corridor has benefited from significant investment in recent years across several projects, notably: the Addis Ababa to Djibouti SGR completed in 2017 at a cost of \$4.5billion (see Case Study 3); the Doraleh Container Terminal completed in 2017 at a cost of \$590m; the Addis Ababa

to Adama Expressway completed in 2014 at a cost of \$612m; the Modjo Dry Port completed in 2018 at a cost of \$155m (see Case Study 4); the \$95m Ethiopia-Djibouti 230KV power transmission interconnector completed in 2011; and the \$330m water pipeline completed in 2017.

Despite this investment, significant gaps remain that require addressing, in particular the corridor does not function as a connection to South Sudan as there is currently no road from the Ethiopian border to Juba. The link from Djibouti to Addis Ababa has adequate physical infrastructure, but there are gaps in economic infrastructure, including logistics, institutional arrangements for managing the corridor and barriers to trade, that need to be addressed to realise the maximum impact of the recent investments in physical infrastructure.

The IRIMP study has identified a number of projects related to the Djibouti Corridor in the inventory. These have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1. The data in these summary tables are presented below in a series of annotated maps illustrating the proposed development of the corridor infrastructure in each planning period to 2050. Following each map is a table providing more detail on each project to be implemented during that planning period. The final section provides recommended economic infrastructure initiatives in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services.





Case Study 3: Addis Ababa to Djibouti Standard Gauge Railway

The SGR project stretching 759km from the port of Djibouti to Addis Ababa was the first SGR line to be constructed in the IGAD region. Construction commenced in 2013, with the Ethiopian section completed in 2016, the Djibouti section in 2017 and the line officially opened on January 1st 2018. The original cost of the project was estimated at \$3bn, but the final cost was estimated to be \$4.5bn. Financing was provided by Exim Bank of China with additional funding from China Development Bank and the Industrial and Commercial Bank of China. Construction was undertaken by two Chinese firms the China Railway Group (CREC) and the China Civil Engineering Construction Corporation (CRCC). The railway is owned by the Ethio-Djibouti Standard Gauge Rail Transport S.C., with 75% of shares held by the GoE and 25% by GoD and the headquarters in Addis Ababa.

Freight transit time from Djibouti to Addis Ababa has been reduced from 72 hours to 12 hours, while passenger time reduced from 36 to 11 hours. This reduction in transit time has the potential to significantly reduce transport costs, as well as CO2 emissions. The project is a positive example of trans-border cooperation and the structuring of the project financing can be applied to other projects – for example the next phase of the Kenya to Uganda SGR. Structuring the ownership of the railway as a joint venture ensures that both countries have a stake in the success of the project and reduces the risks inherent in lines being constructed and maintained separately in each.

Nonetheless, the project has also encountered challenges from which lessons should also be learned. The most significant of these was the construction of the SGR without associated ‘last mile’ connections to the rest of the transport network or sites of economic activity. The decision was made to first construct the SGR without allocating budget for additional connections, which would be built later. However, this has meant that uptake of the rail services has been slower than expected and the SGR has struggled to generate revenue to cover its operating costs. In future, ‘last mile’ connections should be planned and budgeted for in the initial project cost estimates.

Case Study 4: Modjo Dry Port

The Modjo Dry Port is strategically located 73km southeast of Addis Ababa on the primary road corridor and connected to the SGR. In 2018, 79% of all throughput passed through Modjo Dry Port amounting to 520,000 TEUs. A major expansion and upgrade of the dry port was initiated in 2017 and completed in 2018, funded with a \$150m IDA loan from the World Bank, including construction of ‘last mile’ connection to the main SGR trunk line, purchase of cargo handling machinery, expansion of warehousing and cargo consolidation facilities, development of ICT systems, and institutional capacity building.

The impact of the upgrade has been immediate. The construction of the 2.8km rail spur to connect the dry port to the main SGR line has meant that containers can be unloaded directly from the trains into the port without transfer to trucks first, dramatically improving efficiency. As a result, the modal shift to rail has increased to 45% from around 10% when the SGR first opened. Documentation has been harmonised from 10 to 4 documents required for import / export, and these can now be submitted electronically in one portal, reducing time and cost for traders. The port also now has facilities for consolidation and containerisation of cargo, stuffing and unstuffing of containers, helping to relieve congestion at the port of Djibouti and reduce transit and demurrage costs for traders.

The key lesson learned is that it is vital to invest in economic infrastructure alongside physical infrastructure in order to ensure efficient use and maximum uptake of new transport infrastructure. In this case the ‘last mile’ rail connection to the dry port and increased efficiency of the dry port facilities reduced the cost of the SGR relative to road haulage resulting in an immediate modal shift. This demonstrates the benefit of taking a holistic and integrated approach to infrastructure planning.





Photos of infrastructure on the Djibouti Corridor, clockwise from top left: Addis Ababa to Djibouti SGR passing through Adama ; SGR terminus in the Modjo Dry Port; Doraleh Container Terminal; containers in the Modjo Dry Port





Figure 3.5 Current status of physical infrastructure on the Djibouti Corridor, 2019

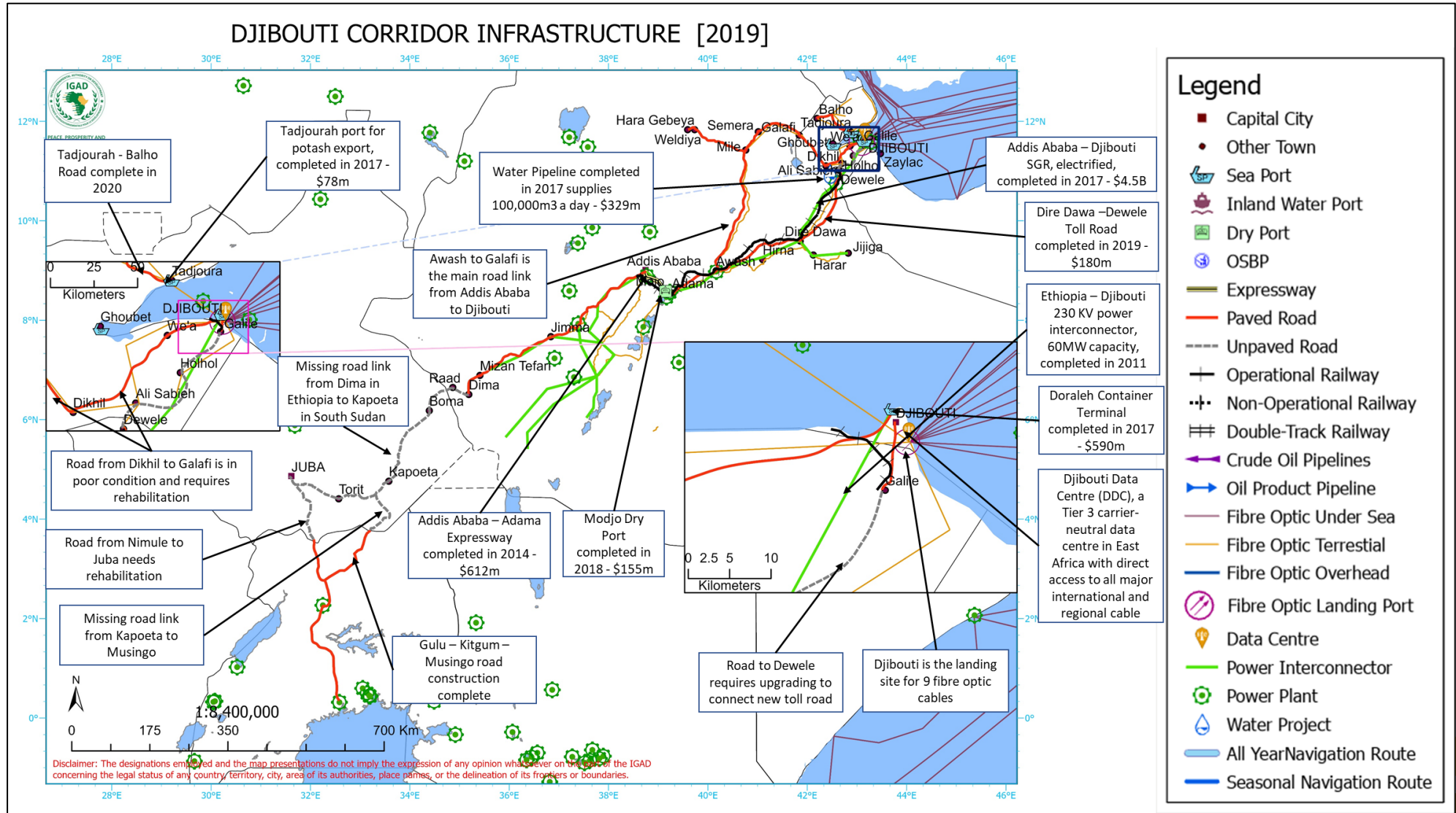




Figure 3.6: Development of physical infrastructure on the Djibouti Corridor, 2020-2024

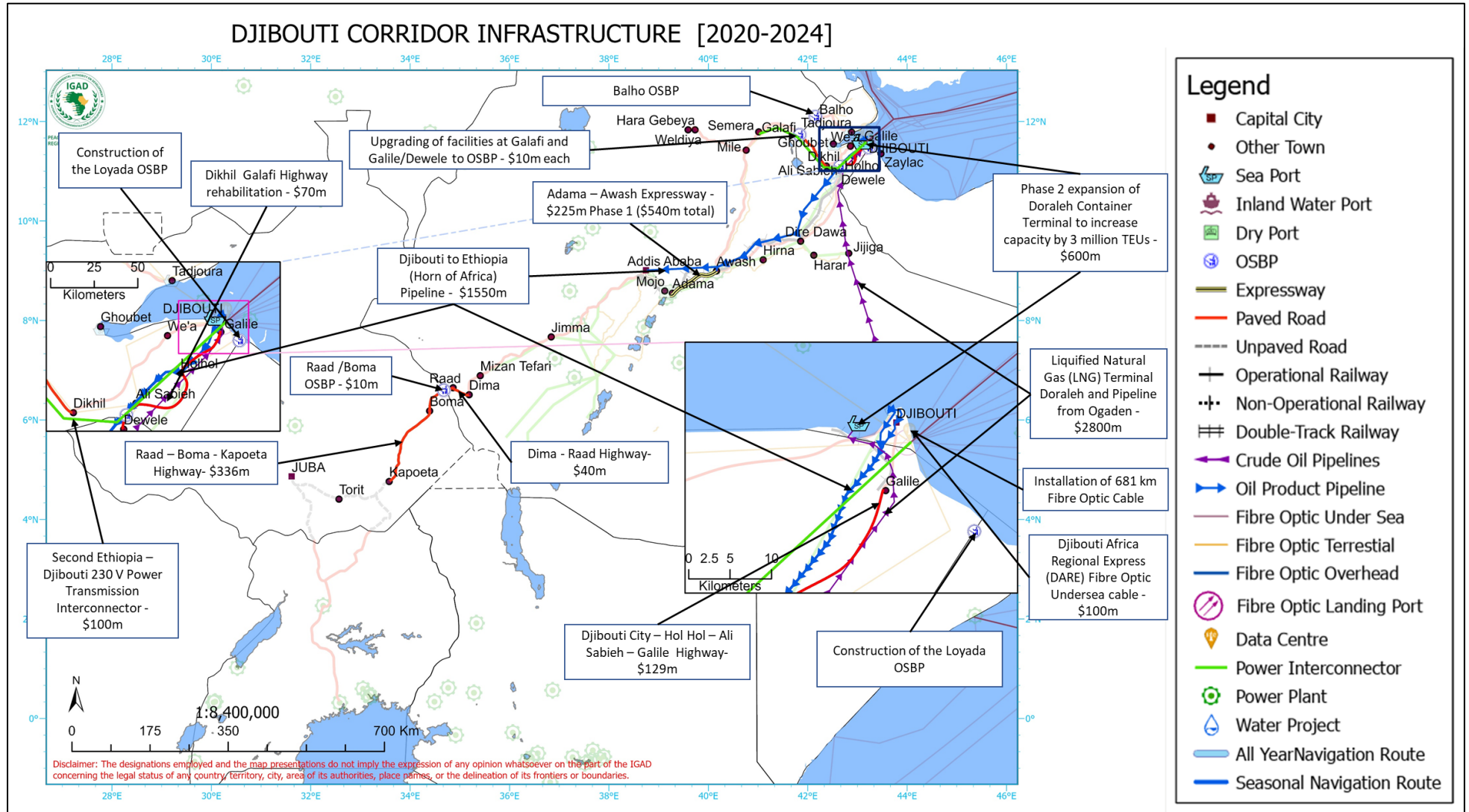




Table 3.5: Planned physical infrastructure projects on the Djibouti Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPD01	Liquefied Natural Gas (LNG) Terminal, Demadjorg	Sea Port and Petroleum/Gas Pipeline	The project includes the construction of an 803-km pipeline that will connect the gas extraction areas in Ethiopia's Ogaden Basin to the coast of Djibouti, as well as a gas liquefaction plant and export terminal, which is close the main Djibouti port of Doraleh.	S2B Feasibility	2,800	Private sector	China Merchant Holding International (CMHI)	Review project for feasibility
EPPD02	Djibouti to Ethiopia Pipeline (Horn of Africa Initiative)	Petroleum/Gas Pipeline	The 550km long, 20in-diameter steel multi-product pipeline has the capacity to transport 240,000 barrels of fuel a day. It will transport diesel, gasoline and jet fuel from Damerjog in Djibouti to a storage facility at Awash in central Ethiopia. The project will include the construction of an import facility and 950,000 barrels of buffer storage tank farm, as well as pump and monitoring stations at Damerjog in Djibouti, which will be connected to a storage terminal and truck loading facility in Awash in Ethiopia through the proposed pipeline.	S3B Transaction Support & Financial Close	1,550	Private sector	Black Rhino Group, Royal Bafokeng Holdings	Project is currently on hold
TRDD03	Djibouti City - Hol Hol - Ali Sabieh - Galile Highway (Horn of Africa Initiative)	Road	This 71km road starts from western part of Djibouti city and passes through the town Hol Hol ending in Al Sabieh city. The road will be upgraded, widened and paved.	S2B Feasibility	129	Blended finance – AfDB, JICA and UAE have expressed interest	ADR of the Ministère de l'Équipement et des Transports	Undertake full feasibility
TBPD04	Balho One Stop Border Post	Border Post	The border post will facilitate the movement of cargo between Djibouti and Ethiopia and supplement the newly constructed 127 km road linking	S3B Transaction Support & Financial Close	10	Concessional finance	Djibouti Customs Authority	Financing has been secured, check to ensure construction has commenced





			Tadjourah Djibouti to the border with Ethiopia at Balho.					
TRDD05	Dikhil-Galafi Highway - Djibouti (Horn of Africa Initiative)	Road	Rehabilitation of 100km Dikhil – Galafi road on the main corridor connecting the port in Djibouti to the border with Ethiopia.	S2B Feasibility	70	Concessional finance – Saudi Fund for Development	ADR of the Ministère de l'Équipement et des Transports	Undertake full feasibility
TBPD06	Galafi One Stop Border Post	Border Post	Proposed one stop border post at Galafi on the Djibouti-Ethiopia border to be constructed with the road rehabilitation.	S2A Pre-Feasibility	10	Donor funds	Ethiopian Revenues and Customs Authority (ERCA)	Undertake full feasibility
TBPD07	Galile/Dewele One Stop Border Post	Border Post	Proposed one stop border post at Galile (Djibouti) / Dewele (Ethiopia) on the Djibouti-Ethiopia border. The Dire Dawa -Dewele toll road has been completed and needs an associated OSBP.	S1 Project Definition	10	Donor grant	Ethiopian Revenues and Customs Authority (ERCA)	Undertake full feasibility
TRDD08	Adama-Awash Expressway (Horn of Africa Initiative)	Road	The project consists of the construction of a 260 km 4-lane expressway section from Adama to Awash. It is proposed to build the expressway in phases, with phase 1 the first 60 km stretch.	S3B Transaction Support & Financial Close	540	African Development Fund (ADF) grant for \$98m and government funds for the remainder	Ethiopian Roads Authority (ERA)	ADF grant was recently approved and phase 1 of the project is due to start
TRDD09	Dima-Raad Highway	Road	Construction of a new road from Dima in Ethiopia to the border with South Sudan at Raad / Boma	S2A Pre-Feasibility	40	Government funds	Ethiopian Roads Authority (ERA)	Undertake full feasibility
TBPD10	Raad/Boma One Stop Border Post	Border Post	Proposed one stop border post on the Ethiopia-South Sudan border to be constructed with the road (TRDD13).	S2A Pre-Feasibility	10	Donor grant	Ethiopian Revenues and Customs Authority (ERCA)	Undertake full feasibility
TRDD11	Raad-Boma-Kapoeta Highway	Road	Construction of a new road from Kapoeta in South Sudan to the border with Ethiopia.	S2A Pre-Feasibility	336	Donor grant	South Sudan Roads Authority (SSRA)	Undertake full feasibility





EPID12	Second Ethiopia – Djibouti 230kV Power Transmission Interconnector	Power Interconnector	The proposed second interconnector will consist of a new 292km (190km in Djibouti, 102km in Ethiopia) 230kV double circuit transmission line connecting the substations of Semera, Ethiopia and Nagad, Djibouti. The project also includes extension of the existing substations at Semera and Nagad. An MoU for the project between the two countries was signed in July 2013, and a feasibility study was completed in 2017, undertaken by Tractebel and funded by the Kuwait Fund.	S3A Project Structuring	100	Concessional finance – Kuwait Fund and India ExIm Bank have expressed interest	Ethiopian Electric Power (EEP) and Electricité de Djibouti (EDD)	Identify funder
IFOD13	Djibouti Africa Regional Express (DARE)	Fibre Optic Cable	Submarine cable of 60 Tbit/s, total length of 4,763km. Kenya consider it as redundancy for TEAMS. Private sector considers Djibouti as redundancy for Mombasa landing points. DARE will commence in Djibouti and have landing points in Berbera, Bossaso, Mogadishu, Mombasa, Dar es Salaam, and Yemen.	S3A Project Structuring	100	Private sector	Consortium of: Djibouti Telecom; Africa Marine Express; TeleYemen; Telesom Company Hormuud Telecom Somalia Inc. Golis Telecom. Somtel Group	Finalise the consortium structure, allocate shares, finalise contract
IFOD14	Installation of 681 km Fibre Optic Cable	Fibre Optic Cable	Cable installation to boost traffic along road corridors: Djibouti-Ethiopia (Djibouti-Galafi, Djibouti-Galilee and Tadjourah-Balho); Djibouti-Somalia (Djibouti-Loyada)	S3A Project Structuring	32	Private sector	Djibouti Telecom	Finalise the financing
IFOD15	South Sudan Internet Exchange Point	Internet Exchange Point	Construction of an internet Exchange Point in South Sudan	S1 Project Definition	3	Government funding	South Sudan Ministry of ICT & Postal Services	Undertake feasibility study





IFOD16	Djibouti – Addis Ababa – Juba –Fibre Optic Link	Fibre Optic Link	Construction of a Fibre Optic Line from Djibouti to Juba to compliment and transform the Djibouti – Kampala highway into a smart corridor	S1 Project Definition	30	Private Sector	Djibouti, Ethiopia, South Sudan ministries of ICT	Undertake feasibility study
IFOD17	Juba - Kampala Fibre Optic Link	Fibre Optic Link	Construction of a Fibre Optic Line from Juba to Kampala to compliment and transform the Djibouti – Kampala highway into a smart corridor	S1 Project Definition	19	Private Sector	South Sudan and Uganda ministries of ICT	Undertake feasibility study
IFOD18	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies
TSPD19	Doraleh Terminal Extension Phase 2	Sea Port	Phase 2 expansion of the Doraleh Container Terminal to increase capacity by 3 million TEUs.	S1 Project Definition	600	Private Sector	Djibouti Ports & Free Zones Authority	Phase 2 of the Doraleh Container Terminal is uncertain due to termination of the DP World concession.
TBPD20	Loyada One Stop Border Post	Border Post	The Loyada-Djibouti link has recently been rehabilitated with funding from the Islamic Bank for Development.	S3B Transaction Support & Financial Close	10	Islamic Bank for Development	Somalia Customs Authority Djibouti Customs Authority	Financing has been secured, check to ensure construction has commenced





Figure 3.7: Development of physical infrastructure on the Djibouti Corridor, 2025-2030

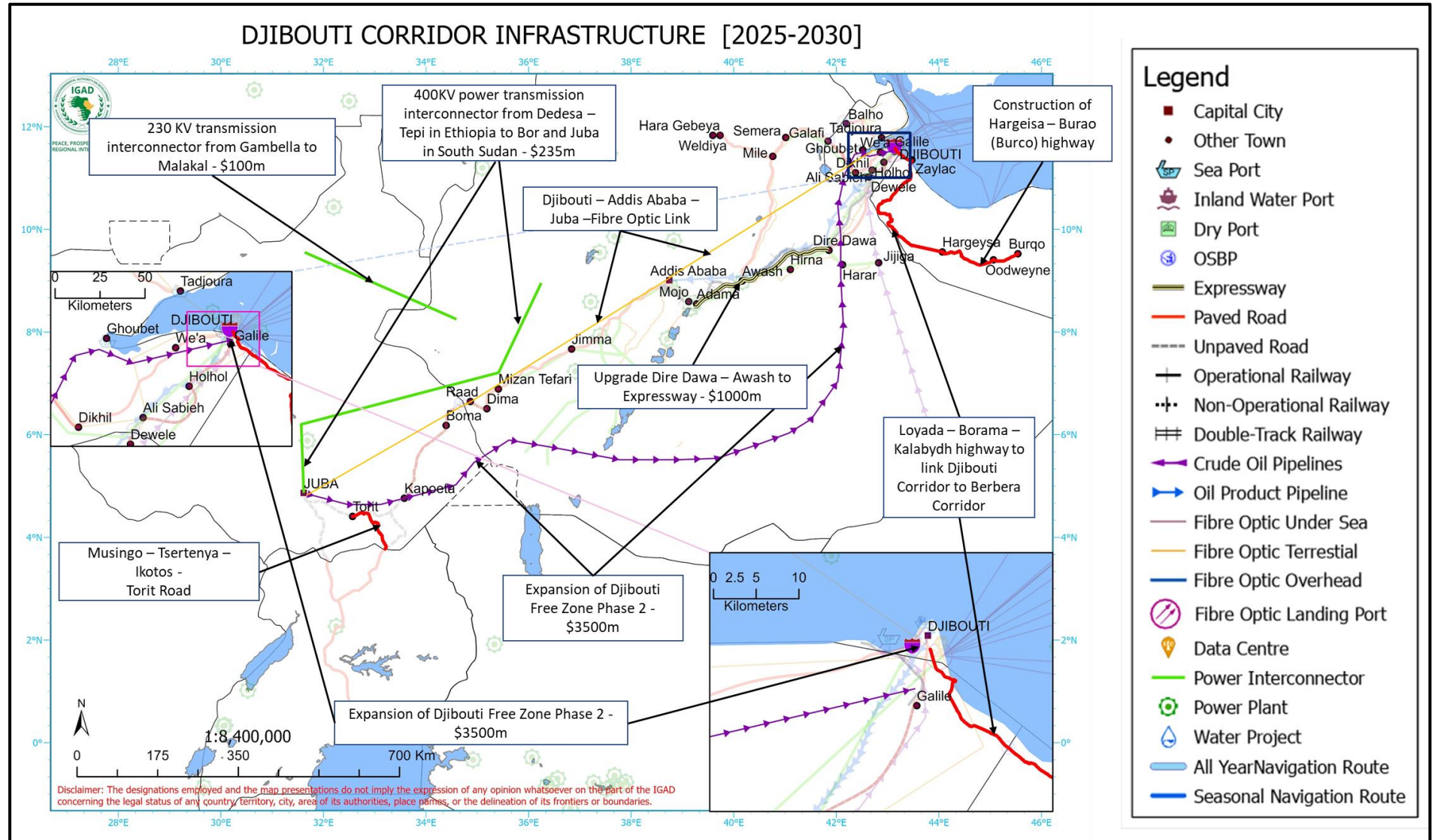




Table 3.6: Planned physical infrastructure projects on the Djibouti Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRDD21	Dire Dawa-Awash Expressway	Road	Upgrade of the 236 km road from Dire Dawa to Awash to 4-lane expressway.	S1 Project Definition	1,000	Blended finance	Ethiopian Roads Authority (ERA)	Undertake feasibility study
TRDD22	Musingo-Tsertenya – Ikotos - Torit Road	Road	Construction of the Musingo-Tsertenya-Ikotos-Torit Road	S1 Project Definition	210	Concessional Finance	South Sudan Roads Authority	Feasibility study and detailed designs for the road segment
EPID23	Ethiopia – South Sudan Interconnector (400KV)	Power Interconnector	400kV, Ethiopia – South Sudan (Tepi-Bor) Interconnector (Ethiopia (Dedesa-Tepi) – South Sudan (Bor) Power TL -Juba, 500 kV of 700 km)	S2A Pre-Feasibility	235	Concessional finance	Ethiopian Electricity Power Cooperation (EEPCo); South Sudan Electricity Corporation (SSEC)	Feasibility study & detailed design (No Feasibility Study done but project profile prepared by EAPP)
EPID24	Ethiopia – South Sudan Interconnector (230KV)	Power Interconnector	230kV Ethiopia-South Sudan Interconnection (Gambella-Malakal (Phase 1), 230kV of 357 km)	S2A Pre-Feasibility	100	Concessional finance	Ethiopian Electricity Power Cooperation (EEPCo); South Sudan Electricity Corporation (SSEC)	Feasibility study & detailed design (No Feasibility Study done but project profile prepared by EAPP)
TFZD25	Expansion of Djibouti Free Zone Phase 2	Port/Free Zone	The project has been co-financed with China Marshal/Exim Bank and the Djibouti Govt. The first phase of this project, launched on Thursday, include a zone of 240 Ha. Once completed, this 10-year project worth \$3.5Billion will be cover 4800 Ha, which will make it the largest free zone in Africa.	S3B Transaction Support & Financial Close	3,500	Donor Financing	Djibouti Ports and Free Zones Authority	Financing has been secured, check to ensure construction has commenced
EPPD26	South Sudan – Djibouti port crude oil pipeline	Pipeline	The project will provide an alternative route for South Sudan crude oil to access the Djibouti Port for export to international market. Project will cover 3 countries traversing through Ethiopia	S0 Enabling Environment and Needs Assessment	5000	Donor Financing	Ministry of Petroleum and Mining, South Sudan; Ministry of Mines and Petroleum, Ethiopia; Ministry of Energy and Natural Resources, Djibouti;	Undertake concept design work needed before the pre-feasibility phase
TRAD27	Loyada – Borema – Hargeisa – Berbera	Road	Construction of Loyada – Borama – Berbera highway linking the Berbera	S1 Project Definition	1096	Concessional Finance	Djibouti Ministry of Equipment and	Feasibility studies





	Highway (Horn of Africa Initiative)		Corridor with the Djibouti Corridor. Partial feasibility studies conducted for Kalabydh – Berbera section.				Transport and Somaliland Roads Development Agency	
TRDD28	Hargeisa – Burao (Burco) Highway	Road	Construction of a new 155km missing link connecting Hargeisa to Burao (Burco). The road is an extension from Djibouti through Loyada – Borema – Kalabydh – Hergeisa and extends to Laascanood in the Berbera Corridor.	S0 Enabling Environment and Needs Assessment	310	Donor Financing	Ministry of Transport, Somalia	Undertake feasibility studies





Figure 3.8: Development of physical infrastructure on the Djibouti Corridor, 2031-2050

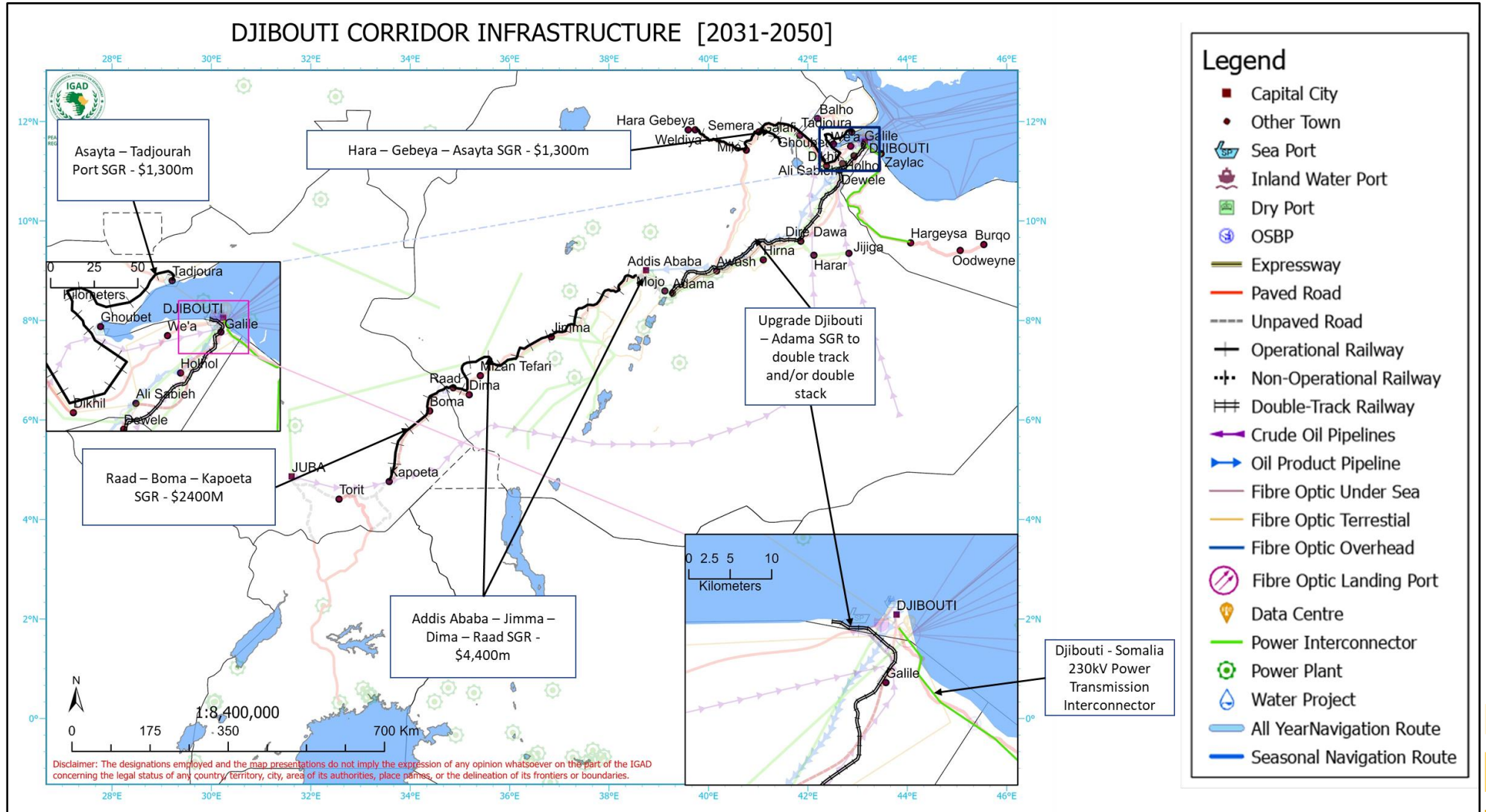




Table 3.7: Planned physical infrastructure projects on the Djibouti Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAD29	Asayta - Tadjourah Port SGR	Railway	SGR line, part of Route 6 of the Ethiopian Railways Master Plan. Fully electrified single-track line of 215km (47km in Ethiopia and 168km in Djibouti) with the major stations at Asayta, Afambo, border, Yoboki, Dhikhil, Gaggade, Firale, Airlof and Tadjourah.	S2A Pre-Feasibility	1172	Concessional Finance	Ethiopia Railways Corporation	Undertake full feasibility study
TRAD30	Hara Gebeya - Asayta SGR	Railway	SGR line, part of Route 6 of the Ethiopian Railways Master Plan. Fully electrified single-track line of 218km with the major stations at Hara Gebeya, Semera, Onale, Dobi and Asayta.	S2A Pre-Feasibility	640	Concessional Finance	Ethiopia Railways Corporation	Undertake full feasibility study
TRAD31	Addis Ababa - Jimma - Dima - Raad SGR	Railway	SGR line, part of Route 3 of the Ethiopian Railways Master Plan. Fully electrified single-track line of 740km with the major stations at Sebeta, Ambo, Ijaji, Seka, Jimma, Bedele, Tepi and Dima.	S2B Feasibility	2800	Concessional Finance	Ethiopia Railways Corporation	Review feasibility and identify sources of funding
TRAD32	Raad-Boma-Kapoeta SGR	Railway	SGR line that will link South Sudan to Ethiopia via the border at Raad/Boma to Kapoeta where it will connect with the planned SGR line on the LAPSET Corridor to Juba.	S1 Project Definition	1344	Concessional Finance	South Sudan Ministry of Transport	Implementation of the project depends on the construction of Addis Ababa - Jimma - Dima - Raad line
TRAD33	Upgrade Djibouti – Adama SGR to double track / double stack	Railway	In the long-term horizon the SGR from Mombasa to Nairobi will need to upgrade from single track to double track or double stack carriages.	S1 Project Definition	2640	Concessional Finance	Ethiopia Railways Corporation	Long-term vision project to be further developed in future IRIMP revision
EPID34	Djibouti - Somalia 230kV Power Transmission Interconnector	Power Interconnector	The proposed interconnector borrows much of the voltage from the Second Ethiopia – Djibouti 230kV Power Transmission Interconnector since Djibouti and Somalia are non-producers of power	S1 Project Definition	100	Concessional Finance	Electricité de Djibouti (EDD)	Feasibility studies





Economic Infrastructure Development Initiatives: Djibouti Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Djibouti Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

The Djibouti Corridor has not been formally established and there is no Corridor Management Institution (CMI) to oversee the development of physical or economic infrastructure. However, the 2002 Agreement, which allows permanent access for Ethiopian Customs to conduct inspections at the port and for goods to move inland without escort or transit fee, can serve as a basis for a new bilateral agreement between the two countries to formally establish an economic development corridor, which South Sudan can later join as required.

Table 3.8: Economic infrastructure initiatives for the Djibouti Corridor²⁶

Initiative type	Current status	Measure	Timeframe	Responsibility
Establishment of Corridor Management Institution (CMI)	No CMI and no agreement in place	Trilateral agreement to be signed and approved by the governments; ratified and incorporated into the national legal frameworks – alternatively the agreement could be signed by Ethiopia and Djibouti to start with South Sudan joining later	2024	Governments of Ethiopia, Djibouti, and South Sudan
Harmonisation of regulations on gross vehicle mass and axle loads	In Ethiopia, the type of vehicle used is almost exclusively the six-axle truck-trailer combination. The gross vehicle mass (GVM) and axle loads that apply to such a vehicle are eight tons on the steering axle and 10 tons on all other axles, for a total of 58 tons	The limits set by COMESA are eight tons on all axles, whether they be in groups of two, three, or four, for a total of 48 tons. It is recommended that the CMI either adopt the limits set by COMESA or establish standards to be adopted by the three countries that are both economically viable and protective of road and bridge infrastructure	2024	CMI
Harmonisation of customs procedures and the use of pre-clearance	Djibouti uses the ASYCUDA World Customs System, while Ethiopia has opted to implement a new customs management system developed for them by the Webb Fontaine Group, a private-sector company	It is vital that the two systems are harmonised and can interact with each other. It also would save time and money if the goods going into Ethiopia from Djibouti could be pre-cleared in Djibouti. South Sudan should also adopt a harmonised system when they are connected to the corridor	2024	Ethiopian Revenues and Customs Authority (ERCA); Djibouti Revenue and Customs Authority

²⁶ The recommended initiatives in this table draw upon and refer to a recent study for UNCTAD (2018) *The Djibouti City – Addis Ababa Transit and Transport Corridor: Turning Diagnostics into Action*





Cargo tracking system	No harmonised cargo tracking system in place	It is recommended that the proposed corridor authority consider using a regional cargo tracking system (that is, one that works across borders) such as the COMESA Virtual Trade Facilitation System (CVTFS)	2024	CMI
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2024	CMI
Spatial Development Initiative (SDI)	The focus of the corridor has been on improving physical infrastructure and to a lesser extent logistics services in the corridor, little attention has been paid to wider economic development	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectoral targeted interventions to promote private sector investment	2024	CMI
Corridor PPP framework	Individual member states have their own PPP frameworks	PPP frameworks of the member states	2024	
Investment Promotion Agency	See above	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2024	CMI
Agency and budget for joint infrastructure planning, investment and maintenance	There are some joint planning activities (including the IRIMP), however investment decisions and maintenance are the responsibility of national governments	CMI should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2030	CMI, Governments of Ethiopia, Djibouti and South Sudan
Removal of remaining non-physical barriers to the flow of goods, services and people	Restrictions on the movement of goods, services and people between the three member states include visa requirements, tariffs, licenses	Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI, Governments of Ethiopia, Djibouti and South Sudan, IGAD Secretariat





Section 3.4 Port Sudan Corridor

Status	Stage 2 – Multi-sectoral
Total length of corridor	Approximately 7,150 km
Countries served	Sudan, South Sudan, Ethiopia
Distance from capital to port	Khartoum, 836 km; Juba, 2,730 km; Addis Ababa, 1,765 km
Total population within 50km	55 million
Total intercontinental trade	12.55m tonnes
Total intra-regional trade	0.37m tonnes
Transport infrastructure	Two ports, roads, narrow gauge railway, petroleum products and crude oil pipelines
ICT, energy, water connections	230kV power transmission interconnector between Sudan and Ethiopia; Bagara Transboundary Groundwater Aquifer is to benefit the hubs along the corridor in the medium term

The Port Sudan Corridor is the most extensive in the IGAD region in terms of distance and coverage, connecting the port of Port Sudan and the new development 46 km south at Suakin to the hinterland of Sudan, Ethiopia and South Sudan. The port of Port Sudan is the third busiest in the region and serves as the primary port for Sudan handling 90% of imports and exports, as well as the primary port for South Sudan's oil exports, and handles a small share of Ethiopia's trade. The corridor has two crude oil pipelines that connect oil fields in Sudan and South Sudan with the refinery and port in Port Sudan: Greater Nile Pipeline, constructed in 1999; and Petrodar Pipeline, constructed in 2005.

The corridor is multi-modal with the full complement of road, rail, crude oil and petroleum product pipelines, as well as inland container depots. Much

of the infrastructure, however, is in need of upgrading and / or rehabilitation, in particular the railway which is narrow gauge and road links to South Sudan and Ethiopia which have received little maintenance in recent years and are in need of rehabilitation or upgrading to regional corridor standards.

More recently, sanctions imposed on Sudan have restricted large-scale investment in the corridor; however, the World Bank funded Ethiopia – Sudan Power Transmission Interconnector (230KV) was completed in 2013 at a cost of \$60m, a new container terminal completed in 2011, and the Salloum Inland Container Depot in 2017. Ethiopia took a stake in the port of Port Sudan in 2018 and views the port and corridor as one of several potential alternatives to Djibouti.

The corridor was formally recognised by COMESA in October 2017 and an agreement is in place to establish a Port Sudan Corridor Authority (PSCA) to coordinate and manage the development of the corridor, though this has not yet happened. In this respect the corridor lags behind the Northern Corridor.

The IRIMP study has identified a number of projects related to the Port Sudan Corridor in the inventory. These have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1. The data in these summary tables are presented below in a series of annotated maps illustrating the proposed development of the corridor infrastructure in each planning period to 2050. Following each map is a table providing more detail on each project to be implemented during that planning period. The final section provides recommended economic infrastructure initiatives in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics service.





Case Study 5: Ethiopia – Sudan Power Transmission Interconnector (230KV)

This is the first – and at present only – power interconnector between Ethiopia and Sudan. The project was approved for implementation by the governments on 20th December 2007 and commissioned in December 2013. It consisted of a new 194 km double circuit 230/220 KV overhead transmission line linking Shehedi in Ethiopia to Al Quadarif in Sudan, with the capacity to supply 100MW per annum, costing around \$60m, with financing secured through a World Bank loan shared equally between the two countries.

As a result of the project, an additional 1.4m households gained access to electricity; Ethiopia can generate revenue from exporting power to Sudan, to about \$8.8m annually; in turn Sudan has gained from lower tariffs of \$0.05/kWh for imported electricity as compared to \$0.096/kWh from power generated domestically; Sudan has been able to substitute fossil fuel generated electricity for cleaner, greener hydropower; Ethiopia has gained in energy security as Sudan can supply thermal power when rainfalls are low; both countries have been able to better integrate their reserve capacities, and in the process, improve reliability of supply on the interconnected system and save on capital and operating costs.

The project can provide important lessons for the implementation of other trans-border power interconnector projects – in particular the proposed 500KV Ethiopia-Sudan interconnector. The small-scale nature of the 230KV project enabled financing to be secured easily and for it to serve as a pilot to demonstrate the benefits of energy trading between the two countries, as well as establish tariffs and build relationships between the energy companies in the two countries.

Another key lesson learnt was to contact local authorities directly when planning the route to identify pre-existing land purchase agreements and available land, thus reducing the time and cost involved in land acquisition. The success of the 230KV project has reduced the risk involved in the much larger investment in the 500KV line, and will therefore make it easier to secure funding.





Photos of infrastructure on the Port Sudan Corridor, clockwise from top left: workers laying the Greater Nile Crude Oil Pipeline; the Nile Train using rolling stock purchased from China in 2014; ship docked at Port Sudan; container yard at Port Sudan

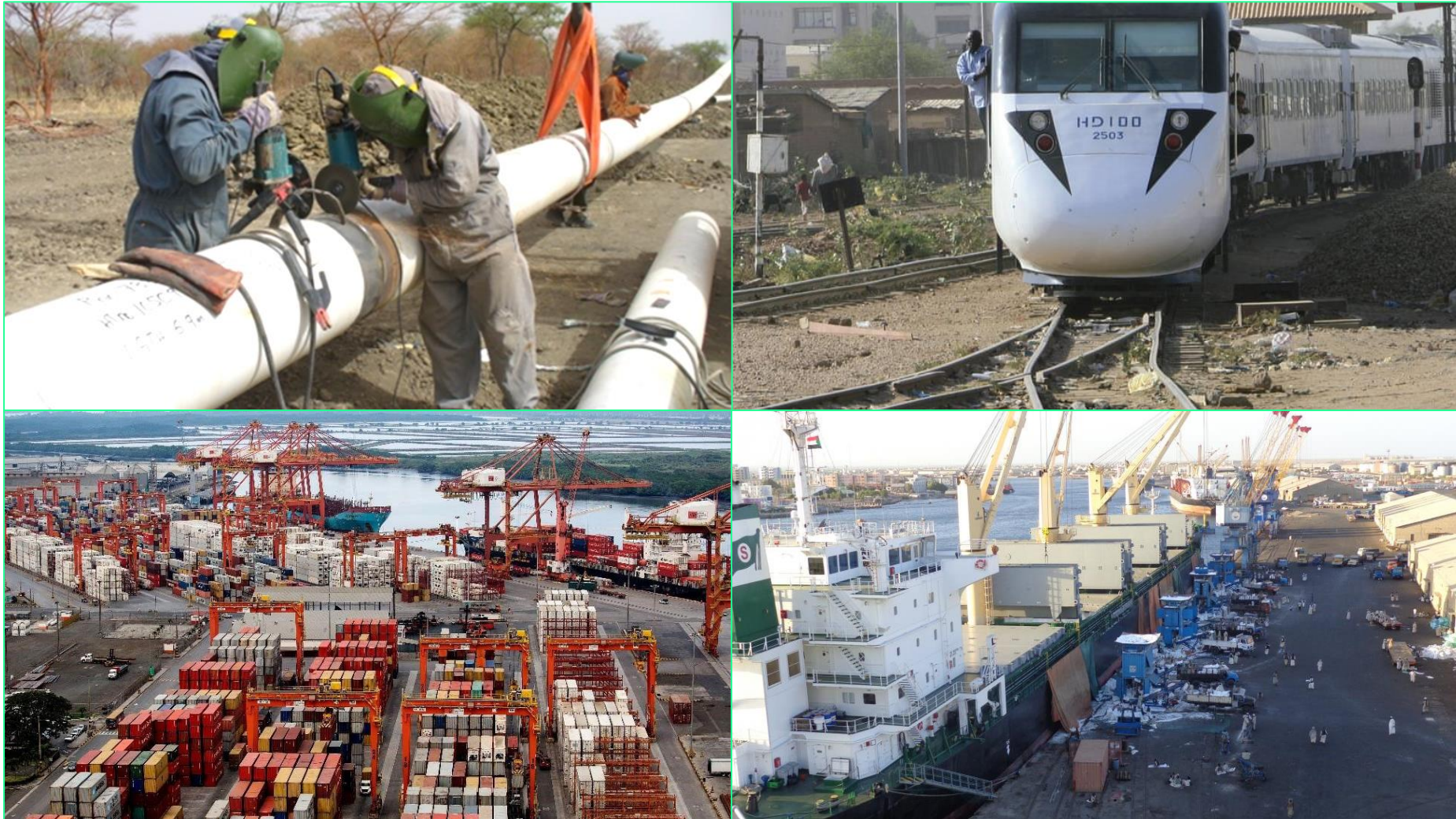




Figure 3.9 Current status of physical infrastructure on the Port Sudan Corridor, 2019

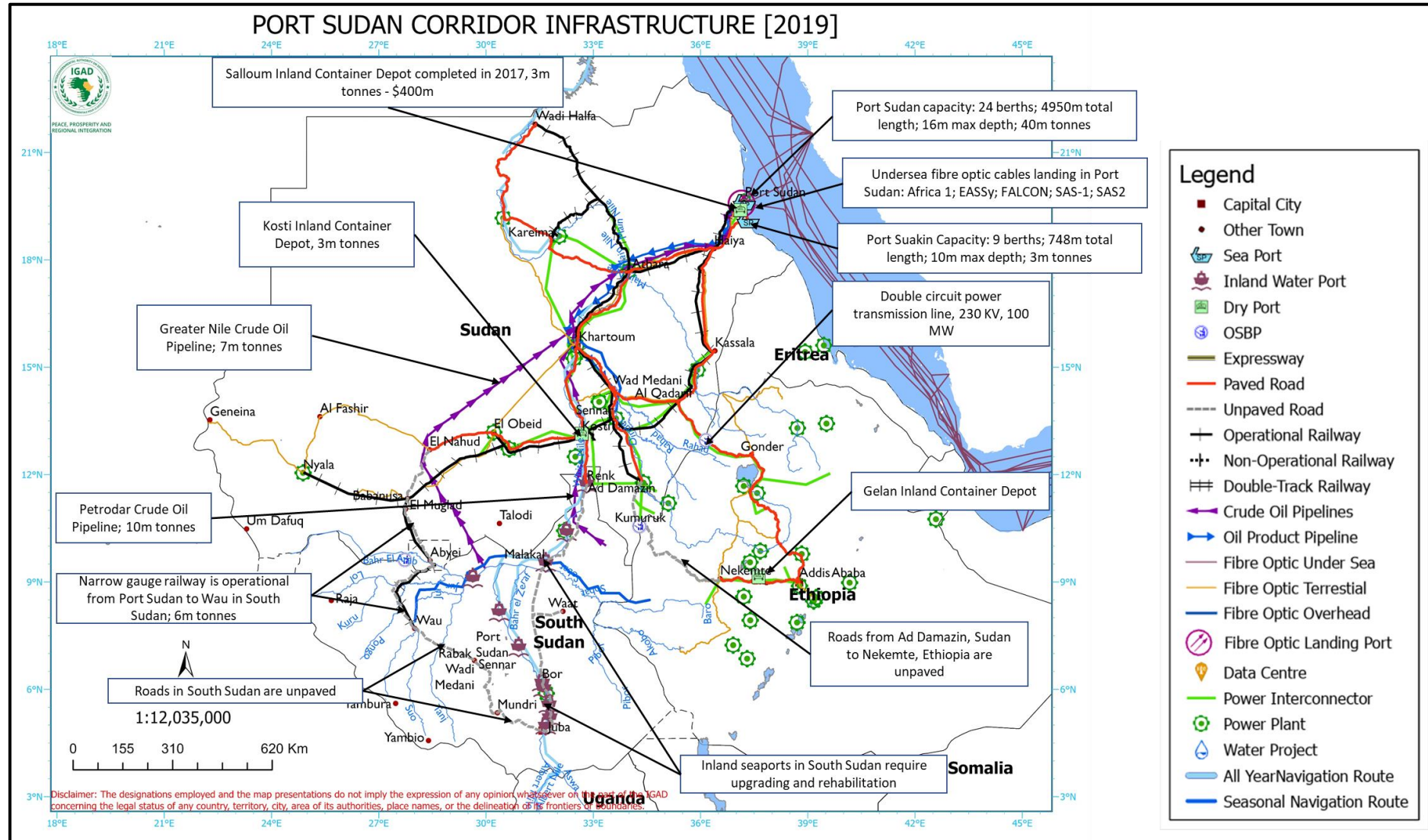




Figure 3.10: Development of physical infrastructure on the Port Sudan Corridor, 2020-2024

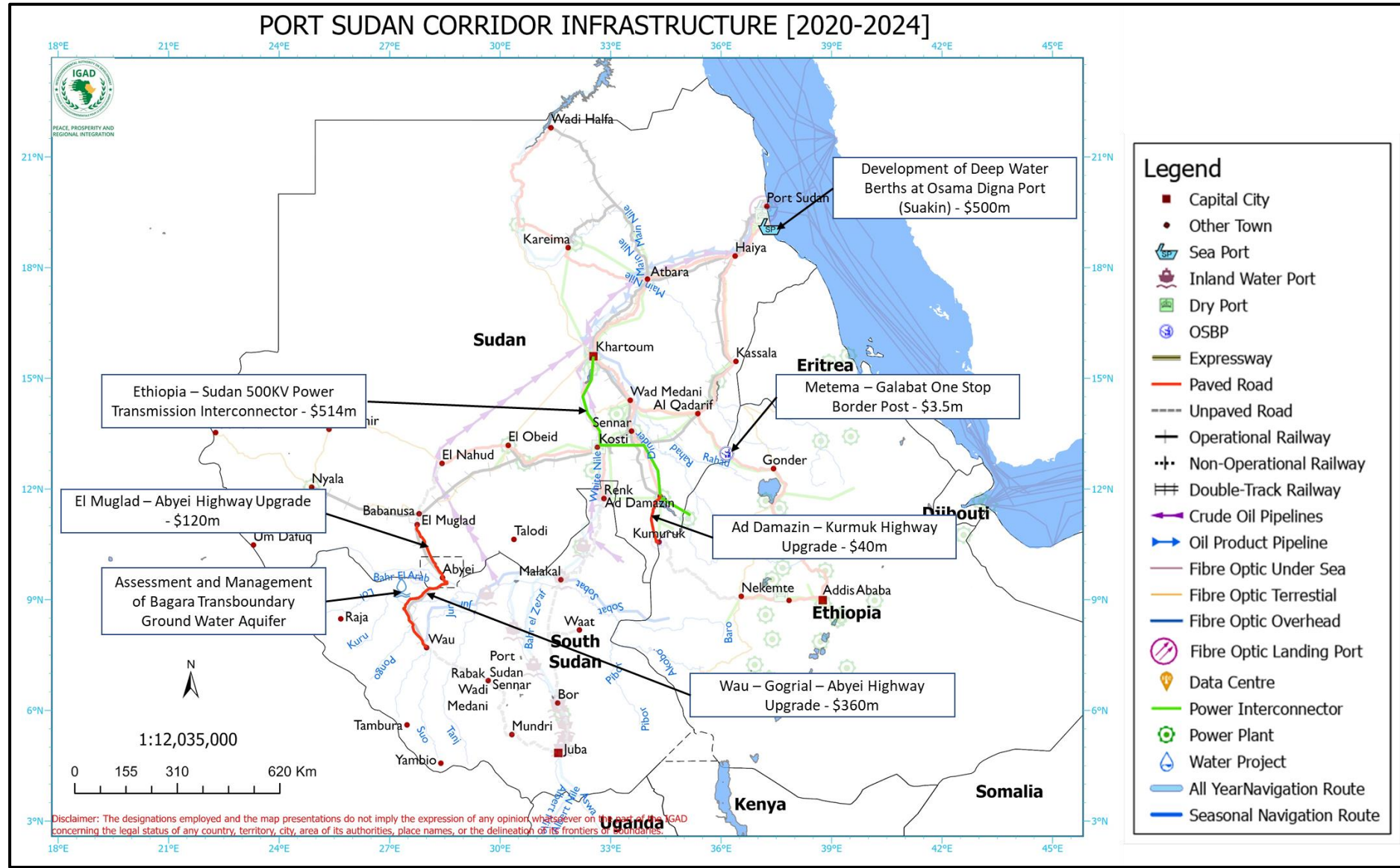




Table 3.9: Planned physical infrastructure projects on the Port Sudan Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPP01	Development of Deep-Water Berths at Osama Digna Port (Suakin)	Sea Port	In March 2018, the governments of Sudan and Qatar agreed to a proposed \$4billion development at the port of Suakin, the first phase of which is development of deep-water container handling berths totalling 800m and costing \$500m.	S3B Transaction Support & Financial Close	500	Qatar (51% owned by GoS; 49% by GoQ)	Sudan Ports Authority; GoQ	Commence construction works
TRDP02	Al Damazin-Kurmuk Highway	Road	Rehabilitation and upgrading of the 93 km road from Al Damazin to Kurmuk to paved regional corridor standards.	S3B Transaction Support & Financial Close	40	Donor funds - Multi Donor Trust Fund for Sudan National Secretariat (MDTF-NS) (WB funded)	Sudan National Highways Authority	The contracts for the Damazin – Kurmuk road (Sections 1 and 2) have been suspended since September 2011 due to conflict and insecurity in the project area (Blue Nile State). The government and the contractors are monitoring the situation for indications that the situation has normalised and would allow the contractors to resume works.
TRDP03	El Mujlad-Abyei Highway	Road	Upgrading of 229 km of road from El Mujlad to Abyei on the South Sudan border, from gravel to paved regional corridor standards. Will join with associated project TRDP10 at the South Sudan border to connect the city of Wau (second largest in South Sudan) to the Port Sudan Corridor.	S3B Transaction Support & Financial Close	120	Government funds	Sudan National Highways Authority	Check status as some work may have commenced, but is currently on hold due to security situation in Sudan





TRDP04	Wau-Gogrial-Abyei Highway	Road	Upgrading of 225 km of road linking Wau, the second largest city in South Sudan, to the border with Sudan at Abyei, from gravel to paved regional corridor standards.	S2B Feasibility	360	Concessional finance – AfDB	South Sudan Roads Authority	Feasibility to be undertaken
TBPP05	Metema - Galabat One Stop Border Post	Border Post	Upgrading of the border post facilities between Galabat, Sudan and Metema, Ethiopia to OSBP standards.	S2B Feasibility	3.5	Government funds	Sudan Revenue Authority, Ethiopia Revenue and Customs Authority	Feasibility to be undertaken
EPIP06	Ethiopia-Sudan (500KV) Transmission Interconnector (Eastern Africa Green Power Transmission Network Project 6 – Guba (Ethiopia)-Khartoum (Sudan))	Power Interconnector	Construction of a 500kV transmission line and the associated substations that connects the power networks of Ethiopia and Sudan to facilitate trading in electricity and promote power systems stability. The line will be 580 km, 564 km in Sudan, terminating in Khartoum, 16 km in Ethiopia, terminating at the Grand Ethiopian Renaissance Dam (GERD). The Project also includes two new, 500 kV capacitated substations at Rabak and Jebel Aulia (both in Sudan), and power line bay extensions at the following existing substations: Grand	S3A Project Structuring	514	Concessional finance	Sudanese Electricity Transmission Company Ltd. (SETCO); Ethiopian Electricity Power Cooperation (EEPCo)	Update financial model, including affordability assessment by the utilities; Market soundings with DFIs and institutional investors; RFQ/ RFP process to appoint EPC contractor; Negotiations with lenders and possible funding applications.





			Renaissance (500kV Ethiopia), Rabak (220kV, Sudan) and Jebel Aulia (220kV, Sudan).					
WWAP07	Assessment and Management of Bagara Transboundary Groundwater Aquifer	Water Aquifer Management	The Bagara is a shared groundwater resource that, if developed, has huge potential in promoting cooperation among the shared water resource users. This project will assess the potential of the aquifer for irrigation.	S3A Project Structuring	2.7	Donor grant – World Bank	Ministry of Irrigation and Water Resources, Sudan; Ministry of Irrigation and Water Resources, South Sudan	Design TOR and contract the consultants





Figure 3.11: Development of physical infrastructure on the Port Sudan Corridor, 2025-2030

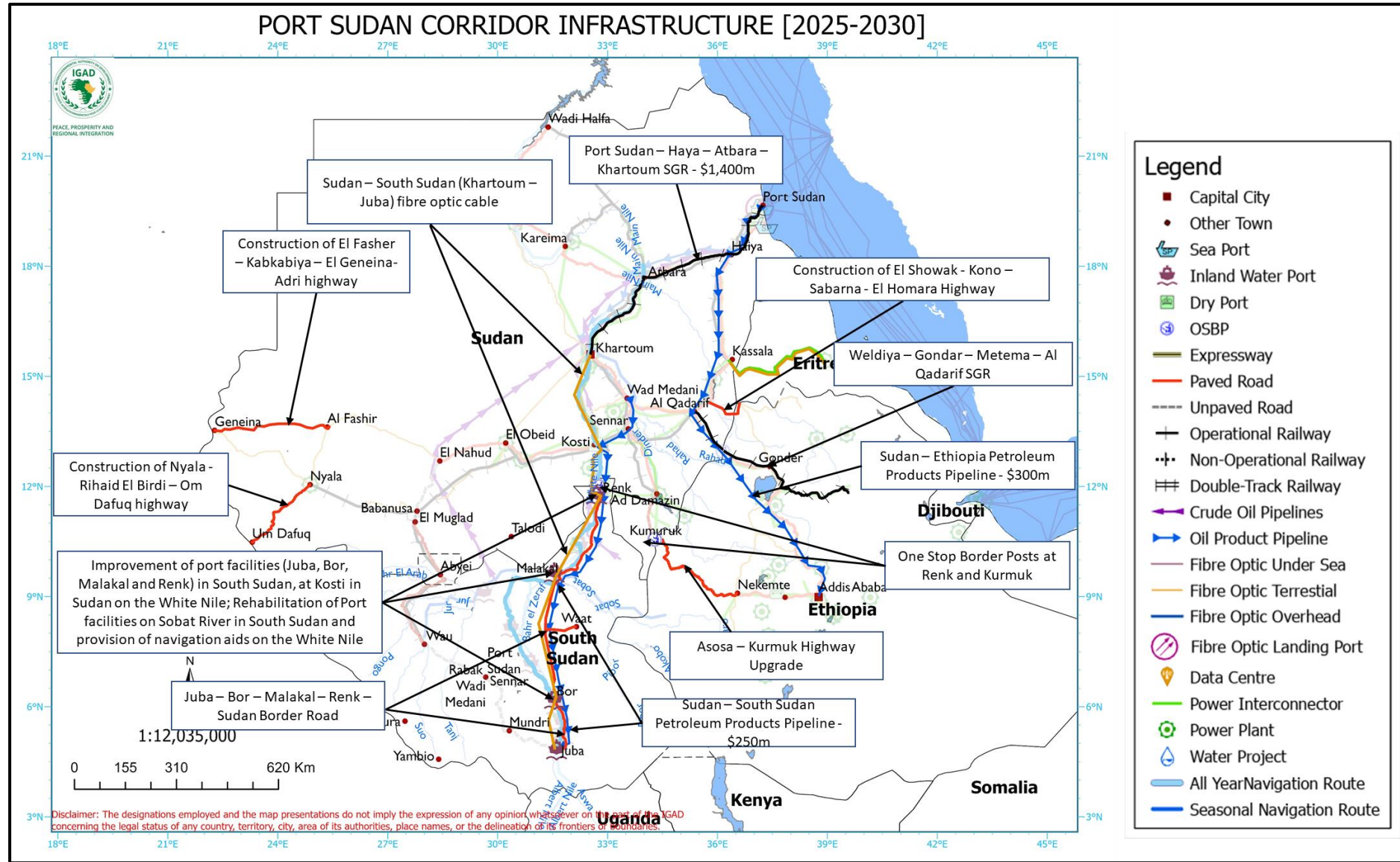




Table 3.10: Planned physical infrastructure projects on the Port Sudan Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAP08	Port Sudan-Haya -Atbara-Khartoum SGR	Railway	This is a new 813 km SGR railway line to be built between Port Sudan and Khartoum through the towns of Haya and Atbara to replace the old NGR.	S2B Feasibility	1,400	Concessional finance - China Exim Bank	Sudan Railways Corporation	Undertake feasibility
TRAP09	Weldiya-Gondar-Metema – Al Qadaref SGR	Railway	Construction of a standard gauge railway from the Weldiya junction via Gondar to the border with Sudan at Metema. Will connect to both the Massawa and Djibouti Corridors at Weldiya.	S2A Pre-Feasibility	2,900	Concessional Finance	Ethiopia Railways Corporation	Undertake feasibility
EPPP10	Sudan-Ethiopia Petroleum Pipeline	Petroleum/Gas Pipeline	Extending the 12-inch pipeline from the Haya region to Gedaref, Algalabat and then to Addis Ababa, Ethiopia, to supply Ethiopia with petroleum products. The total length of the pipeline is around 1,600km.	S2A Pre-Feasibility	300	Government funds	Sudanese Petroleum Pipeline Company	Undertake feasibility
EPPP11	Sudan-South Sudan Petroleum Pipeline	Petroleum/Gas Pipeline	Extending the 12-inch pipeline from the Madani region to Algabalain through Rabak to Juba. Algabalain is located near to the border of South Sudan. The length of this pipeline is approximately 320 km.	S1 Project Definition	250	Government funds	Sudanese Petroleum Pipeline Company	Undertake feasibility
TBPP12	South Sudan/Sudan (Renk) One Stop Border Post	Border Post	Construction of OSBP associated with the Juba-Bor-Malakal-Renk-Sudan Border Road project.	S1 Project Definition	10	Concessional Finance	Sudan Revenue Authority; South Sudan Revenue Authority	Define project and undertake feasibility
TRDP13	Juba-Bor-Malakal-Renk-	Road	Upgrading of the road from Juba through Bor, Malakal and Renk to the Sudan border to paved	S1 Project Definition	200	Concessional Finance	South Sudan Roads Authority (SSRA)	Define project and undertake feasibility





	Sudan Border Road		regional corridor standard. The road sections are as follows: Juba-Bor 205 km; Bor-Malakal 400 km; Malakal-Renk 330km; Renk-border 30km.					
TBPP14	Kurmuk One Stop Border Post	Border Post	Upgrading of the border post facilities between Kurmuk, Sudan and Asosa, Ethiopia to OSBP standards.	S1 Project Definition	3.5	Government funds	Sudan Revenue Authority, Ethiopia Revenue and Customs Authority	Detailed project definition and feasibility to be undertaken
TRDP15	Asosa-Kurmuk Highway	Road	Upgrading the 99 km of road from Asosa in Ethiopia to Kurmuk on the border with Sudan to paved regional corridor standard.	S2B Feasibility	900	Government funds	Ethiopian Roads Authority	Undertake feasibility
TIWP16	Improvement of port facilities (Juba, Bor, Malakal and Renk) on the White Nile	Inland Port & Waterway	Rehabilitation of port facilities at Juba, Bor, Malakal and Renk on the White Nile	S1 Project Definition	900	Concessional Finance	South Sudan Ministry of Transport and Roads	Detailed project definition and feasibility to be undertaken
TIWP17	Improvement of port facilities at Kosti on the White Nile	Inland Port & Waterway	Rehabilitation of port facilities at Kosti on the White Nile	S1 Project Definition	150	Government funds	Sudan Ports Authority	Detailed project definition and feasibility to be undertaken
TIWP18	Rehabilitation of facilities for ports on Sobat River	Inland Port & Waterway	Rehabilitation of port facilities on Sobat River	S1 Project Definition	1804	Concessional Finance	South Sudan Ministry of Transport and Roads	Detailed project definition and feasibility to be undertaken
TIWP19	Provision of Navigation Aids on the White Nile	Inland Port & Waterway	Construction/ Installation of navigational aids such as light houses, lightships, buoys and radar beacons on the White Nile to improve the safety of shipping	S1 Project Definition	200	Donor grant	Sudan Ports Authority; South Sudan Ministry of Transport and Roads	Detailed project definition and feasibility to be undertaken
TRDP20	El Showak-Kono-	Road	Upgrading of the Road that links Sudan to Northern Ethiopia	S1 Project Definition	1200	Concessional Finance	Ethiopian Road Authority	Detailed project definition and feasibility to be undertaken





	Sabarna- El Homara							
TRDP21	El Fasher – Kabkabiya – El Geneina-Adri	Road	Upgrading of the Road that links Sudan to Chad	S1 Project Definition	900	Concessional Finance	Sudan National Highways Authority	Detailed project definition and feasibility to be undertaken
TRDP22	Nyala - Rihaid El Birdi – Om Dafuq	Road	Upgrading of the Road that links Sudan to Central Africa	S1 Project Definition	900	Concessional Finance	Sudan National Highways Authority	Detailed project definition and feasibility to be undertaken
IFOP23	Khartoum – Juba fibre optic cable	Fibre Optic Cable	Fibre optic cable linking Khartoum to Juba.	S1 Project Definition	25	Concessional Finance	South Sudan Ministry of Telecommunications and Postal Service	Long-term vision project to be further developed in future IRIMP revision
IFOP24	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies
TIWP25	Dredging of River Channel (Juba to Renk) and Rehabilitation of 11 ports and Provision Navigation Aids	Inland Water Ways	Dredging of the Nile to improve the navigability of the river and enhance the utilisation of the inland water way as a main route for evacuation of cargo and movement of people between South Sudan and the Sudan	S2B Feasibility	102.5	Donor funding; Government funding	South Sudan Ministry of Transport	Project structuring





Figure 3.12: Development of physical infrastructure on the Port Sudan Corridor, 2031-2050

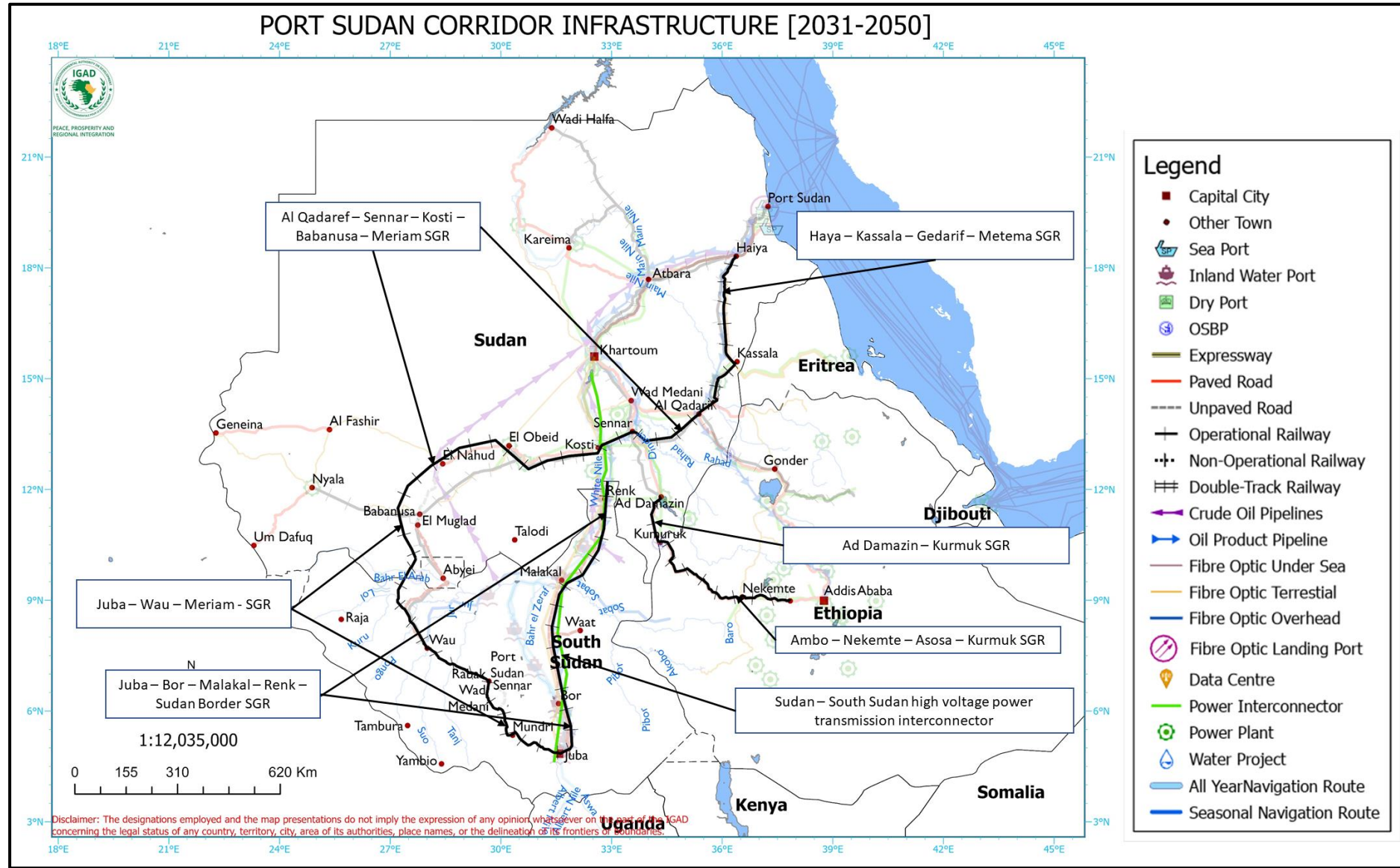




Table 3.11: Planned physical infrastructure projects on the Port Sudan Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAP26	Haya-Kassala-Gedarif – Metema SGR	Railway	Construction of a standard gauge railway from Haya to Metema at the Ethiopian border.	S2B Feasibility	3736	Concessional finance -China Exim Bank	Sudan Railways Corporation	Undertake feasibility, wait for construction of Port Sudan to Khartoum line
TRAP27	Gedarif-Sennar-Kosti-Babanusa-Meram SGR	Railway	Construction of a standard gauge railway from Al Quadarif to Meram at the border with South Sudan.	S2B Feasibility	1824	Concessional finance -China Exim Bank	Sudan Railways Corporation	Undertake feasibility, wait for construction of Port Sudan to Khartoum line
TRAP28	Ad-Damazin - Kurmuk Railway SGR	Railway	Construction of a standard gauge railway from Al Damazin to Kurmuk at the border with Ethiopia.	S1 Project Definition	632	Concessional finance -China Exim Bank	Sudan Railways Corporation	Project was originally proposed, but later put on hold. Reassess project for viability
TRAP29	Juba-Bor-Malakal-Renk-Sudan Border Railway	Railway	Construction of a standard gauge railway from Juba via Bor, Malakal and Renk to the border with Sudan.	S1 Project Definition	3096	Concessional Finance	Ministry of Transport, South Sudan	Define project details and undertake feasibility
TRAP30	Ambo – Nekemte–Asosa–Kurmuk SGR	Railway	Construction of a standard gauge railway from Ambo (where it connects to Addis Ababa) to the border with Sudan at Kurmuk, via Nekemte and Asosa.	S2A Pre-Feasibility	2080	Concessional Finance	Ethiopia Railways Corporation	Undertake feasibility
TRAP31	Juba-Wau-Meram SGR	Railway	Construction of a standard gauge railway from Juba to link with the Sudan SGR at the border in Meram.	S1 Project Definition	5200	Concessional Finance	Ministry of Transport, South Sudan	Long-term vision project to be further developed in future IRIMP revision





EPIP32	Khartoum – Kosti – Renk – Malakal – Juba high voltage power transmission interconnector	Power Interconnector	Construction of a high voltage power transmission line linking Juba to Sudan.	S1 Project Definition	1152	Concessional Finance	Sudan Electricity Distribution Company (SEDC); South Sudan Electricity Corporation (SSEC)	Long-term vision project to be further developed in future IRIMP revision
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Economic Infrastructure Development Initiatives: Port Sudan Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Port Sudan Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced and presented in the following table.

The decision to formally establish the Port Sudan Corridor was made by the COMESA Ministers of Infrastructure during their 10th meeting in Lusaka, Zambia in October 2017. This was confirmed in a recent follow up meeting in January 2019 where it was agreed to establish a corridor management institution known as the Port Sudan Corridor Authority (PSCA) which will be responsible for facilitating the removal of physical and non-physical barriers to goods and people transiting through the corridor; monitoring corridor performance; advocating for and coordinating infrastructure development and maintenance; and promoting business development along the corridor. The PSCA will be funded through contribution by Corridor Member States, User levy and Development Partners contribution. The corridor countries (Sudan, South Sudan, Ethiopia) will adopt the COMESA Virtual Trade Facilitation System (CVTFS) an ICT system that enables the use of harmonisation tools including: harmonised axle load limits and vehicle dimensions; harmonised road user charges; COMESA Carrier Licence; Regional Customs Transit Guarantee; and the COMESA Yellow Card.

Table 3.12: Economic infrastructure initiatives for the Port Sudan Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	The principle to establish the PSCA has been agreed, now a trilateral agreement to be signed and approved by the governments; ratified and incorporated into the national legal frameworks	2024	Governments of Ethiopia, Sudan and South Sudan (with COMESA oversight)
Harmonisation of regulations on gross vehicle mass and axle loads	No harmonisation of axle loads, and in South Sudan there are no weighbridges to police overloading	The limits set by COMESA are eight tons on all axles, whether they be in groups of two, three, or four, for a total of 48 tons. Member states have agreed to adopt these limits set by COMESA through implementation of CVTFS	2024	PSCA (once established) and Governments of Ethiopia, Sudan and South Sudan (with COMESA oversight)
Harmonisation of customs procedures and the use of pre-clearance	No harmonisation of procedures. Ethiopia uses a management system developed for them by the Webb Fontaine Group, a private-sector company	Member states have agreed to use CVTFS which will ensure harmonisation	2024	Ethiopian Revenues and Customs Authority (ERCA); Sudan Customs Authority; South Sudan Customs Authority
Cargo tracking system	No harmonised cargo tracking system in place	CVTFS has a cargo tracking system	2024	PSCA (once established) and Governments of Ethiopia, Sudan





				and South Sudan (with COMESA oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	PSCA should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2024	PSCA
Spatial Development Initiative (SDI)	The focus of the corridor has been on improving physical infrastructure and to a lesser extent logistics services in the corridor, little attention has been paid to wider economic development	PSCA should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectoral targeted interventions to promote private sector investment	2024	PSCA
Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from existing COMESA framework where possible)	2024	PSCA
Investment Promotion Agency	See above	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2024	PSCA
Agency and budget for joint infrastructure planning, investment, and maintenance	The PSCA will be jointly funded by member states and will have responsibility for coordinating investment and maintenance	PSCA should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2030	PSCA, Governments of Ethiopia, Sudan, and South Sudan
Removal of remaining non-physical barriers to the flow of goods, services, and people	Ethiopia and Sudan have a simplified tariff regime	Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	PSCA, Governments of Ethiopia, Sudan, and South Sudan





Section 3.5 LAPSET Corridor

Status	Stage 1 – Basic Transport Corridor
Total length of corridor	3,262 km
Countries served	Kenya, South Sudan, Ethiopia
Distance from capital to port	Nairobi, 800 km; Juba, 1,639 km; Addis Ababa, 1,886 km
Total population within 50km	100 million
Total intercontinental trade	None as port not operational
Total intra-regional trade	0.24 million tonnes
Transport infrastructure	Road and border post complete from Nairobi to Addis Ababa; port and roads under construction
ICT, energy, water connections	Ethiopia-Kenya 500kV power transmission interconnector. Lamu, main hub is to be served by High Grand Falls Multi-Purpose Dam in the medium term.

The LAPSET Corridor refers to the ongoing and planned infrastructure developments linking the new deep-sea port at Lamu to northern Kenya, South Sudan and southern Ethiopia. The LAPSET Corridor will provide access to an efficient transport network for over 100 million people, a key exit point for exports from South Sudan, Ethiopia and the planned special economic zone in Lamu, serve as a transshipment hub for the East and Horn of Africa regions, and provide much needed increase in capacity and an alternative to the ports of Mombasa (for Kenya and South Sudan) and Djibouti (for Ethiopia).

A CMI has been established to manage the development of the corridor, the LAPSET Corridor Development Authority (LCDA), in March 2013 through *The LAPSET Corridor Development Authority Order*. However, this only establishes LCDA in Kenya and there is no multilateral agreement with South Sudan or Ethiopia to recognise the authority of LCDA in these countries. As such, it is primarily focussed on developing the corridor in

Kenya at the moment, though it has coordinated the signing of MoUs with neighbouring member states.

The corridor is in its nascent stage, but several investments are complete or underway, including: ongoing construction of first three berths at Lamu Port at a cost of \$600m; Isiolo-Moyale-Agremariam Highway completed in 2019; Moyale OSBP completed in 2018; with further road projects due to be completed in 2019 (Lamu-Garsen and Lockichar – Lodwar - Nakodok). The first berth was completed in September 2019 with the port commissioning planned for 2021. Until the road projects are completed, however, the corridor will not function as a conduit for trans-border inter-continental trade. The highest priority for the corridor is to find investors, or conclude transactions, for the remaining roads projects that are currently not under implementation (Lamu-Garissa-Isiolo; Isiolo-Lokichar; and Juba-Torit-Kapoeta-Nadapal). Another key backbone infrastructure to the corridor is the proposed crude oil pipeline, initially from the Lokichar Oil Fields to Lamu port, but eventually being extended to South Sudan. This project is being driven by the private sector, Tullow Oil, and is due to begin in 2022.

The IRIMP study has identified a number of projects related to the LAPSET Corridor in the inventory. These have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1. The data in these summary tables are presented below in a series of annotated maps illustrating the proposed development of the corridor infrastructure in each planning period to 2050. Following each map is a table providing more detail on each project to be implemented during that planning period. The final section provides recommended economic infrastructure initiatives in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics service.





Case Study 6: Missing Links in Addis Ababa – Nairobi Highway

The road from Addis Ababa to Nairobi forms part of Trans African Highway Number 4: Cairo to Cape Town, as well as a key component of the LAPSSET Corridor. Despite the importance to regional connectivity and integration, large stretches of the road remained unpaved and in poor condition until 2016, specifically Isiolo to Moyale on the Kenyan side, and Moyale to Agremariam on the Ethiopian side. Though the road has formed part of TAH4 since its inception in 1971, the decision to upgrade and rehabilitate the road to the required standards for a regional highway was made in 2008, and was subsequently included as a priority project in the 2011 Horn of Africa Initiative. The work was divided into three sections: Agremariam-Moyale; Moyale-Marsabit; Marsabit-Isiolo. Funding was provided by AfDB for the Ethiopian segment as well as Moyale-Marsabit, a total of \$670m while the EU funded Marsabit-Isiolo, at a cost of around \$400m.

The impacts have been significant. Travel time between Nairobi and Moyale has reduced from three days to eight hours resulting in increased trade between the two countries, transport costs have reduced from 0.49 to 0.28 cents per km, while Kenyan customs revenue along the corridor in 2017 was \$17m.

The critical success factor was the joint packaging of investments between Kenya and Ethiopia with the AfDB funding segments on both sides of the border simultaneously to synchronise construction. Cooperation and coordination between funders was also critical with the EU picking up the remaining segment in Kenya to ensure all missing links were completed at the same time. This was made possible due to the clear and sustained commitment from both member states to implement the project, demonstrated by the signing of an MoU in 2008 and the inclusion of the project as a priority in the Horn of Africa Initiative.

Case Study 7: Lamu Port Development, Phase 1

The deep-sea port at Manda Bay, Lamu County was first proposed in 1975 and later revived by NEPAD in 2006 becoming a key project in Kenya's Vision 2030, launched in 2008. When complete the port will have 32 berths consisting of 4 bulk berths, 6 container berths, 21 general cargo berths and 1 liquid bulk berth, making it the second largest container port in Sub-Saharan Africa and largest in East Africa. The port development is the anchor project of the LAPSSET Corridor. The first berth is complete and due for commissioning in with the other two berths – berth 2 and 3 expected to be completed by February 2021.

The greenfield nature of the project site presented some difficulty in attracting investors to develop the initial phase of the project, due to the high levels of risk and uncertainty involved. As a consequence, the Government of Kenya decided to finance the construction of the first three berths through the national budget, costing \$600m. Funding the first phase of the port demonstrated GoK's commitment to the project, and has assisted in negotiations to secure funding for the second phase as well as the associated road projects. Through NEPAD-IPPF, the project has received a grant of USD 2,141,590 to undertake the transaction Advisory Consultant for the Lamu Port 2nd phase development as well as an adjacent Special Economic Zone in Lamu. This is expected to assess the projects bankability and prime them for investors uptake.

Funding a future port project of this scale through national budget, however, is not recommended. Rather it is more efficient to form a public-private partnership (PPP) whereby the government provides guarantees or part-funding of the project to lower the uncertainty and risk involved for private investors. The government can also take a minority stake in the ownership of the port to demonstrate commitment and reduce risk for private sector investors.





Photos of LAPSET Corridor infrastructure, clockwise from top left: construction of Lamu Port berth 3, due to be completed June 2019; workers pouring concrete for berth superstructure; ongoing land reclamation for port yard; Moyale OSBP

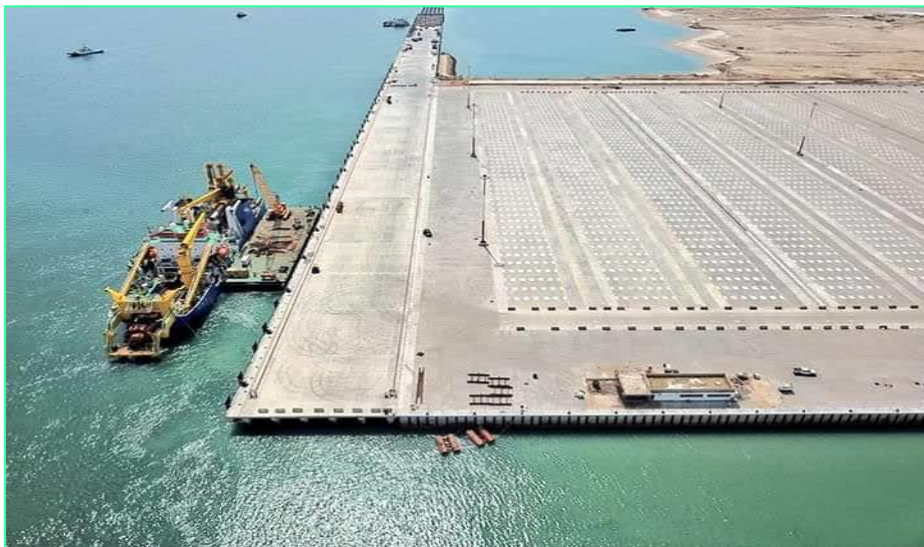




Figure 3.13 Current status of physical infrastructure on the LAPSSET Corridor, 2019

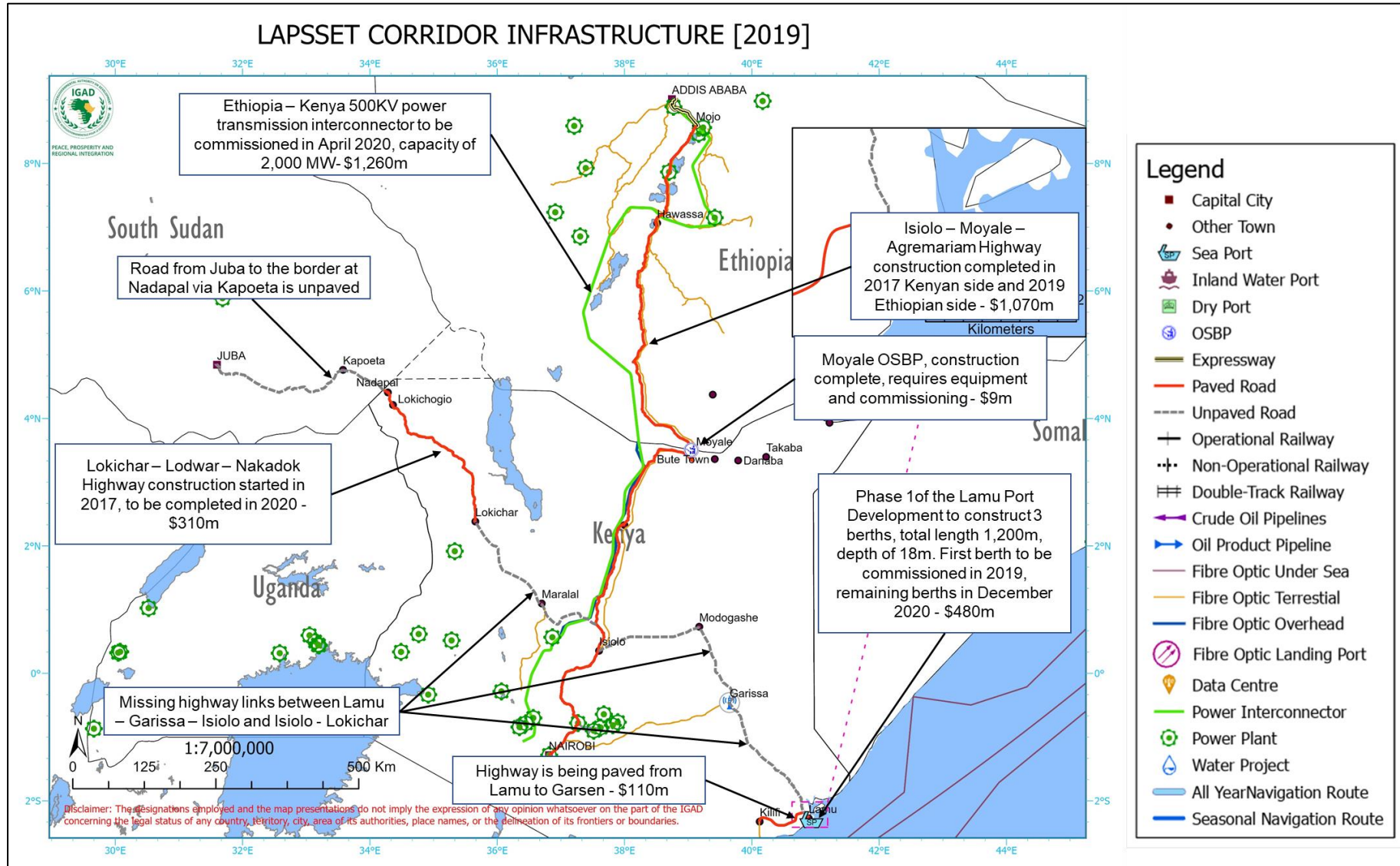




Figure 3.14: Development of physical infrastructure on the LAPSSET Corridor, 2020-2024

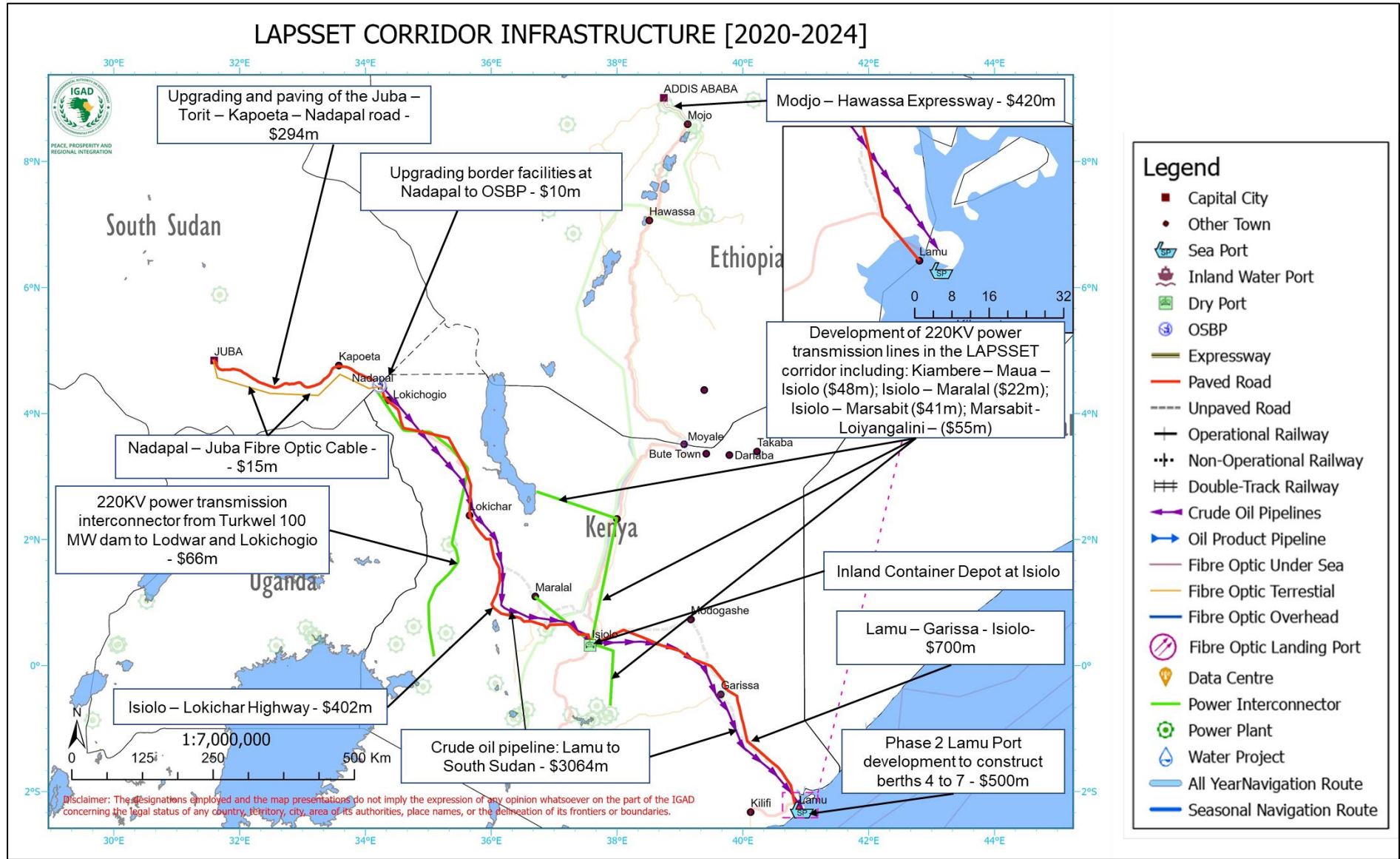




Table 3.13: Planned physical infrastructure projects on the LAPSSET Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPL01	Lamu Port Phase 2: Berths 4 to 7	Sea Port	Construction of berths four to seven of the Lamu Deep Sea Port. Berths four to six will be financed by the private sector. The project is part of the overall Lamu Port project to construct a 32-berth port at an estimated cost of \$5billion, which forms the anchor project of the LAPSSET Corridor programme.	S3B Transaction Support & Financial Close	500	PPP	LAPSSET Corridor Development Authority; Kenya Ports Authority	Undertake negotiations with private sector for operations and next phase construction
TRDL02	Lamu – Garissa – Isiolo Highway (Horn of Africa Initiative)	Road	Construction of a new 530km highway from Lamu to Isiolo. Forming part of the inter-regional highways constructed under the LAPSSET Corridor programme. Detailed Engineering Design completed in 2016; Project Agreement signed between GoK and DBSA Consortium on 29th November 2017 for construction of the road.	S3A Project Structuring	700	PPP	Kenya Highways Authority (KeNHA); LAPSSET Corridor Development Authority	DBSA has agreed to finance but transaction needs to be concluded
EPPL03	Crude Oil Pipeline: Lamu to South Sudan	Petroleum/ Gas Pipeline	The crude oil pipeline in Kenya will be constructed in three phases consisting of Lamu-Isiolo (540km) \$1,480 million, Isiolo-Nakodok (780 km) \$1,240 million, and Lamu Port Area \$340 million. It is planned to link up with a pipeline to Jonglei at the South Sudan border. The Crude Oil Pipeline Front End Engineering Design (FEED) studies were completed in 2019 and a Joint Development Agreement (JDA) was signed between the Government of Kenya and Upstream Investors (Tullow	S2B Feasibility	3,064	PPP, Tullow Oil	Tullow Oil; LAPSSET Corridor Development Authority	Progressing the Investment decision and first oil flows expected in 2022





			Oil Company, Africa Oil and Maersk) in 2017.					
TRDL04	Isiolo-Lokichar Highway	Road	Construction of a new highway from Isiolo to Lokichar. Forming part of the inter-regional highways constructed under the LAPSET Corridor programme. The Isiolo – Lokichar section is under Feasibility Study and Detailed Engineering Design stage.	S2B Feasibility	402	Blended finance	Kenya Highways Authority (KeNHA); LAPSET Corridor Development Authority	Survey of realigned route
TBPL05	Nadapal One Stop Border Post	Border Post	One-Stop Border Post (OSBP) facility at Nadapal border between South Sudan and Kenya, on the LAPSET Corridor. Implement concurrently with the Juba-Torit-Kapoeta-Nadapal road upgrading project.	S3A Project Structuring	10	Donor grant	Kenya Revenue Authority (KRA); South Sudan Customs and Revenue Authority	Identify potential funders and secure financing
TRDL06	Juba-Torit-Kapoeta-Nadapal Road	Road	Upgrading of 365 km Juba-Torit-Kapoeta-Nadapal single carriageway road in South Sudan. The road links with the proposed South Sudan/Kenya OSBP project at Nadapal. The objective of the proposed project is to enhance interstate and regional connectivity, through upgrading a priority road section along a critical national and international corridor. The proposed project contributes to the overarching goal of integrating South Sudan to the regional markets and supporting the state of South Sudan to function as a nation as well as enhancing trade and socio-economic development in the region.	S3A Project Structuring	294	Concessional finance - AfDB	South Sudan Roads Authority	Project structuring and secure financing
TRDL07	Modjo – Hawassa Expressway	Road	The Modjo – Hawassa Highway Project (209km) will be implemented in two phases. Phase 1 consists of the construction of 93 km of a new asphalt	S3A Project Structuring	420	Concessional finance - AfDB	Ethiopian Roads Authority (ERA)	Phase 1 is underway, need to conclude financing agreement for Phase 2





			surfaced 4-lane dual carriageway road between Modjo and Zeway towns. Phase 2 will be from Zeway to Hawassa.					
EPILO8	Multiple 220kV Power Transmission Interconnectors to power the LAPSET corridor	Power Interconnector	Several 220kV power transmission lines are planned to provide power to the corridor, including: 120km Turkwel – Lokichar – Lodwar line(100MUSD) 92km Loosuk – PS2 – Baragoi line(76MUSD), 165km 220kV Isiolo – PS6 - (Loosuk line(121.8MUSD), 320km 220kV Isiolo – PS6 - Garba Tula – PS9 – PS10 - Garissa line(168.78MUSD), 18km 220kV Lamu (Hindi) – Marine Terminal Jetty line(15MUSD), 220kV Lodwar – Lokichogio line(120MUSD) will be part of the Kenya – Southern Sudan Interconnection	S2B Feasibility	232	Concessional finance	Kenya Electricity Transmission Company (KETRACO)	Undertake feasibility studies
IFOL09	Nadapal – Juba Fibre Optic Cable	Fibre Optic Cable	The project will link South Sudan to Kenya to exchange traffic and voice data with the world via submarine landing points in Mombasa. Should have been implemented concurrently with construction in Kenya, but security issues prevented this.	S2A Pre-Feasibility	62	Donor grant – World Bank	South Sudan Ministry of Telecommunications and Postal Service	Fibre optic cable on the Kenya side connecting Nandapal to Eldoret is complete. Need to secure financing for South Sudan side.
IFOL10	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies
TCDL11	Isiolo Inland Container Depot	Inland Container Depot	Construction of a new inland container depot / dry port at Isiolo	S2A Pre-Feasibility	100	Concessional Finance	Kenya Highways Authority (KeNHA); LAPSET Corridor Development Authority	Undertake feasibility study





TRAL12	LAPSSET Railway Detailed Design	Railway	<p>The LAPSSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage. The Government Kenya and the Government of Ethiopia have signed a Bilateral Agreement to jointly pursue the development of the LAPSSET Standard Gauge Railway. A Memorandum of Understanding (MoU) has been signed between LCDA and Inter-Governmental Authority on Development (IGAD) to facilitate the financing of this stage through an Infrastructure Project Preparatory Fund (IPPF) available through the New Partnership for African Development (NEPAD).</p>	S2B - Feasibility	4000	Donor funding	LAPSSET Corridor Development Authority	Undertake project structuring and financial structuring plan.
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Figure 3.15: Development of physical infrastructure on the LAPSET Corridor, 2025-2030

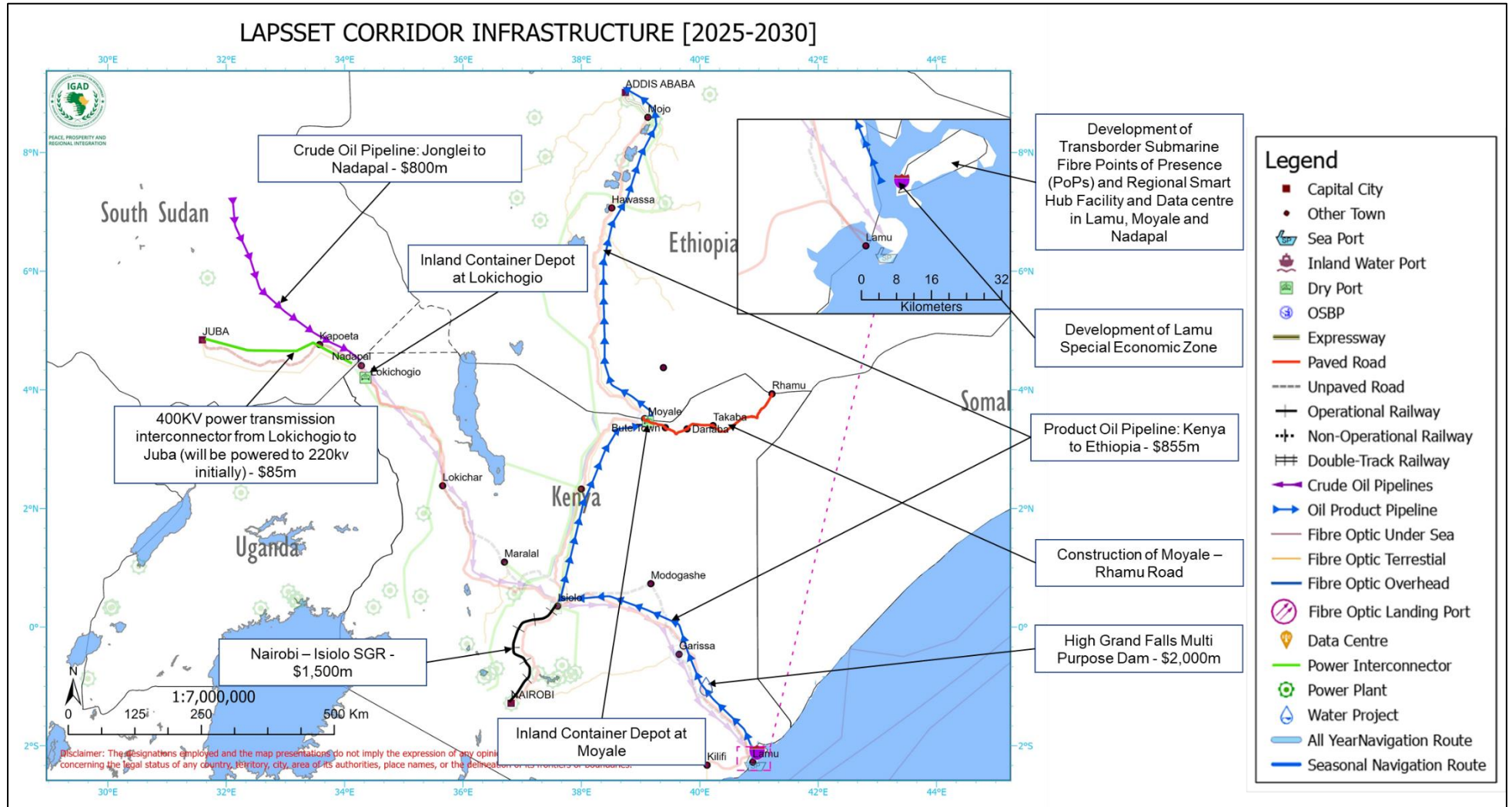




Table 3.14 Planned physical infrastructure projects on the LAPSET Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
EPPL13	Product Oil Pipeline: Kenya to Ethiopia	Petroleum/ Gas Pipeline	The project runs from Lamu – Isiolo – Moyale – Addis Ababa (Ethiopia), a distance of 1810 km. Considering that Kenya and Ethiopia are connected through road infrastructure, it might be strategic to fast track the construction of a product pipeline connecting to Ethiopia which to-date does not have a product pipeline. The Bilateral Agreement on the development and operation of the Lamu Port – Isiolo, Nakuru – Isiolo and Isiolo – Moyale – Hawassa – Addis Ababa Product Oil Pipeline was drafted and approved by the Attorney General on 17th June 2016. The Bilateral Agreement was then negotiated with Ethiopia during Bilateral negotiations held on 18th and 19th June 2016. The Agreement was then signed on 23rd June 2016 during the state visit to Kenya by Prime Minister of the Federal Democratic Republic of Ethiopia.	S2A Pre-Feasibility	885	PPP	LAPSET Corridor Development Authority	Design of pipeline by Investors; Feasibility study on pipeline project by investors.
TRAL14	Nairobi to Isiolo SGR	Railway	Nairobi-Isiolo phase of the SGR, 270 km in length. The LAPSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).	S2B Feasibility	1,500	Concessional loan	Kenya Railways Corporation; LAPSET Corridor Development Authority	The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage
EPPL15	Crude Oil Pipeline: Jonglei to Nadapal	Petroleum/ Gas Pipeline	Proposed South Sudan phase of the crude oil pipeline to link the oil producing regions from Jonglei to the Kenyan pipeline at the border in Nadapal / Nakodok.	S1 Project Definition	800	PPP	South Sudan Ministry of Petroleum and Mining	Undertake feasibility study





EPIL16	Kenya – South Sudan Interconnector (220KV)	Power Interconnector	The implementation of the 220KV interconnector is linked to the Jonglei crude oil pipeline. It will connect the grid in Juba and South Sudan to the Kenyan grid.	S1 Project Definition	85	Blended finance	Kenya Electricity Transmission Company (KETRACO)	Undertake feasibility study
TCDL17	Moyale Inland Container Depot	Inland Container Depot	Construction of a new inland container depot / dry port at Moyale	S1 Project Definition	100	Concessional Finance	Kenya Highways Authority (KeNHA); LAPSSET Corridor Development Authority	Undertake feasibility study
TCDL18	Lokichogio Inland Container Depot	Inland Container Depot	Construction of a new inland container depot / dry port at Lokichogio	S1 Project Definition	100	Concessional Finance	Kenya Highways Authority (KeNHA); LAPSSET Corridor Development Authority	Undertake feasibility study
WMRL19	High Grand Falls Multi-Purpose Dam	Multi-purpose Reservoir	The High Grand Falls Multi-Purpose Dam is a project to be located 50 km downstream of the Kiambere Hydro Power Station along the River Tana at Kitui, Embu and Tharaka-Nithi County's junction. The project scope is 165 km ² to hold over 5.6 billion m ³ of water. The project incorporates three user principles of 700 MW hydro power generation: the downstream area irrigation schemes of 250,000 Ha and supply of domestic and industrial water for Lamu Metropolis and LAPSSET downstream counties. The dam is a strategic reservoir that to tame perennial flash floods that occur in Tana Delta region.	S2B Feasibility	2,000	PPP through Build Operate Transfer (BOT) backed by a Power Purchase Agreement (PPA) by Kenya Power Limited (KPL)	Kenya Power Limited	Undertake feasibility study





TSP20	Lamu Special Economic Zone	Special Economic Zone	Development of a Special Economic Zone at Lamu adjacent to the port. The Transactional Advisory consultancy has been procured for both the Port and the Lamu SEZ and is currently at market sounding stage	S2B Feasibility	500	PPP	LAPSSET Corridor Development Authority (LCDA)	Undertake detailed Master Planning and role out the investors priming
IFOL21	Transborder Submarine Fibre Points of Presence (PoPs) and Regional Smart Hub Facility and Data centre	Fibre Optic Cable and Data Centre	The project will promote inter-connectivity infrastructure at the border points which will comprise of 400 Gbps PoPs and Smart Hub data centre in Mombasa are currently unavailable. The project interconnection contributes to the Trans – African ICT highway Cape to Cairo, Northern Corridor and LAPSSET corridor (Lamu port, Moyale and Nadapal).	S1 Project Definition	70	Concessional Finance	LAPSSET Partner Member States Ministries of ICT	Full Feasibility to be undertaken
TRDL22	Construction of Moyale – Banisa – Rhamu road	Road	The project is a 330 km road linking Moyale to Rhamu on to Mandera. The road is a missing link connecting the LAPSSET corridor with Mogadishu corridor	S1 Project Definition	330	Concessional finance	KeNHA	Undertake feasibility study





Figure 3.16: Development of physical infrastructure on the LAPSSSET Corridor, 2031-2050

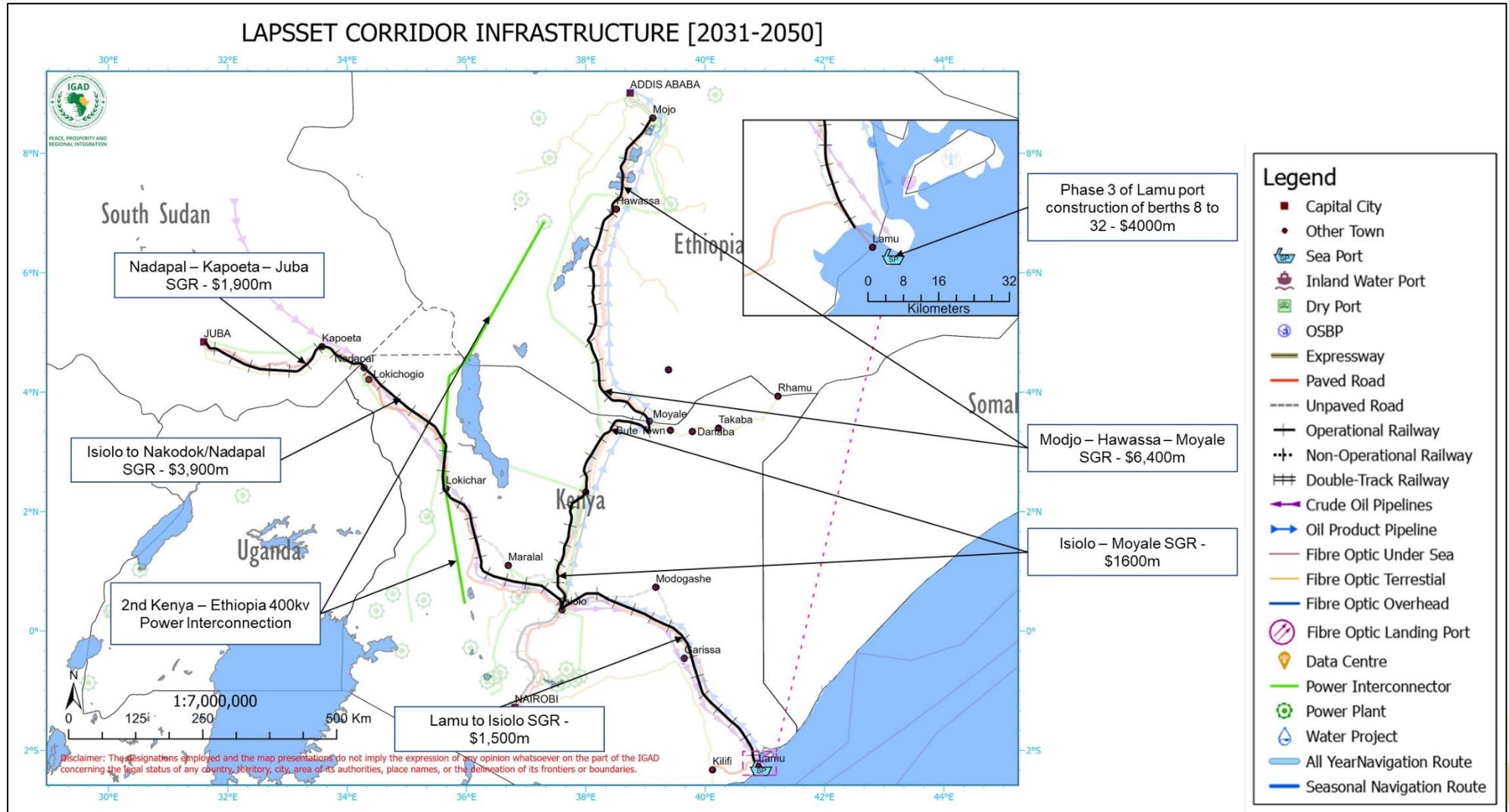




Table 3.15: Planned physical infrastructure projects on the LAPSSSET Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPL23	Lamu Port Phase 3: Remaining Berths	Sea Port	Construction of berths additional berths depending on demand the additional berths will be constructed in phases and financed by the private sector. The project is part of the overall Lamu Port project to construct a second port at an estimated cost of \$5billion, which forms the anchor project of the LAPSSSET Corridor programme.	S2A Pre-Feasibility	4,000	PPP	LAPSSSET Corridor Development Authority; Kenya Ports Authority	To be procured in phases subject to demand triggered by 80% occupancy of previous phases.
TRAL24	Lamu to Isiolo SGR	Railway	533km SGR line for freight and passengers. Part of LAPSSSET. The LAPSSSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).	S2B Feasibility	2132	PPP	LAPSSSET Corridor Development Authority	Full feasibility, environmental social impact assessment (resettlement RAP). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage.
TRAL25	Isiolo to Moyale SGR	Railway	448km SGR line for freight and passengers. Part of LAPSSSET. The LAPSSSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).	S2B Feasibility	1792	PPP	LAPSSSET Corridor Development Authority	Full feasibility, environmental social impact assessment (resettlement RAP). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage.
TRAL26	Modjo-Awassa-Moyale SGR	Railway	905 km SGR Line for freight and passengers. Part of LAPSSSET. The LAPSSSET Standard Gauge Railway (SGR) lines will run from Nairobi to	S2B Feasibility	3620	PPP	Ethiopian Railways Authority	Full feasibility, environmental social impact assessment





			Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).					(resettlement RAP). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage.
TRAL27	Isiolo to Nakodok/Nadapal SGR	Railway	738 km SGR Line for freight and passengers. Part of LAPSSET. The LAPSSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).	S2B Feasibility	2952	PPP	LAPSSET Corridor Development Authority	Full feasibility, environmental social impact assessment (resettlement RAP). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage.
TRAL28	Nadapal-Kapoeta-Juba SGR	Railway	368 km SGR Line for freight and passengers. Part of LAPSSET. The LAPSSET Standard Gauge Railway (SGR) lines will run from Nairobi to Isiolo (270 km), Lamu to Isiolo (533 Km), Isiolo to Nakodok (738 Km) Nakodok to Juba, South Sudan (368 km) and from Isiolo to Moyale (448 Km), Moyale to Addis Ababa, Ethiopia (905 km).	S2B Feasibility	1800	PPP	Ministry of Transport, South Sudan	Full feasibility, environmental social impact assessment (resettlement RAP). The railway project preliminary designs are complete for the Kenyan and Ethiopian route and expected to proceed to the Detailed Engineering Design stage.
EPIL29	2nd Kenya – Ethiopia 400kv Power Interconnection (Horn of Africa Initiative)	Power Interconnector	The construction of a 400KV power interconnector from Lodwar – Lokitung to Ethiopia 400KV proposed under the Horn of Africa Initiative. The project involves a 180km 400kv transmission line from Lodwar – Lokitung – Ethiopia Border on the Kenyan side.	S1 Project Definition	111.5	PPP	KETRACO, EEPCo	Undertake feasibility study





			<p>Its approximate cost is 111.6 million USD. Power to Lodwar will be supplied from:</p> <ol style="list-style-type: none"> 1. Proposed 400kV Baringo – Lodwar Transmission line 2. Proposed 400kV transmission line from Loiyangalani to Lodwar 					
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Economic Infrastructure Development Initiatives: LAPSET Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments, it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the LAPSET Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

The LAPSET Corridor has taken several steps towards becoming an EDC – despite not yet being a functional transport corridor to the port. These include the formation of the LAPSET Corridor Development Authority (LCDA), which has undertaken some regional economic development planning for the corridor. However, the activities of the LCDA in terms of coordinating and planning corridor investments has so far been limited to Kenya, and it does not appear that LCDA is legally recognised in South Sudan or Ethiopia. This means that it will be severely restricted in fulfilling the role of a CMI in terms of harmonisation of systems and regulations and removal of barriers to trade. It is recommended that the LCDA is recognised formally in a trilateral agreement which gives it the mandate to manage all aspects of corridor development across the three member states. Once this is done, steps should be made to establish the corridor, similar to those recommended elsewhere.

Table 3.16: Economic infrastructure initiatives for the LAPSET Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Establishment of Corridor Management Institution (CMI)	The LAPSET Corridor Development Authority has been established already in 2013, but only has legal status in Kenya. Tripartite negotiations spearheaded by UNECA, AU and NEPAD ongoing to institutionalise the implementation in the partner states.	A trilateral agreement recognizing the mandate of LCDA to be signed and approved by the governments; ratified and incorporated into the national legal frameworks Proposed institutional arrangement mirroring the Northern Corridor Development Authority	2024	Governments of Kenya, South Sudan, and Ethiopia (with IGAD oversight)
Harmonisation of regulations on gross vehicle mass and axle loads	No harmonisation of axle loads, and in South Sudan there are no weighbridges to police overloading	Recommended to adopt the limits set by COMESA through implementation of CVTFS (as with all IGAD corridors)	2024	LCDA and Governments of Kenya, South Sudan and Ethiopia (with IGAD oversight)
Harmonisation of customs procedures and the use of	No harmonisation of procedures.	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2024	Kenya Revenue Authority; South Sudan Customs Authority; Ethiopian





pre-clearance				Revenues and Customs Authority (ERCA)
Cargo tracking system	No harmonised cargo tracking system in place	Recommended to adopt the CVTFS cargo tracking system	2024	LCDA and Governments of Kenya, South Sudan and Ethiopia (with IGAD oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	<ul style="list-style-type: none"> LCDA should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure A system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure should be developed. 	2024	LCDA
Spatial Development Initiative (SDI)	Regional economic planning has been undertaken for the Kenya portion of the corridor	This should be updated and extended to the neighbouring member states	2024	LCDA
Corridor PPP framework	Individual member states have their own PPP frameworks	<ul style="list-style-type: none"> Adopt a harmonised PPP framework (adapt from an existing framework where possible, e.g. COMESA) Development of model law to guide investors and PPP in the transboundary projects 	2024	LCDA
Investment Promotion Agency	See above	<ul style="list-style-type: none"> Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor The partner states should form a Super national Authority/Agency to coordinate and mobilise resources and investments in the corridor 	2024	LCDA
Agency and budget for joint infrastructure planning, investment, and maintenance	No plans in place for joint funding of LCDA	<ul style="list-style-type: none"> LCDA should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget The partner states should form a Super National Authority/Agency for the management of the corridor and all the partner states to be contributing to the budget. 	2030	LCDA and Governments of Kenya, South Sudan and Ethiopia
Removal of remaining non-physical barriers to the flow of goods, services and people	Ethiopia and Kenya have visa-free travel arrangements	Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	LCDA and Governments of Kenya, South Sudan and Ethiopia





Section 3.6 Berbera Corridor

Status	Stage 1 – Basic Transport Corridor
Total length of corridor	470 km (merges with Djibouti Corridor at Dire Dawa)
Countries served	Somalia, Ethiopia
Distance from capital to port	Addis Ababa (935 km); Hargeisa (regional capital) (157 km); Mogadishu (1,411 km)
Total population within 50km	<5 million
Total intercontinental trade	1.77 million tonnes
Total intra-regional trade	0.15 million tonnes
Transport infrastructure	Port with minimal equipment and facilities that is currently being upgraded; road in poor condition
ICT, energy, water connections	Power transmission line to Jijiga; Development of the Berbera - Togochale Fibre optic cable in the short term; No water related projects

The Berbera Corridor links the port in Berbera in Somalia to Ethiopia via Jijiga and Dire Dawa, where it connects to the Djibouti Corridor and on to Addis Ababa. The development of the corridor has been designated a high priority by the government in Ethiopia as an alternative to the Djibouti Corridor, and was named as a priority programme in the 2011 Horn of Africa (HoA) Initiative, and was again included as a high priority in the 2014 World Bank HoA Initiative. The corridor is also an AU priority under the Programme for Infrastructure Development in Africa (PIDA) endorsed by Heads of State in 2012. The Government of Ethiopia, in the Growth and Transformation Plan (GTP) 2, has set a target to diversify 30% of trade from the port of Djibouti to Berbera by 2025.

In May 2016, Dubai Port World signed a 30-year concession to manage the port, and holds a stake of 51%, with the regional government of Somaliland holding 30% and Ethiopia 19%. This has acted as a catalyst for investment and several projects are currently underway, including: the first phase of the port upgrade costing \$101m, with a further phase of \$341m planned; rehabilitation and upgrading of the road from Berbera to Hargeisa began February 28, 2019 at a cost of \$80m funded by Abu Dhabi Fund; Hargeisa By-pass to commence in late 2019 funded by the UK Government at a cost of \$33m.

There are, however, still significant gaps that need addressing, both in terms of physical infrastructure and non-physical barriers. At present, the road is being upgraded from Berbera to Hargeisa, in addition to the by-pass, but there is no agreement to upgrade the road from Hargeisa to the border at Togachale, though discussions are ongoing with Abu Dhabi Fund. There is also an urgent need to upgrade the border crossing as currently the customs facilities are very limited and the majority of trade crossing the border is informal and unrecorded.

The IRIMP study has identified a number of projects related to the Berbera in the inventory. These have been screened and assessed against forecast demand and capacity in each time period in order to sequence investments. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1. The data in these summary tables are presented below in a series of annotated maps illustrating the proposed development of the corridor infrastructure in each planning period to 2050. Following each map is a table providing more detail on each project to be implemented during that planning period. The final section provides recommended economic infrastructure initiatives in three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics service.





Case Study 8: Coordination of investors in the ongoing road upgrade

As noted above, since the IRIMP study began there have been several developments on the Berbera Corridor related to the upgrade of the road from Berbera to the border with Ethiopia at Togochoale, with projects now ongoing to upgrade the road from the port to Hargeisa and the by-pass. The corridor serves as a case study to provide several lessons.

First, the need for sustained commitment through a long project gestation period. Pre-feasibility studies for the upgrade of the road sections were first conducted in 2003, funded by the EU, with the projects again identified as a priority in the Horn of Africa Initiative (HOAI) launched by the EU and IGAD in 2007 with a final set of priority projects agreed in 2011. Full feasibility studies, as well as detailed engineering designs were undertaken in 2014, again funded by the EU. Construction finally began in 2019, now funded by the Abu Dhabi Fund and to a new design specification. By the time all sections of the road are complete it will be around 20 years following the first identification and prioritisation of the projects, by which time they will have been included in multiple plans and initiatives, including the HOAI, PIDA PAP 1 and the IRIMP.

The second lesson is related to coordination, of both government and funders. Roads projects are normally implemented by the Somaliland regional government Roads Development Agency; however, the development of the Berbera Corridor projects has been assigned to the Somaliland Presidential Projects Office. This has created some confusion around roles and responsibilities.

Moreover, there is evidence of poor coordination among donors financing the projects and, at the time of writing, a lack of clarity surrounding which organisation is financing the sections of road from Hargeisa to Togochoale. It is understood that discussions are ongoing between the regional

government and the Abu Dhabi Fund to continue upgrading the road from the end of the by-pass to the border. However, at the same time, the EU and GIZ are also rehabilitating 60 km of the road from Hargeisa to Kalabaydh.

These issues highlight the need for a CMI to coordinate the activities of different stakeholders in corridor development. In the immediate future, the IGAD Secretariat could play this role to ensure the projects identified are completed as quickly and efficiently as possible.





Photos of Berbera Corridor infrastructure, clockwise from top left: Berbera Port in February 2019; unloading new cargo cranes purchased as part of the DP World investment upgrading the port facilities; Somalia-Ethiopia border crossing; poor condition of the road from Hargeisa to the border at Togochaale





Figure 3.17: Current status of physical infrastructure on the Berbera Corridor, 2019

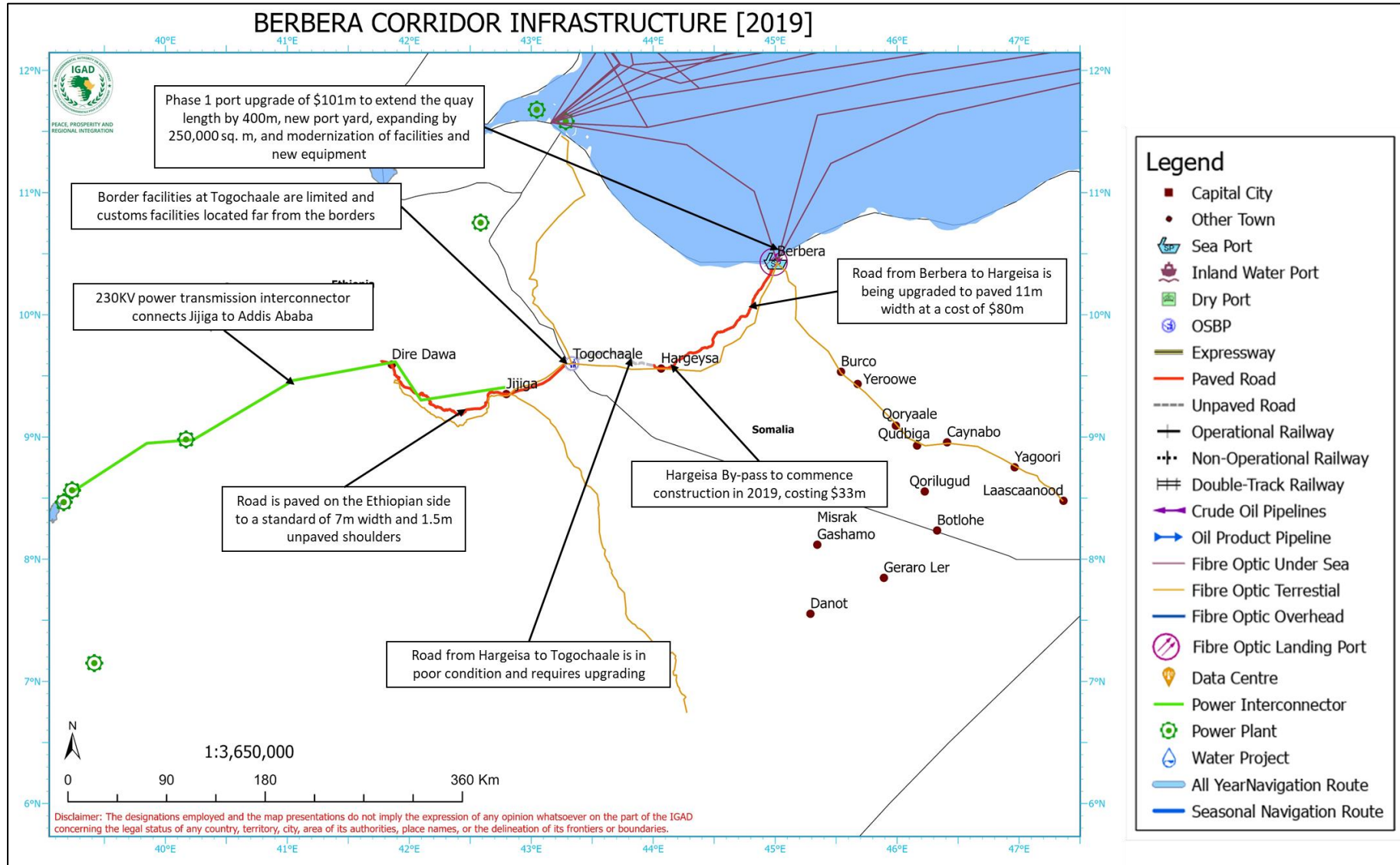




Figure 3.18: Development of physical infrastructure on the Berbera Corridor, 2020-2024

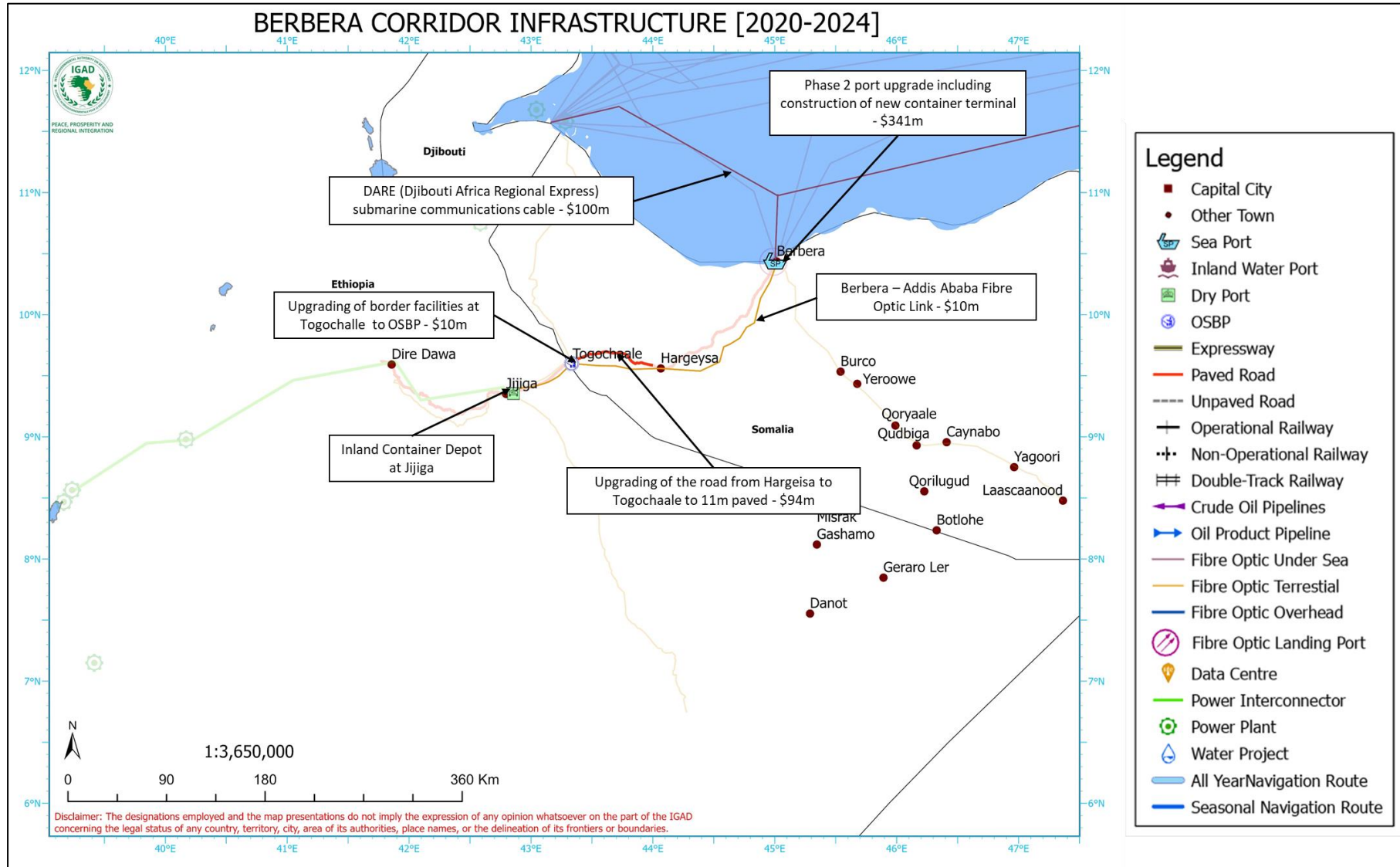




Table 3.17: Planned physical infrastructure projects on the Berbera Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPB01	Berbera Port Upgrade Phase 2	Sea Port	The first phase of the upgrade, which is ongoing, consists of extending the quay length by 400m, construction of a new port yard, expanding by 250,000 sq. m, and modernisation of facilities including purchase of new equipment. The second phase will comprise of construction of a new container port terminal and a petroleum terminal.	S2B Feasibility	341	Private Sector – DP World	Dubai Port World; Somaliland Ports Authority	The second phase of the upgrade will take place after the first phase is complete and sufficient demand for the port has been demonstrated
TRDB02	Berbera – Hargeisa - Kalabaydh–Togachale Road (Horn of Africa Initiative)	Road	Upgrading of the 90km of road from Hargeisa to Togachale to the standard required for a regional corridor. This is the final missing road link on the Berbera Corridor, with work ongoing to upgrade the road from Berbera to Hargeisa, and on the Hargeisa By-pass.	S2A Pre-Feasibility	35	Donor grant	Somaliland Roads Development Agency	Undertake a full feasibility and identify potential funders and financing arrangements
TBPB03	Togachale OSBP	Border Post	Construction of a One Stop Border Post facility on the border between Ethiopia and Somalia at Togachale.	S1 Project Definition	10	Donor grant	Ethiopia Revenue and Customs Authority (ERCA); Somalia Customs Authority	Undertake a full feasibility and identify potential funders and financing arrangements
TDPB04	Jigjiga Dry Port	Inland Container Depot	Construction of a dry port at Jigjiga to process Ethiopian cargo transiting through the port in Berbera, in order to reduce congestion on port facilities.	S1 Project Definition	100	Concessional finance	Ethiopian Shipping & Logistics Services Enterprise (ESLSE)	Undertake a full feasibility and identify potential funders and financing arrangements
IFOB05	Berbera – Togochaale Fibre Optic Cable	Fibre Optic Cable	The Berbera – Togochaale terrestrial optical fibre cable is an ICT project that will link Somalia and Ethiopia telecommunication networks. The estimated length of the cable will be 260 km and twenty-four pair with estimated capacity of 100G. The link will be designed according to the ITU standards which is globally accepted. In addition, the project will run along the Berbera – Togachale road.	S3A Project Structuring	10	Private sector	Telesom	Transaction advisory support





IFOB06	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies
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Figure 3.19: Development of physical infrastructure on the Berbera Corridor, 2025-2030

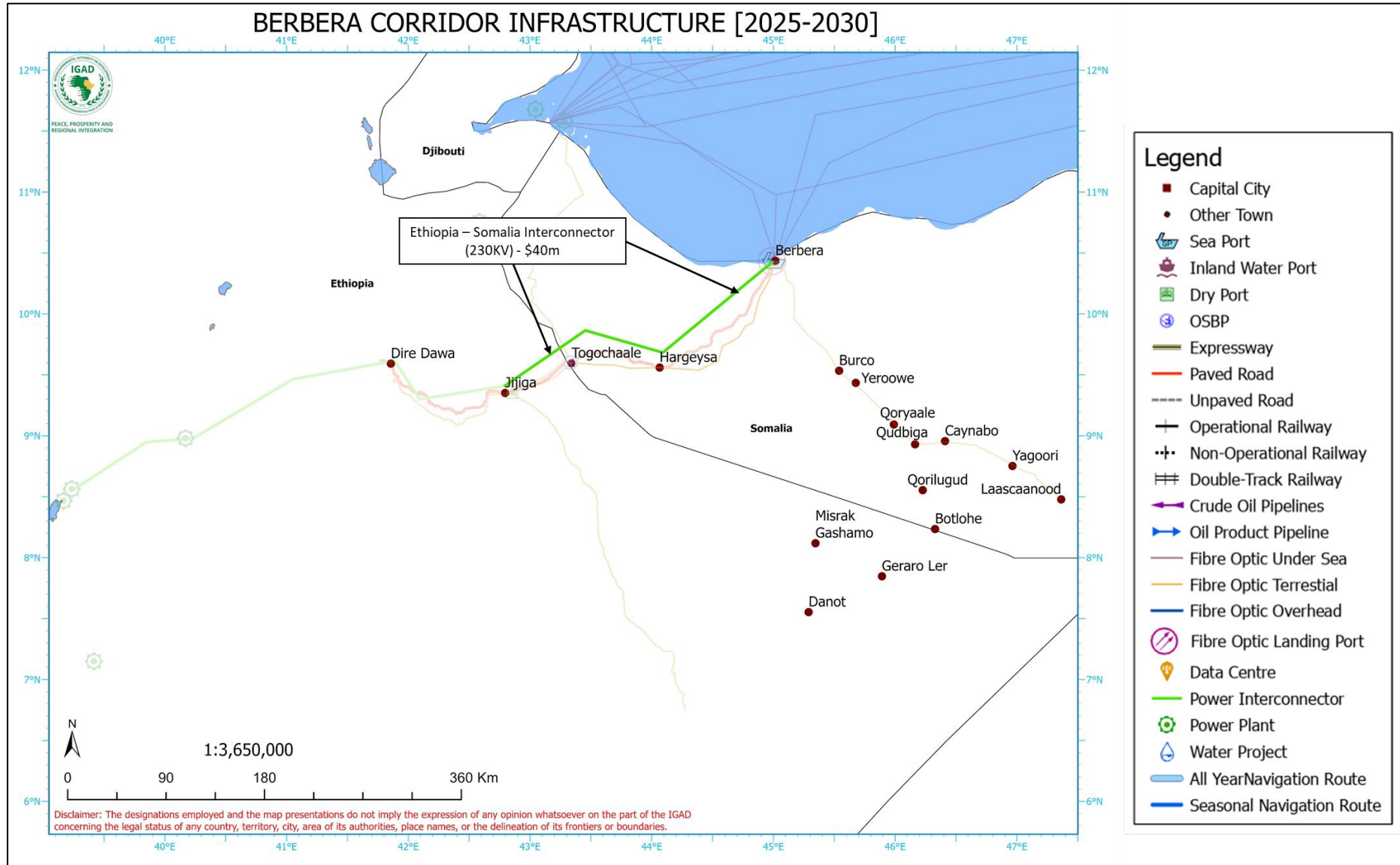




Table 3.18: Planned physical infrastructure projects on the Berbera Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
EPIB07	Ethiopia – Somalia Interconnector (230KV) (Horn of Africa Initiative)	Power Interconnector	230 KV power interconnectors from Jijiga to the port in Berbera via Hargeisa	S1 Project Definition	40	Concessional finance	Ethiopian Electric Power	Undertake a full feasibility and identify potential funders and financing arrangements





Figure 3.20: Development of physical infrastructure on the Berbera Corridor, 2031-2050

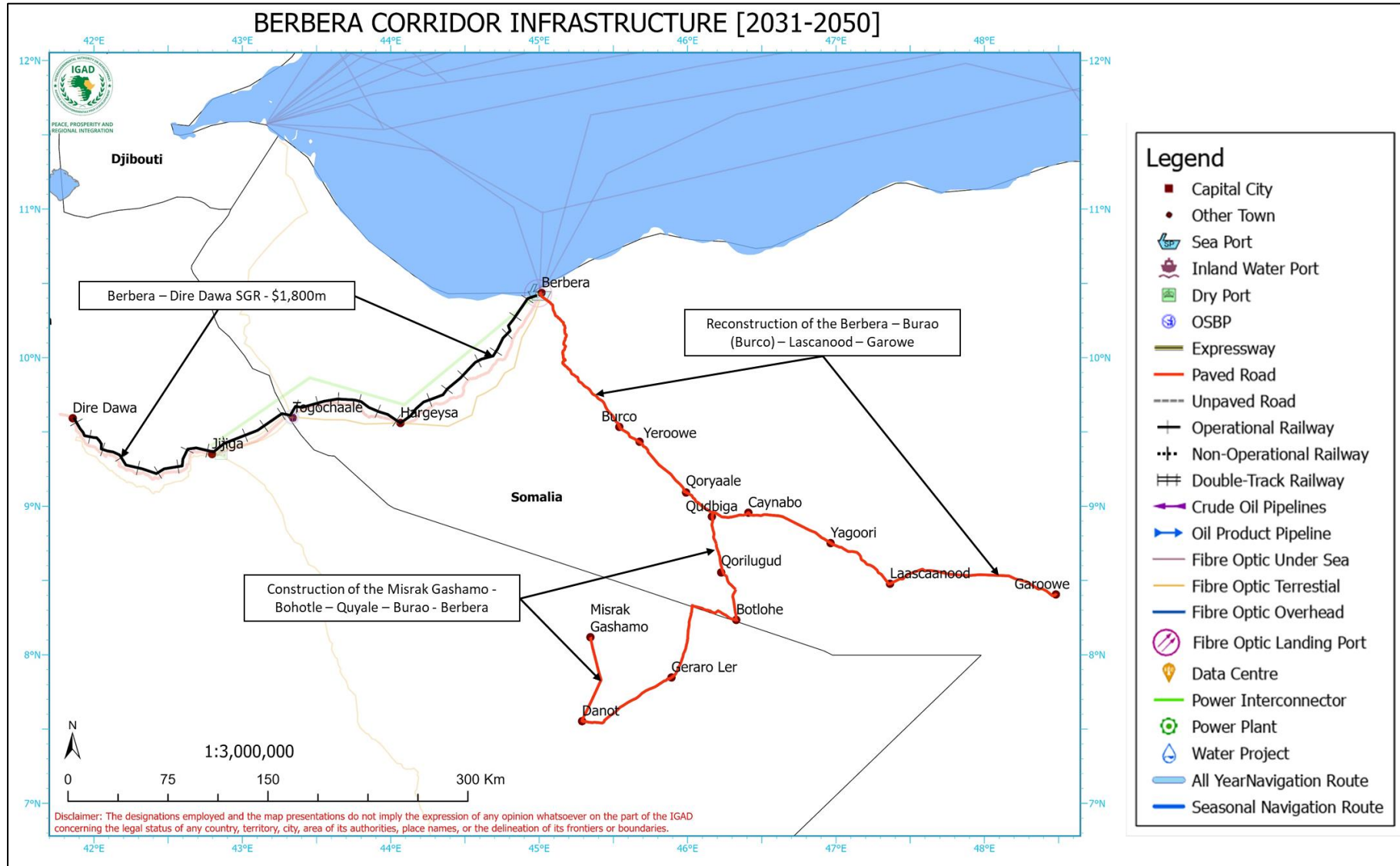




Table 3.19: Planned physical infrastructure projects on the Berbera Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRAB08	Berbera – Dire Dawa SGR	Railways	Single track SGR	S1 Project Definition	1,800	CONCESSIONAL FINANCE	Ethiopia Railways Corporation	Long-term vision project to be further developed in future IRIMP revision
TRDB09	Berbera – Burao (Burco) – Lascanood – Garowe	Road	Construction of 515.6 km road from Berbera to Garowe which joins to route to Bossaso port and to Mogadishu	S1 Project Definition	520	CONCESSIONAL FINANCE	Ministry of Transport, Somalia	Undertake feasibility studies
TRDB10	Misrak Gashamo - Bohotle – Quayale – Burao - Berbera	Road	Construction of road from Misrak Gashamo in Ethiopia to Burao in Somalia which joins to extend to Berbera Port	S1 Project Definition	568	CONCESSIONAL FINANCE	Ethiopia Roads Authority, Ministry of Transport Somalia	Undertake feasibility studies





Economic Infrastructure Development Initiatives: Berbera Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Berbera Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

As noted above, several physical infrastructure projects are ongoing to develop the Berbera Corridor and ambitious objectives have been set in terms of trade volumes (30% of Ethiopian trade according to GTP 2). There are also multiple non-physical barriers that need to be addressed for the corridor to function effectively, including customs agreements and facilities, roadblocks, and logistics services. The following initiatives are proposed.

Table 3.20: Economic infrastructure initiatives for the Berbera Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Upgrading of customs facilities and capacity building of staff	The level of customs and border management is substantially lower than required for functioning as a corridor for import, exports, and official transit cargoes. Customs facilities are situated some distance from borders needs to be solved by the provision of new buildings in the most effective locations.	Physical infrastructure is required at the border (e.g. an OSBP), in addition to ICT systems and capacity building of the customs and revenue authority in Somaliland through both training and recruitment.	2024	Regional Government of Somaliland Customs and Revenue Authority
Logistics services	No agreement in place for Ethiopian Shipping & Logistics Services Enterprise (ESLSE) to provide logistics services from Berbera port	Bilateral agreement for Ethiopian Shipping & Logistics Services Enterprise (ESLSE) to begin operations on the Berbera Corridor	2024	Government of Ethiopia and Regional Government of Somaliland
Removal roadblocks	There are more than 10 roadblocks for security checkpoints currently in place from Berbera to Togochaale. With the current levels of traffic, these do not impose much impediment, but with the forecast increase in traffic they have the potential to become severe bottlenecks	Systematic removal of checkpoints, with alternative security measures proposed if necessary	2024	Regional Government of Somaliland
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	A corridor management institution should be established through at least a trilateral agreement between the Government of Ethiopia, the Government of Somalia, and the Somaliland regional government.	2024	Governments of Ethiopia and Somalia (including regional government of





				Somaliland) with IGAD oversight
Harmonisation of regulations on gross vehicle mass and axle loads	Harmonisation unclear	Recommended to adopt the limits set by COMESA through implementation of CVTFS (as with all IGAD corridors)	2024	CMI (once established) and Governments of Ethiopia, and Somalia (including regional government of Somaliland) (with IGAD oversight)
Harmonisation of customs procedures and the use of pre-clearance	No harmonisation of procedures. Ethiopia uses a management system developed for them by the Webb Fontaine Group, a private-sector company	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2024	Ethiopian Revenues and Customs Authority (ERCA); Regional Government of Somaliland Customs and Revenue Authority
Cargo tracking system	No harmonised cargo tracking system in place	Recommended to adopt the CVTFS cargo tracking system	2024	CMI (once established) and Governments of Ethiopia, and Somalia (including regional government of Somaliland) (with IGAD oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2024	CMI
Spatial Development Initiative (SDI)	The corridor is not operational and has not attracted any significant inward investment	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectoral targeted interventions to promote private sector investment	2024	CMI
Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from and existing framework where possible, e.g. COMESA)	2024	CMI





Investment Promotion Agency	See above	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2024	CMI
Agency and budget for joint infrastructure planning, investment and maintenance	The CMI will be jointly funded by member states and will have responsibility for coordinating investment and maintenance	CMI should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2030	CMI (once established) and Governments of Ethiopia, and Somalia (including regional government of Somaliland) (with IGAD oversight)
Removal of remaining non-physical barriers to the flow of goods, services and people	At present, the border is fairly open with people and goods moving freely – at least as far as Jijiga – but this is an informal arrangement and will not suffice for a regional trade corridor	Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI (once established) and Governments of Ethiopia, and Somalia (including regional government of Somaliland) (with IGAD oversight)





Section 3.7 Massawa Corridor

Status	Stage 0 – not currently functioning
Total length of corridor	1,750 km (merges with Djibouti Corridor next to Semera)
Countries served	Eritrea, Ethiopia, Sudan
Distance from capital to port	Asmara, 113 km; Addis Ababa, 1,191 km; Khartoum, 1,115 km
Total population within 50km	20 million
Total intercontinental trade	1.75 million tonnes
Total intra-regional trade	N/A
Transport infrastructure	Roads, unpaved and poorly maintained to Ethiopia and Sudan; narrow gauge railway to Asmara, but equipment is very old
ICT, energy, water connections	No trans-border energy, ICT or water connections

The Massawa Corridor links the port of Massawa to the hinterland of Eritrea, northern Ethiopia, and eastern Sudan via road. A standard gauge railway link from Mekele to Awash is under construction. The corridor, as well as the corridor to the port in Assab, was closed to trade with Ethiopia from the commencement of the war in May 1998 to the rapprochement in July 2018. As a consequence, Ethiopian trade shifted primarily to the port of Djibouti, while the infrastructure on the Massawa Corridor has deteriorated. As part of the rapprochement, Eritrea has agreed to reopen its ports to Ethiopia, and an Ethiopian vessel docked for the first time in more than 20 years in September 2018.

²⁷ <https://africanarguments.org/2019/07/08/eritrea-and-ethiopia-a-year-of-peace-a-year-of-dashed-hopes/>

Recent investment has been limited, however the ongoing construction of the SGR lines from Awash to Hara Gebeya and onward to Mekele – primarily intended to connect these cities to the port in Djibouti – now form part of the Massawa Corridor and could be extended to Massawa. The Italian government has agreed to finance a feasibility study for the completion of the SGR to Massawa.

In the immediate future, the priority is to rehabilitate the primary road and border crossing from Ethiopia at Zalambessa so that the corridor can once again function as a trade corridor. The EU has been funding the rehabilitation of the existing gravel roads through the EU Trust Fund for Africa implemented through the United Nation’s Office for Project Services. The next phase of work will be to upgrade and pave these roads.

The rapprochement occurred after the commencement of the IRIMP study, and Eritrea is yet to reactivate its membership of IGAD, though this is expected to happen in the near future. Consequently, the IRIMP team has been restricted in its access to Eritrea for data collection. Reports indicate that the border has also been unilaterally closed once more by Eritrea, and the corridor is not currently functioning as a cross-border trade route.²⁷ Despite this, the corridor has been included as a priority due to the high potential to capture a significant share of Ethiopian trade due to the historic links between the two countries.

Though the IRIMP team has been restricted in its access to Eritrea, the study has identified some projects related to the Massawa Corridor, which have been assessed in the same way as the other corridors. The detailed infrastructure inventory and demand / capacity gap analysis is presented in table format in Annex 1.





Photos of Massawa Corridor infrastructure, clockwise from top left: an Ethiopian ship docks at Massawa port for the first time in 20 years in September 2018; berth at Massawa port; Massawa port and railway track; steam train operating on the narrow-gauge railway between Massawa and Asmara





Figure 3.21 Current status of physical infrastructure on the Massawa Corridor, 2019

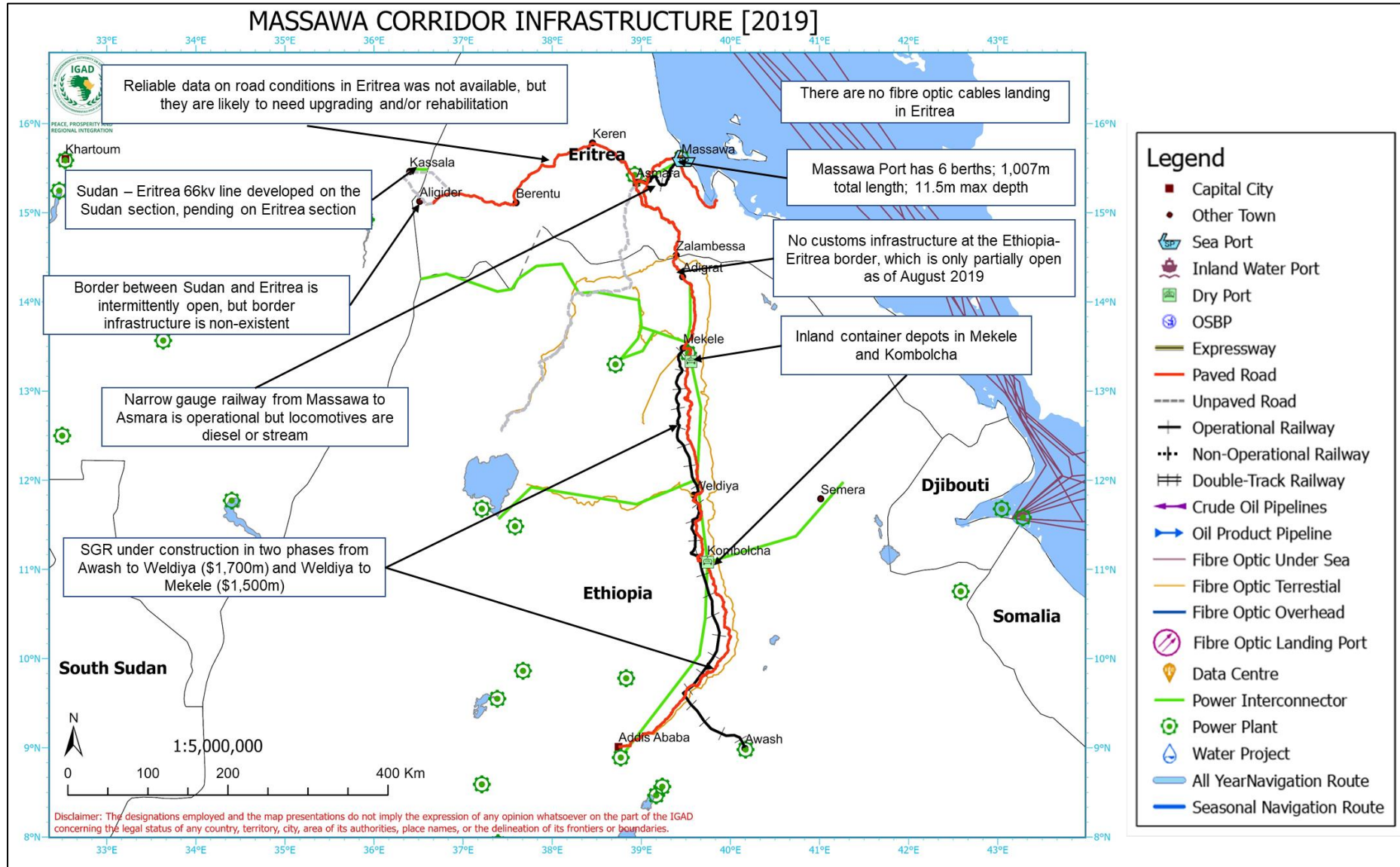




Figure 3.22: Development of physical infrastructure on the Massawa Corridor, 2020-2024

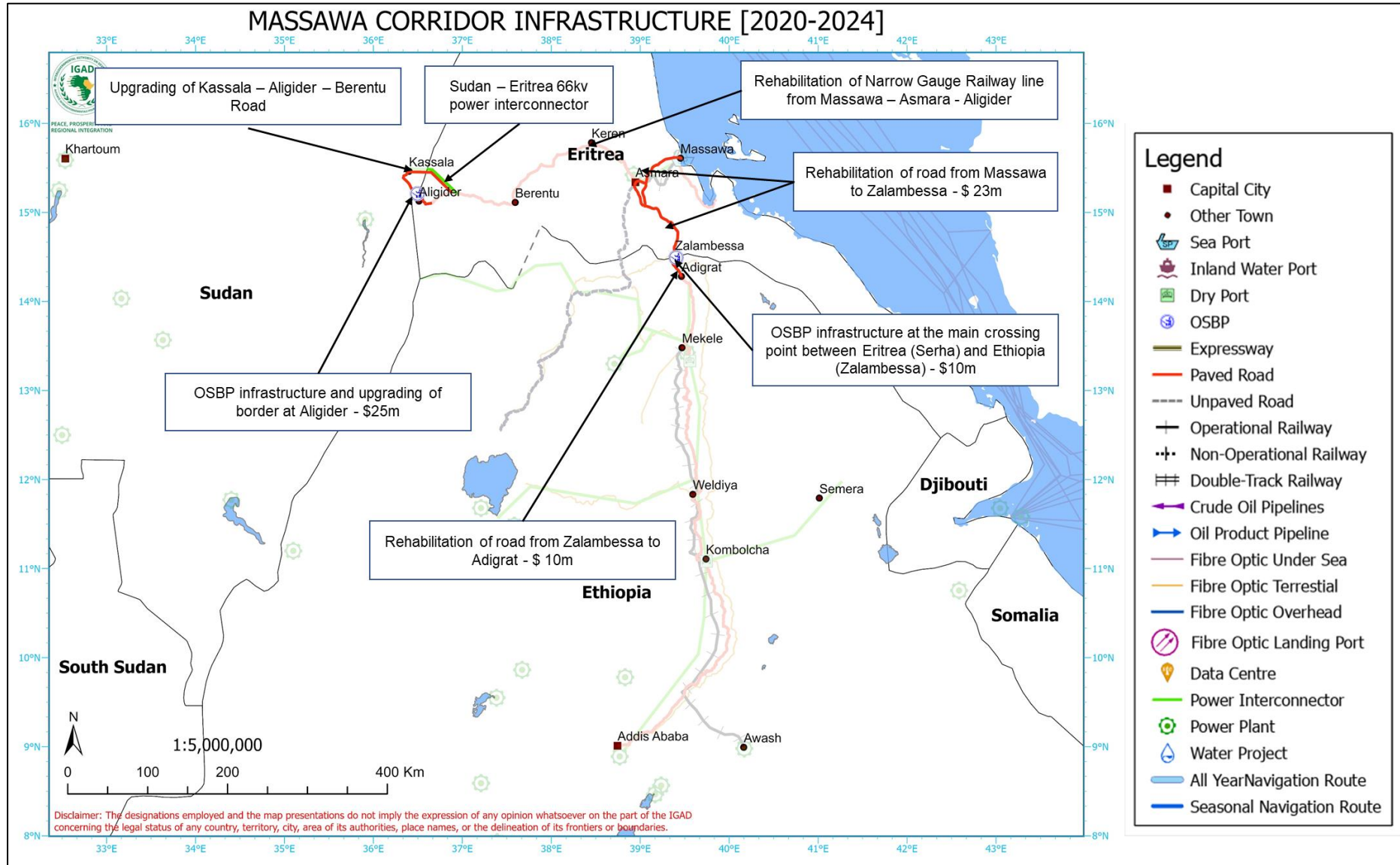




Table 3.21: Planned physical infrastructure projects on the Massawa Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRDM01	EU Road Rehabilitation	Road	The project will rehabilitate the road connections in Eritrea, between the port of Massawa and the border with Ethiopia at Serha (Eritrea) / Zalambessa (Ethiopia), 245 km or road	S3B Transaction Support & Financial Close	23	Donor Grant - EU Trust Fund for Africa	United Nation's Office for Project Services (UNOPS)	Finalise contracting and commence work
TRDM02	Rehabilitation of road between Adigrat and Zalambessa	Road	Rehabilitation of the 35 km of road from Adigrat to the border with Eritrea at Zalambessa	S2B Feasibility	10	Government funds	Ethiopian Roads Authority (ERA)	Feasibility study
TBPM03	Zalambessa / Serha One Stop Border Post	Border Post	One Stop Border Post infrastructure at the main crossing point between Eritrea (Serha) and Ethiopia (Zalambessa). At present there is no customs infrastructure at the border crossing	S1 Project Definition	10	Donor grant	Ethiopian Revenues and Customs Authority (ERCA); Eritrean Customs Authority	Detailed project definition and pre-feasibility study
TBPM04	OSBP infrastructure and upgrading of border road at Aligider	Border Post	One Stop Border Post infrastructure at the main crossing point between Eritrea and Sudan (Aligider) and upgrading of the road from Kassala.	S1 Project Definition	25	Donor grant	Sudan Revenue Authority; Eritrean Customs Authority; Sudan Roads Authority	Detailed project definition and pre-feasibility study
TRAM05	Rehabilitation of Massawa – Asmara – Aligider Narrow Gauge Railway line and upgrading of gauge	Railway	Rehabilitation of the dilapidated Narrow-Gauge Railway line from Massawa to Aligider through Asmara and upgrading of the gauge from NGR to SGR	S1 Project Definition	702	Donor grant and government funding	Eritrea Railroad Authority	Detailed project definition and pre-feasibility study
TRDM06	Upgrading of Kassala – Aligider – Berentu road	Road	Upgrading of the Kassala – Aligider – Berentu road which links Eritrea to Sudan	S1 Project Definition	10	Donor grant and government funding	Eritrea Roads Authority and Sudan National	Detailed project definition and pre-feasibility study





							Highways Authority	
EPIM07	Sudan - Eritrea 66kv power interconnector (Eritrea Section)	Power Interconnector	Development of 66KV power interconnector in Eritrea – an extension of the 66kv power line from Kassala to Aligider	S1 Project Definition	8	Government funding	Eritrean Electricity Authority	Undertake feasibility studies





Figure 3.23: Development of physical infrastructure on the Massawa Corridor, 2025-2030

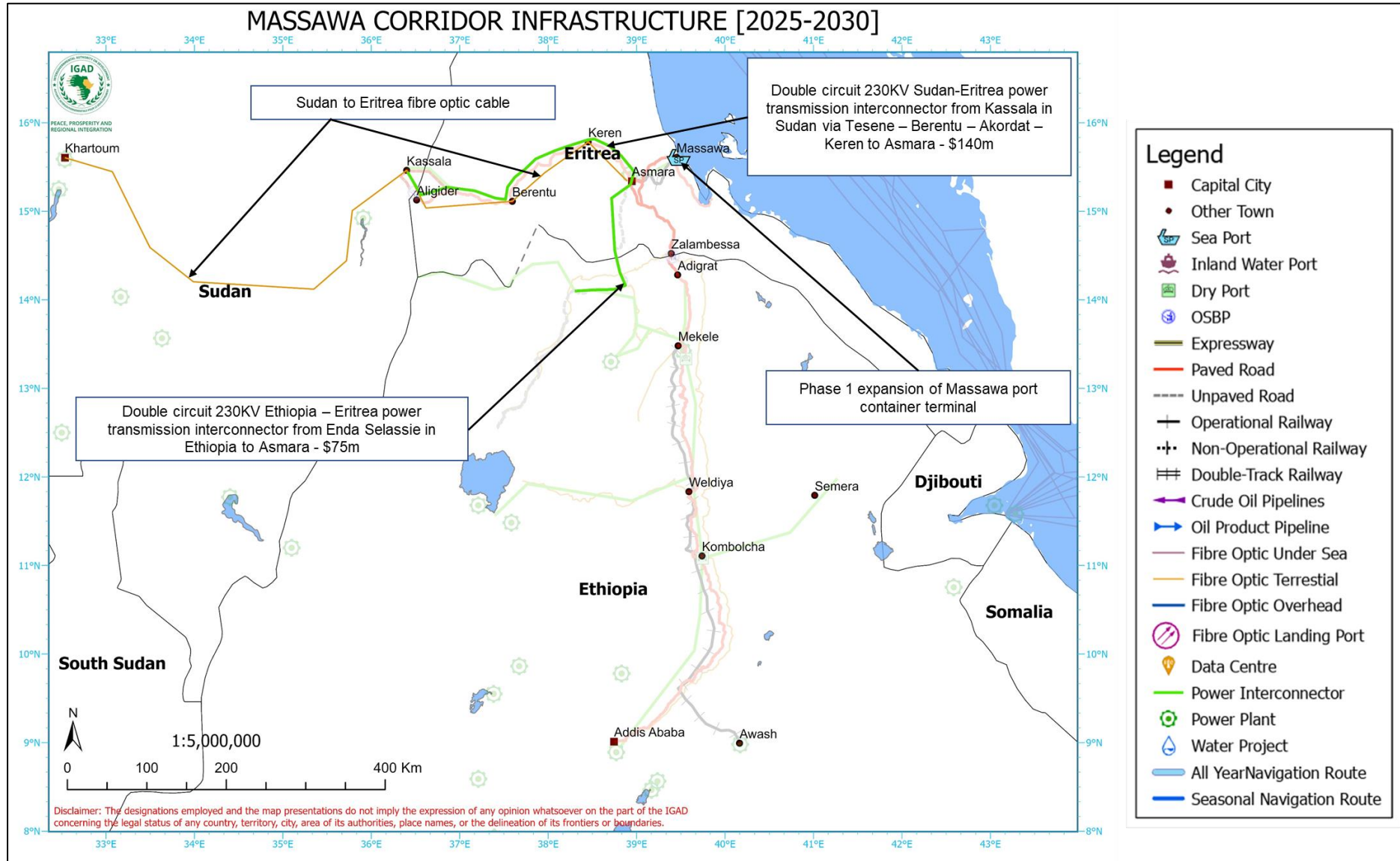




Table 3.22: Planned physical infrastructure projects on the Massawa Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPM08	Massawa Port Expansion Phase 1	Sea Port	Expansion of the port facilities at Massawa to accommodate the increase in trade from Ethiopia, in particular expansion of the container terminal	S1 Project Definition	100	PPP	Massawa Port Authority	Detailed project definition and pre-feasibility study
EPIM09	Eritrea – Sudan Interconnector (230KV)	Power Interconnector	Double circuit 230kV Sudan-Eritrea power transmission interconnector from Kassala in Sudan via-Tesene-Barentu-Akordat-Keren to Asmara, Eritrea	S2A Pre-Feasibility	140	Concessional finance	Eritrean Electricity Corporation (EEC); Sudanese Electricity Transmission Company Ltd. (SETCO)	Undertake full feasibility and identify potential funders
EPIM10	Eritrea – Ethiopia Interconnector (230KV) (Horn of Africa Initiative)	Power Interconnector	Double circuit 230kV, Ethiopia-Eritrea (Enda Silasie-Asmara) power transmission interconnector	S2A Pre-Feasibility	75	Concessional finance	Eritrean Electricity Corporation (EEC); Ethiopian Electricity Power Cooperation (EEPCo)	Undertake full feasibility and identify potential funders
IFOM11	Sudan-Eritrea Fibre-optic Link	Fibre Optic Cable	Construction of a fibre optic link between Khartoum (Sudan) and Asmara (Eritrea)	S1 Project Definition	10	Private sector	CONCESSIONAL FINANCE	Detailed project definition and pre-feasibility study
IFOM12	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies





Figure 3.24: Development of physical infrastructure on the Massawa Corridor, 2031-2050

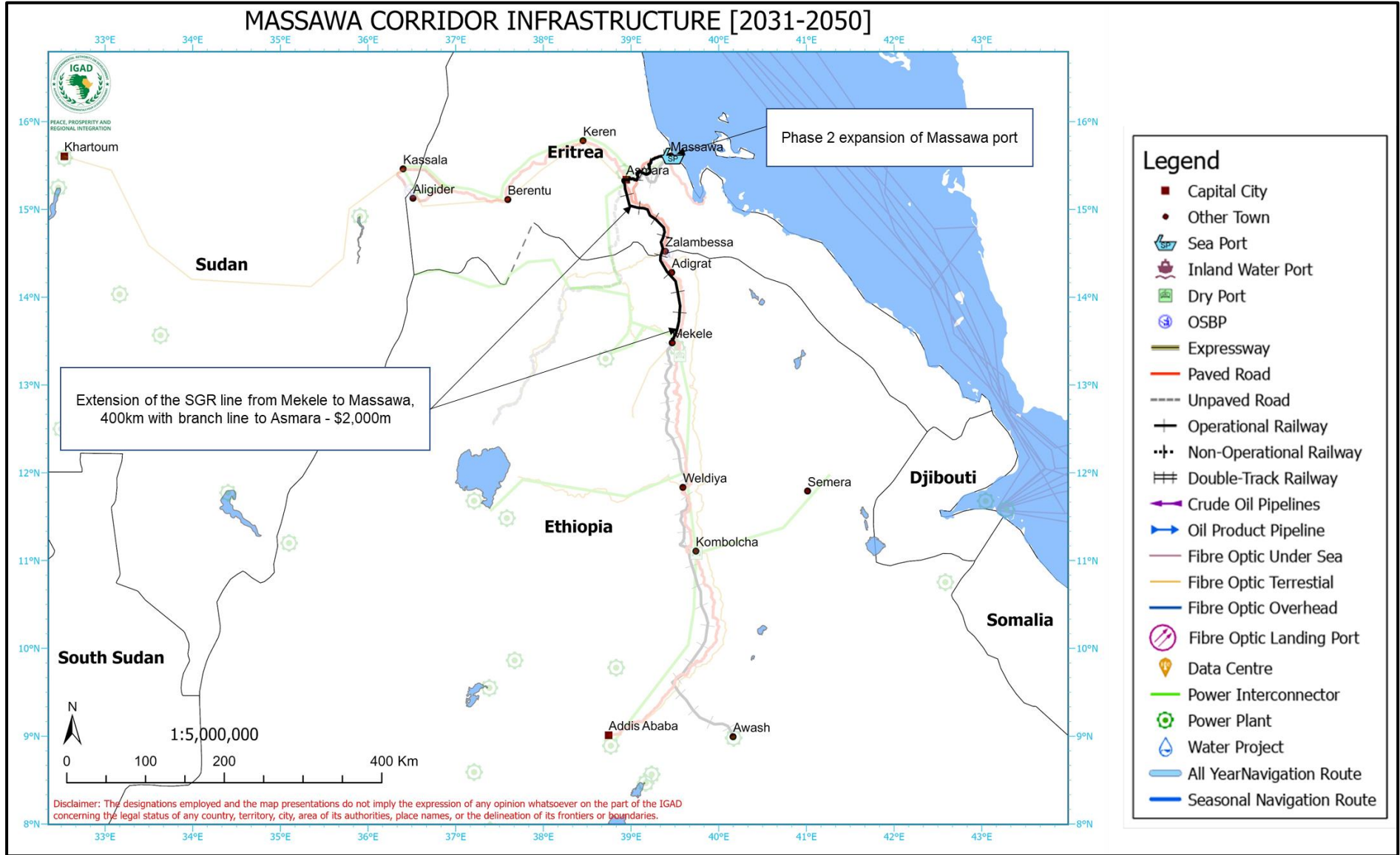




Table 3.23: Planned physical infrastructure projects on the Massawa Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost	Financing	Implementing agency	Next steps
TSPM13	Massawa Port Expansion Phase 2	Sea Port	Additional expansion of the port facilities at Massawa to accommodate the increase in trade from Ethiopia; construction of multi-modal rail facilities to connect to SGR	S1 Project Definition	100	Private	Massawa Port Authority	Long-term vision project to be further developed in future IRIMP revision
TRAM14	Mekele – Massawa SGR	Railway	Extension of the SGR line from Mekele to Massawa, 400 km, with branch line to Asmara	S1 Project Definition	2,000	Concessional finance	Ethiopian Railways Corporation	Long-term vision project to be further developed in future IRIMP revision





Economic Infrastructure Development Initiatives: Massawa Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Massawa Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

The Massawa Corridor is not currently functional as a trade route between Eritrea and Ethiopia due to the unclear status of the borders. Prior to the 1998 conflict and subsequent closing of the borders, both countries enjoyed what was essentially a common market. Cross-border trade flowed freely, with neither tariff nor non-tariff barriers. Eritrea's introduction in 1997 of its own currency, the Nakfa, made cross-border trade more complicated, but had little impact on commerce. Ethiopia also had full access to the Eritrean ports of Assab and Massawa with its own customs facility in Assab where they cleared imports destined for Ethiopian markets. It is recommended that a bilateral agreement is signed between the two countries to revert back to their former status as a starting point for continued relations.

Table 3.24: Economic infrastructure initiatives for the Massawa Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Re-opening of Eritrea-Ethiopia border	The border was re-opened in July 2018, but has since gradually closed again due to lack of clarity over arrangements	Eritrea and Ethiopia should sign a bilateral agreement that establishes a common market similar to that which existed before the way	2024	Governments of Ethiopia and Eritrea
Establish a currency-clearing mechanism allowing businesses to pay for goods in either country's local currency	As both countries now use their own currency, cross-border trade is more difficult	The IMF has established several such mechanisms in other regions of the world and could assist here	2024	Governments of Ethiopia and Eritrea
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	A corridor management institution should be established through at least a bilateral agreement between Eritrea and Ethiopia – potentially the same agreement that establishes the common market. Sudan may join, though only a fraction of the corridor is in Sudan	2024	Governments of Eritrea and Ethiopia
Harmonisation of regulations on gross vehicle mass and axle loads	Harmonisation unclear	Recommended to adopt the limits set by COMESA through implementation of CVTFS (as with all IGAD corridors)	2024	CMI (once established) and Governments of Ethiopia, Sudan and South Sudan (with IGAD oversight)





Harmonisation of customs procedures and the use of pre-clearance	No harmonisation of procedures. Ethiopia uses a management system developed for them by the Webb Fontaine Group, a private-sector company	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2024	Ethiopian Revenues and Customs Authority (ERCA); Eritrean Customs Authority
Cargo tracking system	No harmonised cargo tracking system in place	Recommended to adopt the CVTFS cargo tracking system	2024	CMI (once established) and Governments of Ethiopia and Eritrea (with IGAD oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2024	CMI
Spatial Development Initiative (SDI)	The corridor is not operational and has not attracted any significant inward investment	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectoral targeted interventions to promote private sector investment	2024	CMI
Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from and existing framework where possible, e.g. COMESA)	2024	CMI
Investment Promotion Agency	See above	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2024	CMI
Agency and budget for joint infrastructure planning, investment and maintenance	The CMI will be jointly funded by member states and will have responsibility for coordinating investment and maintenance	CMI should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2030	CMI and Governments of Ethiopia and Eritrea (with IGAD oversight)
Removal of remaining non-physical barriers to the flow of goods, services and people	Ethiopia and Sudan have a simplified tariff regime	Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI and Governments of Ethiopia and Eritrea (with IGAD oversight)





Section 3.8 Assab Corridor

Status	Stage 0 – not currently functioning
Total length of corridor	883 km
Countries served	Eritrea, Ethiopia
Distance from capital to port	Addis Ababa, 883 km
Total population within 50km	<1m
Total intercontinental trade	N/A
Total intra-regional trade	N/A
Transport infrastructure	Roads, unpaved and poorly maintained from Bure to Assab Port. Basic port facilities to handle cargo ships
ICT, energy, water connections	No trans-border energy, ICT or water connections

The Assab corridor consists of a road and a port as the main infrastructure facilities. The Assab port handled the bulk of Ethiopian trade prior to the closure of the border in 1998. The border closure resulted in a drastic decline in traffic volume. The opening of the borders will enable Assab reclaim some of its traffic which lost to the other ports in the region. The port’s grain storage facilities can handle a total of 55,000mt with 30,000mt in open area and 25,000mt in open plus closed sheds. The total approximate capacity is 264,000mt.

The port operates on a 24-hour basis, providing stevedoring and shore handling services. In normal working circumstances, Assab port can discharge a maximum of 2,800 metric tonnes - 3,000 metric tonnes per vessel of bulk cargo depending on the availability and allocation of bagging machines. Past experience has showed that the port in exceptional cases, it can reach a daily discharge rates of more than 4,000 metric tonnes/per

vessel with bulk/bagged relief cargo. The port can accommodate six vessels at one time on its eleven berths and current drafts

The Assab Corridor’s traditional hinterland has been Ethiopia which has been served by the 883 km highway linking Assab port to Addis Ababa. There are other road links to Massawa Port and to Djibouti through Obok and Balho via Tadjourah.

The Assab Corridor eventually merges with the Djibouti Corridor as the road from Assab converges with the Galafi road near Semera in the Affairs Region. The link between Assab and the border with Ethiopia at Bure needs rehabilitation since it has been non-functional following the border closure in 1998.

Investments in ICT and energy also need to be undertaken on the Assab corridor to make it more competitive for trade and achieve an economic development corridor status. This has been planned for the future as the priority is to rehabilitate the primary roads within the corridor and border crossing to Ethiopia at Bure so that the corridor can once again function as a trade corridor.

The IRIMP study has identified a number of road projects related to Assab Corridor. These have been assessed and selected based on their ability to promote regional connectivity with Ethiopia and Djibouti.

The Assab Corridor is phased to be developed predominantly from 2030 onwards, with the focus in the short and medium-term to complete rehabilitation of links in the basic transport network.





Figure 3.25: Current Status of Physical Infrastructure on the Assab Corridor, 2019

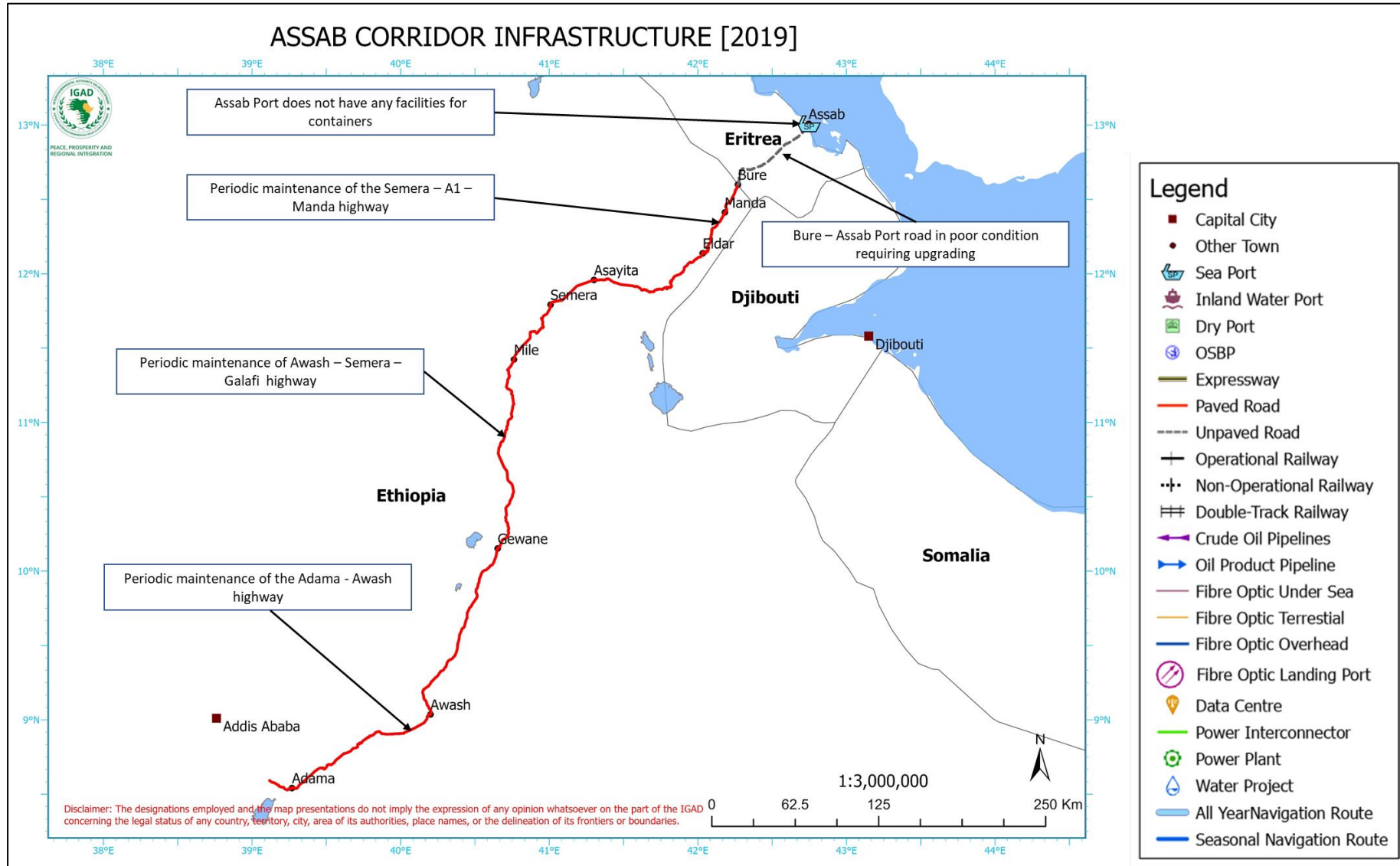




Figure 3.26: Development of physical infrastructure on the Assab Corridor, 2025-2030

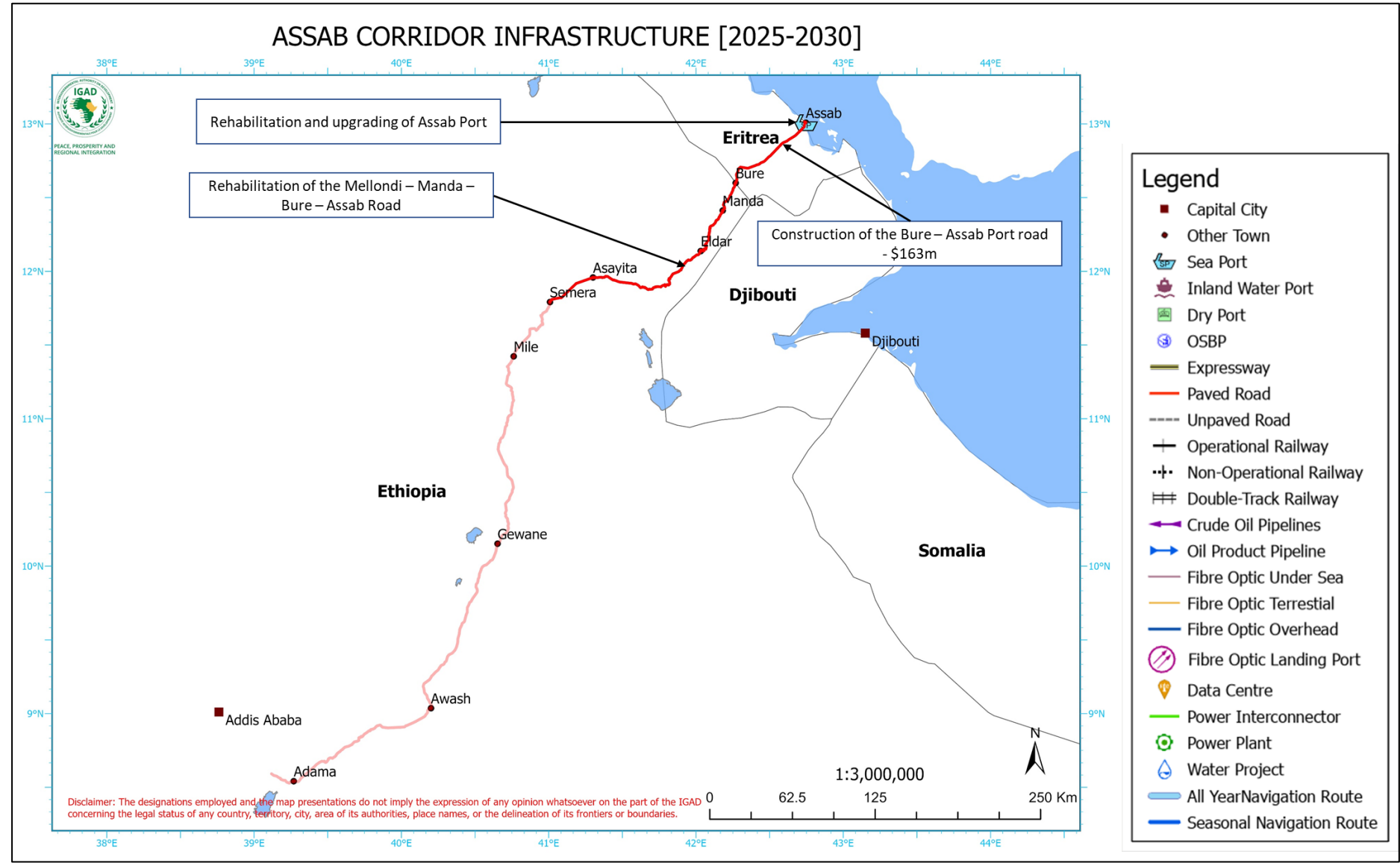




Table 3.25: Planned physical infrastructure projects on the Assab Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPA01	Rehabilitation and upgrading of Assab Port	Sea Port	The Assab port has not been functioning as an international port since 1998. It will require rehabilitation and upgrading.	S1 Project Definition	100	Private sector	Eritrean Ports Authority	Project definition and pre-feasibility study
TRDA02	Construction of Bure – Assab Port road (Horn of Africa Initiative)	Road	The project entails construction of the Bure – Assab Port road that would provide an additional route for Ethiopia to access the international market through the Port of Assab	S1 Project Definition	163	Concessional Finance	Eritrean Roads Authority	Undertake feasibility studies
TRDA03	Rehabilitation of the Mellondi – Manda – Bure – Assab Road	Road	The project entails rehabilitation of the main route in Ethiopia leading to Bure and on to Assab Port	S1 Project Definition	700	Concessional Finance	Ethiopia Roads Authority	Undertake feasibility studies





Economic Infrastructure Development Initiatives: Assab Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Assab Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

Assab Corridor is currently not functional as a trade route between Ethiopia and Eritrea due to the dilapidated state of infrastructure in Assab as the main highway leading to Assab in Eritrea was destroyed during the Ethio-Eritrean war. With the advent of peace between Ethiopia and Eritrea, it is expected that Assab Corridor will be a crucial corridor that serves Ethiopia in addition to Djibouti Corridor thereby promoting trade, interconnectivity, and integration between the two countries. It is recommended that bilateral agreements be signed between Ethiopia and Eritrea to support the development of infrastructure to facilitate trade between the two countries.

Table 3.26: Economic infrastructure initiatives for the Assab Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Harmonisation of regulations on gross vehicle mass and axle loads	Harmonisation unclear	Recommend the adoption of limits as set by COMESA	2050	CMI (once established) and Governments of Ethiopia and Eritrea
Harmonisation of customs procedures and the use of pre-clearance	No harmonisation of procedures.	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2050	Ethiopia Revenue Authority (ERA); Eritrea Customs and Revenue Authority
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	A corridor management institution should be established through at least a bilateral agreement between the Governments of Ethiopia and Eritrea	2050	Governments of Ethiopia and Eritrea with IGAD oversight
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2050	CMI
Spatial Development Initiative (SDI)	The corridor is not operational and has not attracted any significant inward investment	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectoral targeted interventions to promote private sector investment	2050	CMI





Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from an existing framework where possible, e.g. COMESA)	2050	CMI
Investment Promotion Agency	Low trade volumes along the corridor have hampered initiatives to promote investments on the corridor	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2050	CMI
Removal of remaining non-physical barriers to the flow of goods, services and people		Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI (once established) and Governments of Ethiopia and Eritrea (including regional government) with IGAD oversight





Section 3.9 Mogadishu Corridor

Status	Stage 0 – not currently functioning
Total length of corridor	4053.7 km
Countries served	Somalia, Ethiopia, Kenya
Distance from capital to port	Mogadishu, 0 km; Addis Ababa, 1,410 km; Nairobi, 1,545 km
Total population within 50km	25 million
Total intercontinental trade	1.75 million tonnes
Total intra-regional trade	0.2 million tonnes
Transport infrastructure	Roads, unpaved and poorly maintained to Ethiopia and Mandera; the remains of the Mogadishu – Villabruzzi railway line - 114 kilometres in length
ICT, energy, water connections	Ethiopia – Somalia 500 KV interconnector in the short term; Kenya – Somalia 220KV interconnector in long term; Nairobi – Somalia Fibre optic link in the long term; Dawa River Multi-purpose Dam is to serve the corridor in the medium term while Merti aquifer is the trans-border water project to serve the corridor in the long term.

Somalia has one of the longest coastlines in Africa with four main ports namely Mogadishu, Kismayo, Bossaso and Berbera; port development in three of these ports (Mogadishu, Kismayo and Bossaso) is still largely underdeveloped as the ports lack modern infrastructure to handle some of the large volume vessels. In addition, the relative isolation of the Mogadishu Port from the inhabited interior (and transport networks) is prompting conversations around building and upgrading the roads leading to the port and upgrading the Mogadishu port as well as building new ports between Mogadishu and the tip of the Horn (Cape Guardafui).

The Mogadishu Corridor links various regions in Somalia such as Puntland, South West State of Somalia, Hirshabelle and Galmudug, thereby playing a vital role in promoting the unity of the country through interconnectivity, trade and

movement of people between the regions. The corridor also links to neighbouring countries such as Ethiopia and Kenya as the trade routes between Somalia, Ethiopia and Kenya are critical.

The corridor between Addis Ababa and Mogadishu through Beledweyne and between Mandera in North Eastern Kenya and Mogadishu through Beled Xaawo played important roles in the past, however, the road infrastructure has greatly deteriorated as the regions the corridor traverses have continued to suffer from intermittent insecurity. Large sections of the corridor remain to be tarmacked. Priorities for the immediate future include rapid upgrading and rapid rehabilitation of infrastructure. Currently, the only established corridor connecting Somalia with the rest of Africa is the Berbera-Addis Ababa corridor, which offers an alternative route to Djibouti for Ethiopian imports and exports.

The IRIMP study has identified a number of projects related to the Mogadishu Corridor. These have been assessed and selected based on their ability to promote interconnectivity between Somalia and the rest of the IGAD region by offering alternative routes and access to international markets. The highway from Mogadishu through Baidoa to Dollow at the border of Somalia and Ethiopia has been scheduled for upgrading and rehabilitation works with Qatar financing the rehabilitation of 30km of the corridor between Mogadishu and Afgooeye. On the Ethiopian section, the road section from Negele to Filtu which is 100 km in length is in poor condition; and the remaining section from Filtu - Melka Siftu (240 km) needs full upgrading. The Kismayo Corridor is phased to be developed predominantly from 2030 onwards, with the focus in the short and medium-term to complete missing links in the basic transport network.

Transmission interconnection projects between Ethiopia and Mogadishu (500kV) and between Kenya and Mogadishu are being considered. Although the need and the benefits in Somalia are great, these projects have high costs and other challenges. Feasibility studies are an important first step in the development process. The HOAI has prioritised feasibility studies for each of these projects. HOAI has also prioritised the Somalia Transmission Backbone project. It is the view of the IRIMP that the timing of this Backbone project should be coordinated with the interconnection projects, in order to mutually enhance the benefits.





Photo of Mogadishu Corridor infrastructure: Mogadishu Port





Figure 3.27: Current Status of physical infrastructure on the Mogadishu Corridor, 2019

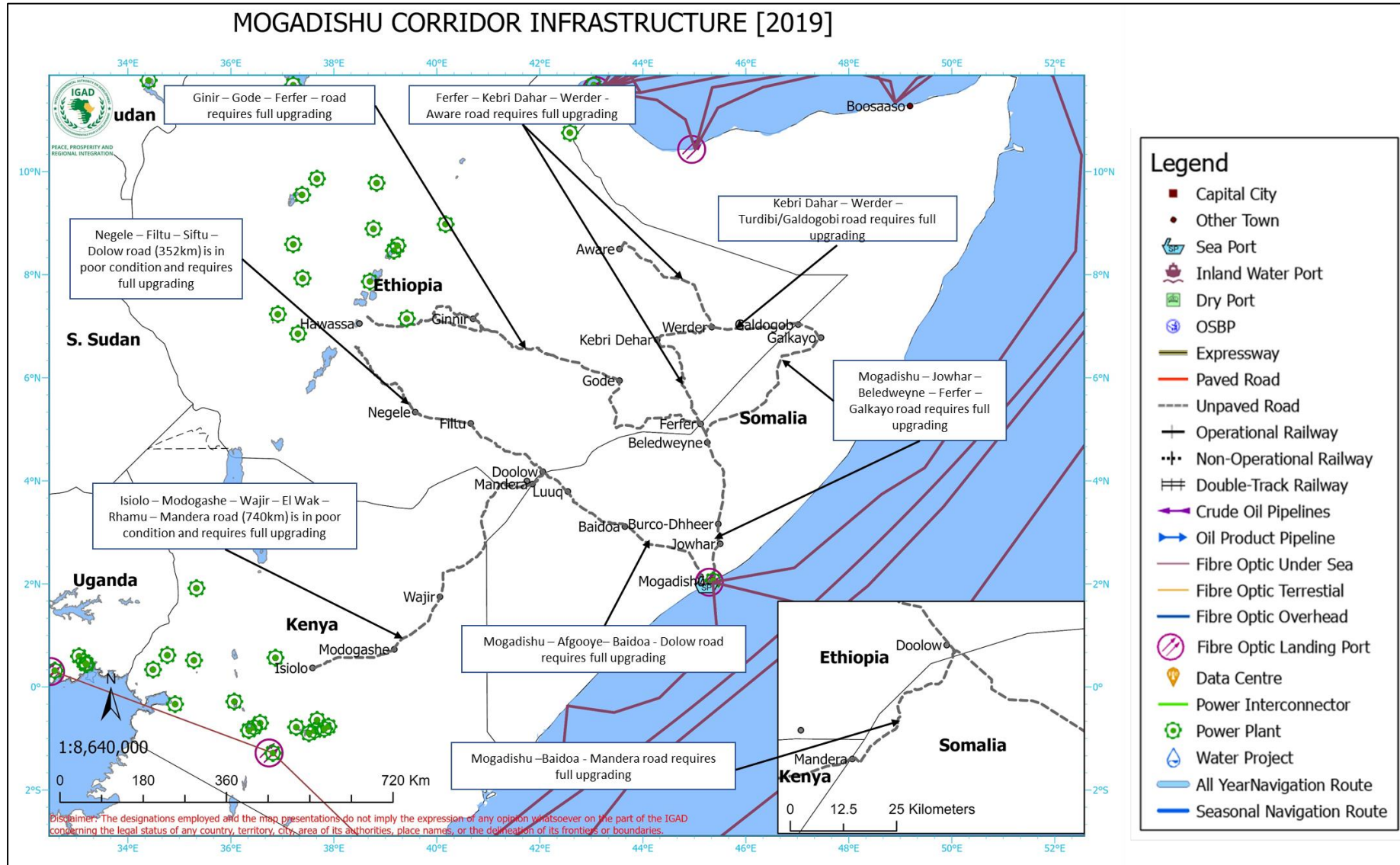




Figure 3.28: Development of physical infrastructure on the Mogadishu Corridor, 2020-2024

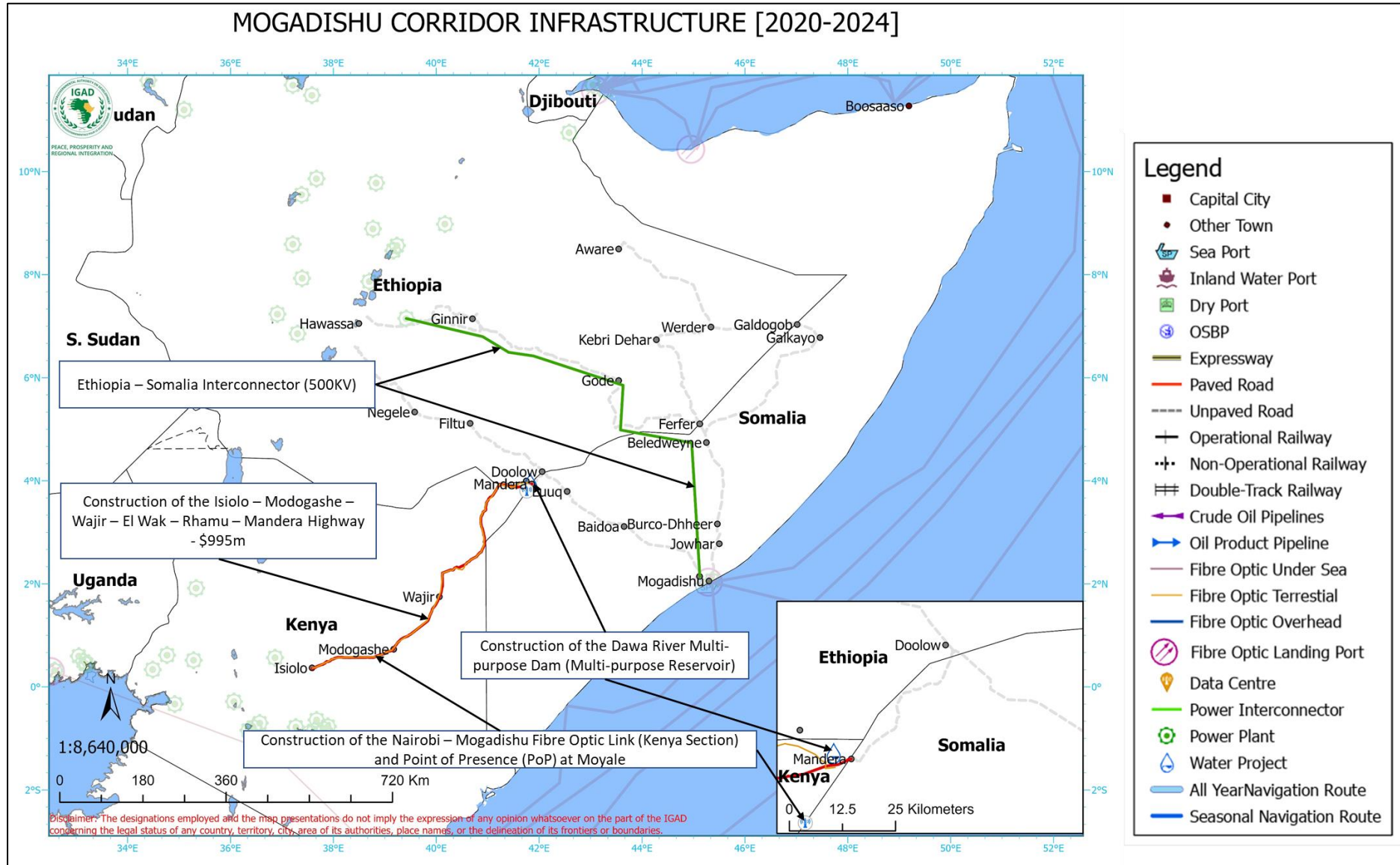




Table 3.27: Planned physical infrastructure projects on the Mogadishu Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRDMo01	Construction of the Isiolo – Modogashe – Wajir – El Wak – Rhamu – Manderu Highway (Horn of Africa Initiative)	Road	The project will construct, upgrade and rehabilitate the road sections within Kenya from Isiolo – Modogashe – Wajir – El Wak – Rhamu to Manderu, covering a distance of 776 km	S4A Tendering	995	Government of Kenya and annuities, Donor funds (World Bank)	Kenya National Highways Authority (KeNHA)	Designs and negotiation of annuities
WMRMo02	Dawa River Multi-purpose Dam	Multi-purpose Reservoir	The proposed Dawa dam will be located approximately 20 km upstream of Rhamu Dimtu town in Manderu County and 2km upstream of Boni centre in Ethiopia. The estimated dam height is about 90m with a capacity of approximately 4.5 Billion m ³ and can be utilised to generate 8.2MW of hydropower.	S2B Feasibility	604	Concessional finance	Ministry of Water and Sanitation, Kenya; Ministry of Water, Irrigation and Electricity, Ethiopia; Ministry of Energy and Water Resources, Somalia	Finalise feasibility study, identify finance
EPIMo03	Ethiopia – Somalia Interconnector (500KV) (Horn of Africa Initiative)	Power Interconnector	Construction of 500KV power transmission line to connect Ethiopia and Somalia. The exact routing to be determined	S1 Project Definition	1188	Concessional finance	Ethiopia Electric Power Corporation (EEPCO)	Feasibility study
IFOMo04	Nairobi – Mogadishu Fibre Optic Link (Kenya Section) and Point of Presence (PoP)	Fibre Optic Cable	Construction of a fibre optic cable connecting Nairobi to Mogadishu through Isiolo and Manderu (also known as the Isiolo - Manderu fibre optic link)	S1 Project Definition	34	Concessional finance	Kenya ICT Authority and Liquid Telecom	Long-term vision project to be further developed in future IRIMP revision





IFOMo05	Somalia Internet Exchange Point	Internet Exchange Point	Construction of Somalia Internet Exchange Point in Mogadishu	S1 Project Definition	4	Concessional finance	Somalia Ministry of ICT	Feasibility study
IFOMo06	Adoption of One Area Network	Voice Traffic Exchange	Adoption of One Area Network for reduced call charges across the region	S1 Project Definition	0.5	Government funding	Djibouti, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Somalia, Uganda Ministry of ICT	Feasibility studies





Figure 3.29: Development of physical infrastructure on the Mogadishu Corridor, 2025-2030

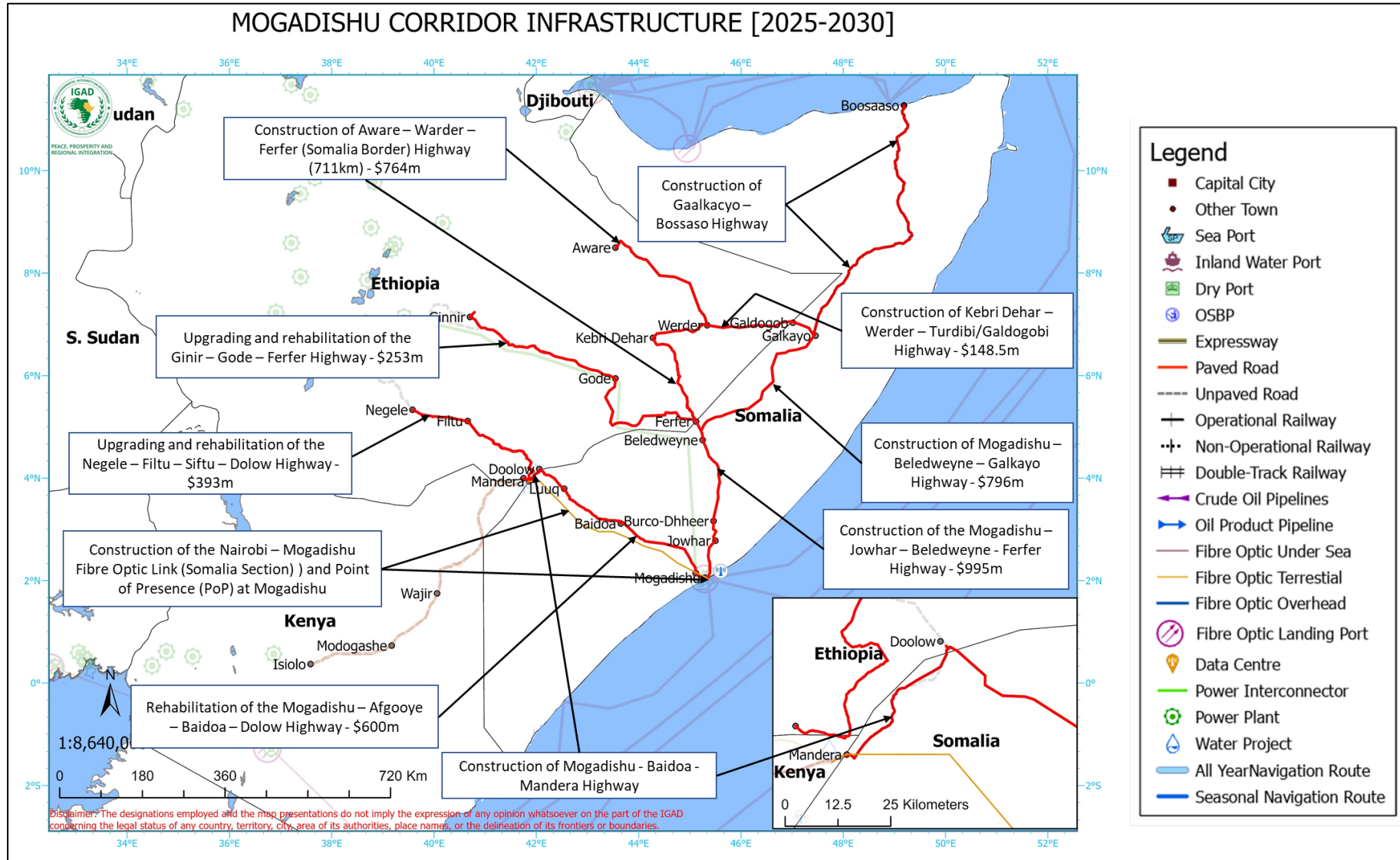




Table 3.28: Planned physical infrastructure projects on the Mogadishu Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRDMo07	Upgrading and rehabilitation of the Negele – Filtu – Siftu highway (Horn of Africa Initiative)	Road	The project will upgrade and rehabilitate the road sections within Ethiopia between Negele – Filtu -Mekele Siftu, covering a distance of 340 km. The highway connects to Somalia at Dollow border crossing	S1 Project Definition	393	Government funds	Ethiopian Roads Authority (ERA)	Feasibility study and detailed designs
TRDMo08	Upgrading and rehabilitation of the Ginir – Gode - Ferfer highway (Horn of Africa Initiative)	Road	The project will upgrade and rehabilitate the road sections within Ethiopia from Ginir – Gode - Ferfer. The highway connects to Somalia at Ferfer border crossing	S1 Project Definition	253	Government funds	Ethiopian Roads Authority (ERA)	Feasibility study and detailed designs
TRDMo09	Rehabilitation of the Mogadishu – Afgooye – Baidoa – Dollow highway (Horn of Africa Initiative)	Road	Rehabilitation of the 475 km highway from Mogadishu to Dollow. Qatar to finance rehabilitation of 30 km of the corridor close to Mogadishu to Afgooye	S2B Feasibility	600	Donor funds	Somalia Roads Authority	Feasibility study and detailed designs
TRDMo10	Construction of Aware – Warder - Ferfer /Somalia border highway (Horn of Africa Initiative)	Road	Total road length is 711 km of which 80% of the entire road requires total construction which 20% of the highway needs rehabilitation	S1 Project Definition	764	Donor funds	Ethiopia Roads Authority (ERA)	Feasibility study and detailed designs
TRDMo11	Construction of Kebridahar – Warder – Turdibi /Galdogobi highway (Horn of Africa Initiative)	Road	Construction of Kebridahar – Warder – Turdibi/Galdogobi highway with total road length is 335 km	S1 Project Definition	148	Donor funds	Ethiopia Roads Authority (ERA)	Feasibility study and detailed designs
TRDMo12	Construction of Mogadishu – Beled weyne - Galkayo highway (Horn of Africa Initiative)	Road	85% of the road is in poor condition requiring upgrading. Galkacyo/Bossaso paved but in 80% poor condition; Galdogob - Galkacyo gravel road funded by local and diaspora community. Bosaso - Gaalkacyo 537 km; Gaalkacyo - Galdogobi 160 km. Feasibility studies done for Galkayo to Bossaso only	S1 Project Definition	796	Donor Funds	Somalia Roads Authority	Feasibility study and detailed designs for the other sections of the road
TRDMo13	Construction of Mogadishu -Jowhar - Beled weyne - Ferfer	Road	74% of the road is in poor condition requiring upgrade. Mogadishu - Jowhar rehabilitation part of Qatar \$200 million road project.	S1 Project Definition	338	Donor funds	Somalia Roads Authority	Feasibility study and detailed designs for





	highway (Horn of Africa Initiative)		Mogadishu - Jowhar - Beledweyne is 299 km; road connection between Beledweyne and Ferfer is estimated at 41 km. Feasibility study done for Mogadishu – Jowhar section only					the other sections of the road
TRDMo14	Galkayo – Bossaso	Road	Construction of Bossasso - Gaalkacyo Road	S1 Project Definition	700	Concessional Finance	Somalia Roads Authority	Feasibility study and detailed designs for the road
TRDMo15	Mogadishu-Baidoa-Mandera Road	Road	Construction of the segment connecting Dollow to Mandera from Baidoa	S1 Project Definition	270	Concessional Finance	Somalia Roads Authority	Feasibility study and detailed designs for the road segment
IFOMo16	Nairobi – Mogadishu Fibre Optic Link (Somalia Section) and Point of Presence (PoP) at Mogadishu	Fibre Optic Cable	Construction of a fibre optic cable connecting Nairobi to Mogadishu	S1 Project Definition	134	Concessional Finance	Somalia Ministry of ICT	Long-term vision project to be further developed in future IRIMP revision





Figure 3.30: Development of physical infrastructure on the Mogadishu Corridor, 2031-2050

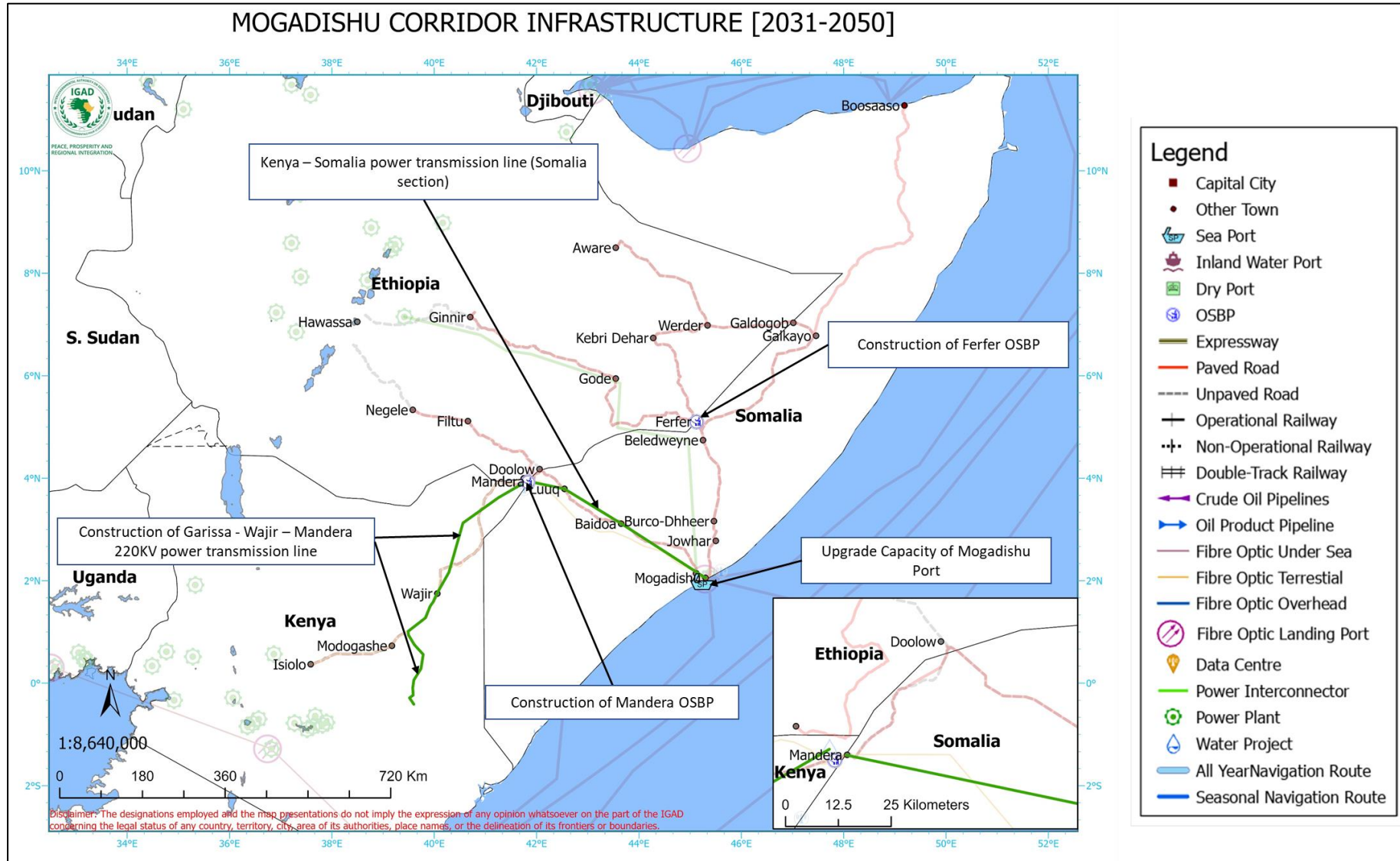




Table 3.29: Planned physical infrastructure projects on the Mogadishu Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TRDMo17	Upgrade Capacity of Mogadishu Port	Sea Port	Subject to assessment of demand, an expansion of the Mogadishu port is likely to be required in the long-term	S1 Project Definition	100	Private sector	Somali Port Authority	Long-term vision project to be further developed in future IRIMP revision
TBPMo18	Mandera OSBP	Border Post	Construction of an OSBP at the Somalia-Kenya border at Mandera	S1 Project Definition	20	Concessional Finance	Kenya Revenue Authority; Somalia Revenue Authority	Long-term vision project to be further developed in future IRIMP revision
TBPMo19	Ferfer OSBP	Border Post	Construction of an OSBP at the Somalia-Ethiopia border at Ferfer	S1 Project Definition	20	Concessional Finance	Ethiopia Revenue and Customs Authority; Somalia Revenue Authority	Long-term vision project to be further developed in future IRIMP revision
EPIM020	Kenya – Somalia power transmission line (Somalia section) (Horn of Africa Initiative)	Power Interconnector	Construction of a 220 KV line from Mandera to Mogadishu	S1 Project Definition	192	Concessional Finance	Ministry of Energy Somalia	Undertake feasibility studies
EPIMo21	Garissa – Wajir – Mandera 220KV power transmission line	Power Interconnector	Construction of a 220 KV line from Garissa to Mandera through Wajir	S1 Project Definition	192	GOK	Kenya Electricity Transmission Company Ltd (KETRACO)	Undertake feasibility studies





Economic Infrastructure Development Initiatives: Mogadishu Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Mogadishu Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

Mogadishu Corridor is not currently functional as a trade route between Somalia, Ethiopia, and Kenya due to the dilapidated state of infrastructure in Somalia and some sections of the highways have not been constructed in Kenya and Ethiopia. The road sections comprising the Mogadishu Corridor have remained neglected as a result of insecurity due to war and banditry thereby negatively impacting on interconnectivity and cross border trade that once existed within the wider Somali region covering the three countries. With the advent of peace resuming in Somalia, it is expected that Mogadishu Corridor will be a crucial corridor that serves the North Eastern and South Eastern regions of Kenya and Ethiopia respectively thereby promoting trade, interconnectivity, and integration in the region. It is recommended that multilateral agreements be signed between the three countries (Somalia, Ethiopia, and Kenya) to support the development of infrastructure to facilitate trade between the three countries.

Table 3.30: Economic infrastructure initiatives for the Mogadishu Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Securing the Corridor routes	Mogadishu corridor on the Somali section remains to be one of the most insecure corridors within the IGAD region as some sections are characterised by illegal roadblocks erected by armed militia and the general safety of the route is yet to be guaranteed.	Systematic removal of illegal roadblocks and working together with regional governments to secure the corridor routes	2030	Regional Governments and Central Somali
Harmonisation of regulations on gross vehicle mass and axle loads	Harmonisation unclear	Recommend the adoption of limits as set by COMESA (Somalia is not a member of COMESA, but neighbouring countries are) through implementation of CVTFS (as with all IGAD corridors)	2050	CMI (once established) and Governments of Kenya, Ethiopia, and Somalia (including regional government within Somalia) (with IGAD oversight)
Harmonisation of customs procedures and the use of	No harmonisation of procedures.	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2050	Kenya Revenue Authority (KRA), Ethiopian Revenues and Customs Authority





pre-clearance				(ERCA); Somalia Customs and Revenue Authority
Cargo tracking system	No harmonised cargo tracking system in place	Recommended to adopt the CVTFS cargo tracking system	2050	CMI (once established) and Governments of Ethiopia, and Somalia (including regional government of Somaliland) (with IGAD oversight)
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	A corridor management institution should be established through at least a trilateral agreement between the Government of Ethiopia, the Government of Kenya and the Government of Somalia	2050	Governments of Ethiopia, Kenya and Somalia (including regional government where the corridor traverses) with IGAD oversight
Agency and budget for joint infrastructure planning, investment and maintenance	The CMI will be jointly funded by member states and will have responsibility for coordinating investment and maintenance	CMI should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2050	CMI (once established) and Governments of Ethiopia and Somalia (with IGAD oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2050	CMI
Spatial Development Initiative (SDI)	The corridor is not operational and has not attracted any significant inward investment	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectorally targeted interventions to promote private sector investment	2050	CMI
Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from and existing framework where possible, e.g. COMESA)	2050	CMI
Investment Promotion Agency	Low trade volumes along the corridor have hampered initiatives to promote investments on the corridor	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2050	CMI
Removal of remaining non-physical barriers to the flow of goods, services and people		Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI (once established) and Governments of Ethiopia, Kenya and Somalia (including regional government) with IGAD oversight





Section 3.10 Kismayo Corridor

Status	Stage 0 – not currently functioning
Total length of corridor	438 km (Kismayu -Garissa)
Countries served	Somalia, Kenya
Distance from capital to port	Mogadishu, 483 km; Nairobi, 805km
Total population within 50km	
Total intercontinental trade	0.10 million tonnes
Total intra-regional trade	0.09 million tonnes
Transport infrastructure	Roads, unpaved and poorly maintained from Kismayu to Garissa. Paved road from Garissa to Nairobi Basic port facilities to handle dhows and small cargo ships
ICT, energy, water connections	No trans-border energy, ICT or water connections; Merti aquifer is the trans-border water project to serve the corridor in the long term.

Kismayo is the major city of southern Somalia and the Kismayo Corridor is a vital corridor as it serves the Juba region and extends to serve the North Eastern parts of Kenya and by extension to Ethiopia. The corridor further plays a vital role in promoting the unity and integration of Somalia through interconnectivity, trade and movement of people between the regions.

While the development enhancing role of the corridor is currently being hampered by security issues, there is no doubt that the corridor and its associated infrastructures i.e. road, port and airport make Kismayo an important city for the growth and development of this important part of the country. The reconstruction of Somalia’s infrastructure requires strong leadership from federal and state governments as their capacity to provide

appropriate policies and regulatory frameworks is severely constrained. Priorities for the immediate future include rapid upgrading of state and capacity and rapid rehabilitation of infrastructure. Currently, the corridor only has a functioning port and an airport both of which require renovation and rehabilitation to be fully functional to handle more people and cargo using the facilities.

On the road sector, Kismayo Corridor has highways linking the port of Kismayu to the port of Mogadishu and an international road linking Somalia to Kenya through Liboi. However, there is need for major construction, rehabilitation and upgrading works and investments in ICT and energy to be undertaken on the Kismayo corridor to make the corridor more competitive for trade and achieve an economic development corridor status. This has been planned for the future as the priority is to rehabilitate the primary roads within the corridor and border crossing to Kenya at Liboi so that the corridor can once again function as a trade corridor.

The IRIMP study has identified a number of projects related to the Kismayo Corridor. These have been assessed and selected based on their ability to promote interconnectivity in Somalia and the region by offering alternative routes and access to international markets. The data in the summary tables are presented below in a series of annotated maps illustrating the proposed development of Kismayo corridor infrastructure in each planning period.

The Kismayo Corridor is phased to be developed predominantly from 2030 onwards, with the focus in the short and medium-term to complete missing links in the basic transport network.





Figure 3.30: Current Status of physical infrastructure on the Kismayo Corridor, 2019

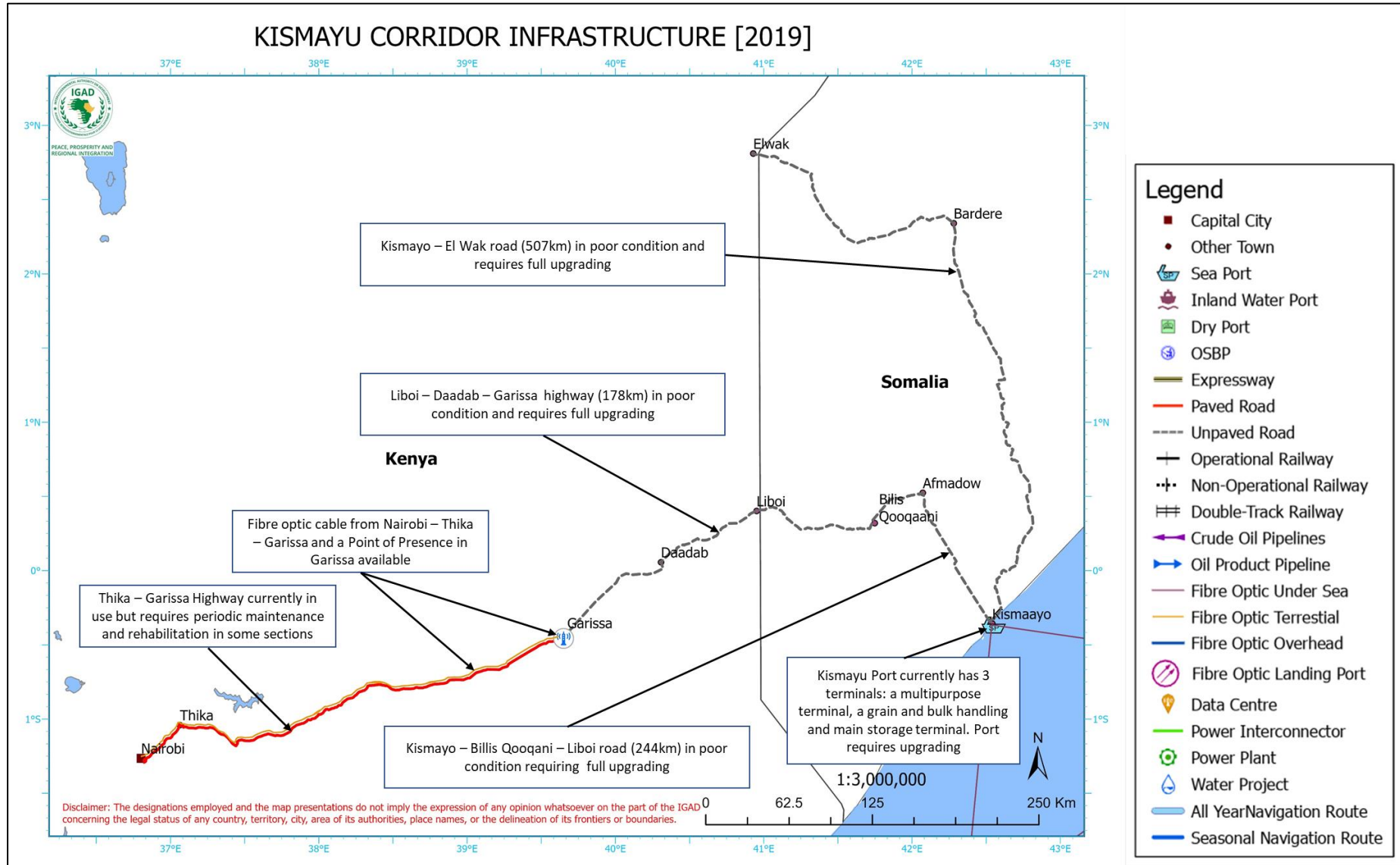




Figure 3.31: Development of physical infrastructure on the Kismayo Corridor, 2020-2024

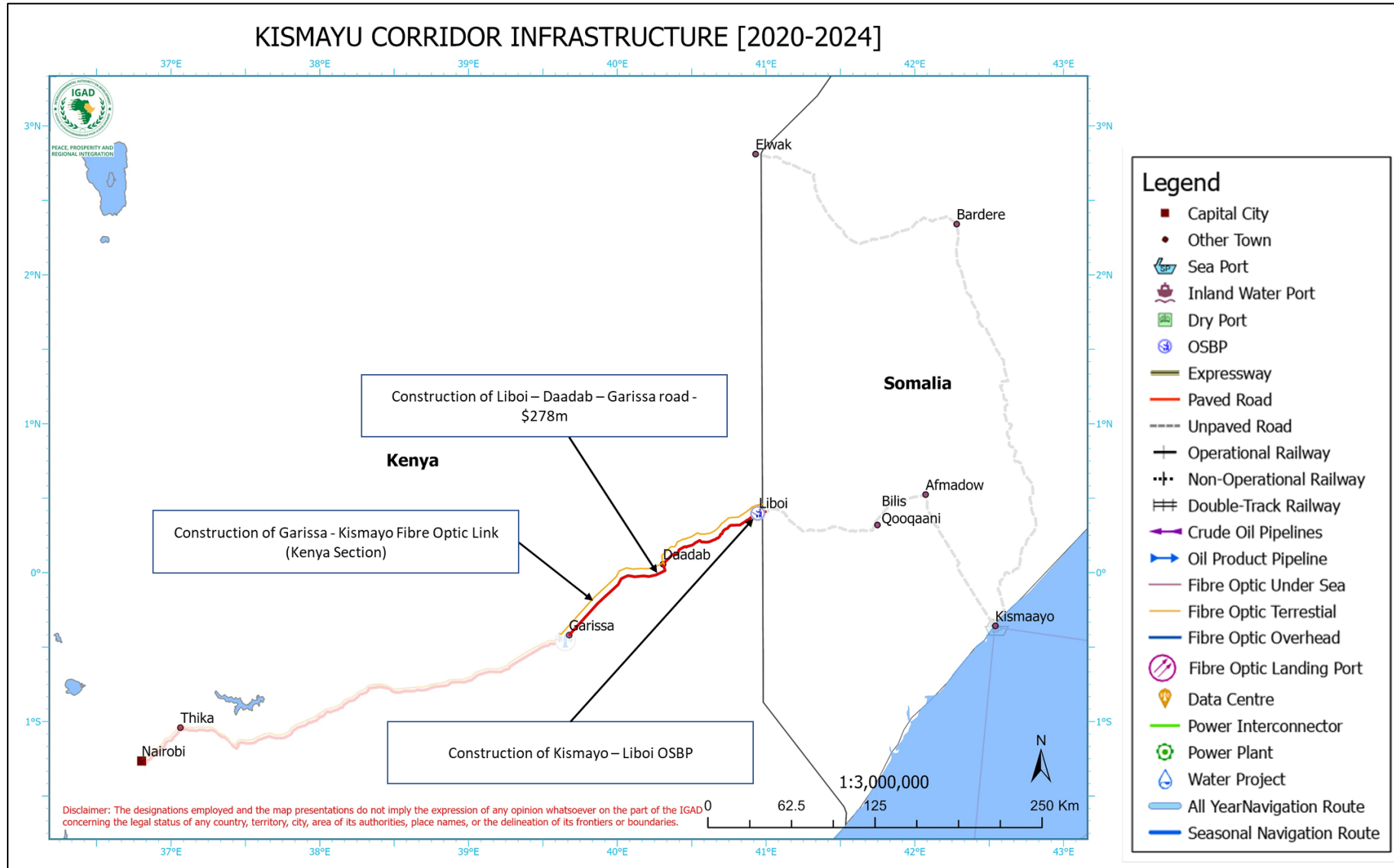




Table 3.31: Planned physical infrastructure projects on the Kismayo Corridor, 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$M)	Financing	Implementing agency	Next steps
TRDK01	Construction of Liboi – Daadab/Hagadera - Garissa road (Horn of Africa Initiative)	Road	The total distance of the road is 207 km which has neither been paved or tarmacked. The project will entail construction of a new road linking Garissa to Kismayo on Somali side.	S3A Project Structuring	278	Government funds	Kenya National Highways Authority (KeNHA)	Transaction Support & Financial Close
IFOK02	Garissa - Kismayo Fibre Optic Link (Kenya Section)	Fibre Optic Cable	Construction of a fibre optic cable connecting Garissa in Kenya to Kismayo Port in Somalia through Liboi. The fibre optic connection at Liboi will support the operations of the planned Liboi One Stop Border Post	S1 Project Definition	20	Concessional Finance	Ministry of ICT Kenya	Feasibility study and Detailed Engineering Design
TBPK03	Construction of Liboi OSBP	Border Post	Construction of new One Stop Border Post at Liboi between Kenya and Somalia	S1 Project Definition	20	Concessional Finance	Kenya Revenue Authority	TBPK05





Figure 3.32: Development of Physical Infrastructure on the Kismayo Corridor, 2025-2030

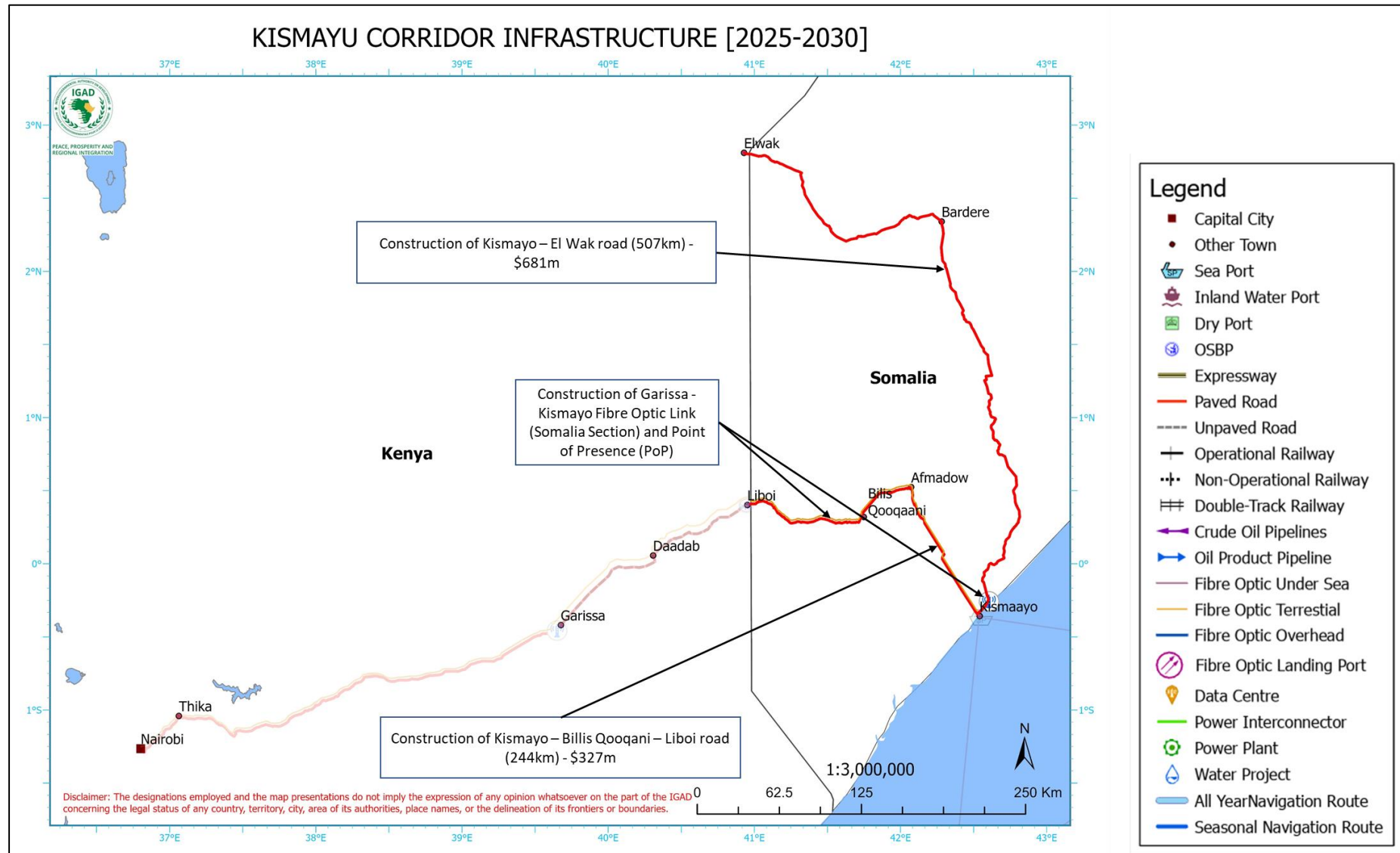




Table 3.32: Planned physical infrastructure projects on the Kismayo Corridor, 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$M)	Financing	Implementing agency	Next steps
TRDK04	Construction of Kismayo – Elwak road	Road	The total distance of the road is 507 km which has neither been paved or tarmacked. The project will entail construction of a new road linking Kismayo to Elwak on Somali side. Existing thoroughfare consists of paths and earth road in very poor condition.	S1 Project Definition	681	Concessional Finance	Somalia Roads Authority	Design Review and Procurement for construction
TRDK05	Construction of Kismayo-Bilis Qooqani – Liboi highway	Road	The road project is a new road linking Somalia to Kenya through Liboi. Existing thoroughfare consists of paths and earth road in very poor condition. Total road length is 244 km.	S1 Project Definition	327	Concessional Finance	Somalia Roads Authority	Feasibility study and Detailed Engineering Design
IFOK06	Garissa - Kismayo Fibre Optic Link (Somalia Section) and Point of Presence (PoP) in Kismayo	Fibre Optic Cable	Construction of a fibre optic cable connecting Garissa in Kenya from Liboi border to Kismayo Port in Somalia and construction of a Point of Presence (PoP) in Kismayo	S1 Project Definition	25	Concessional Financing	Ministry of ICT, Somalia	Feasibility study and Detailed Engineering Design





Figure 3.33: Development of physical infrastructure on the Kismayo Corridor, 2031-2050

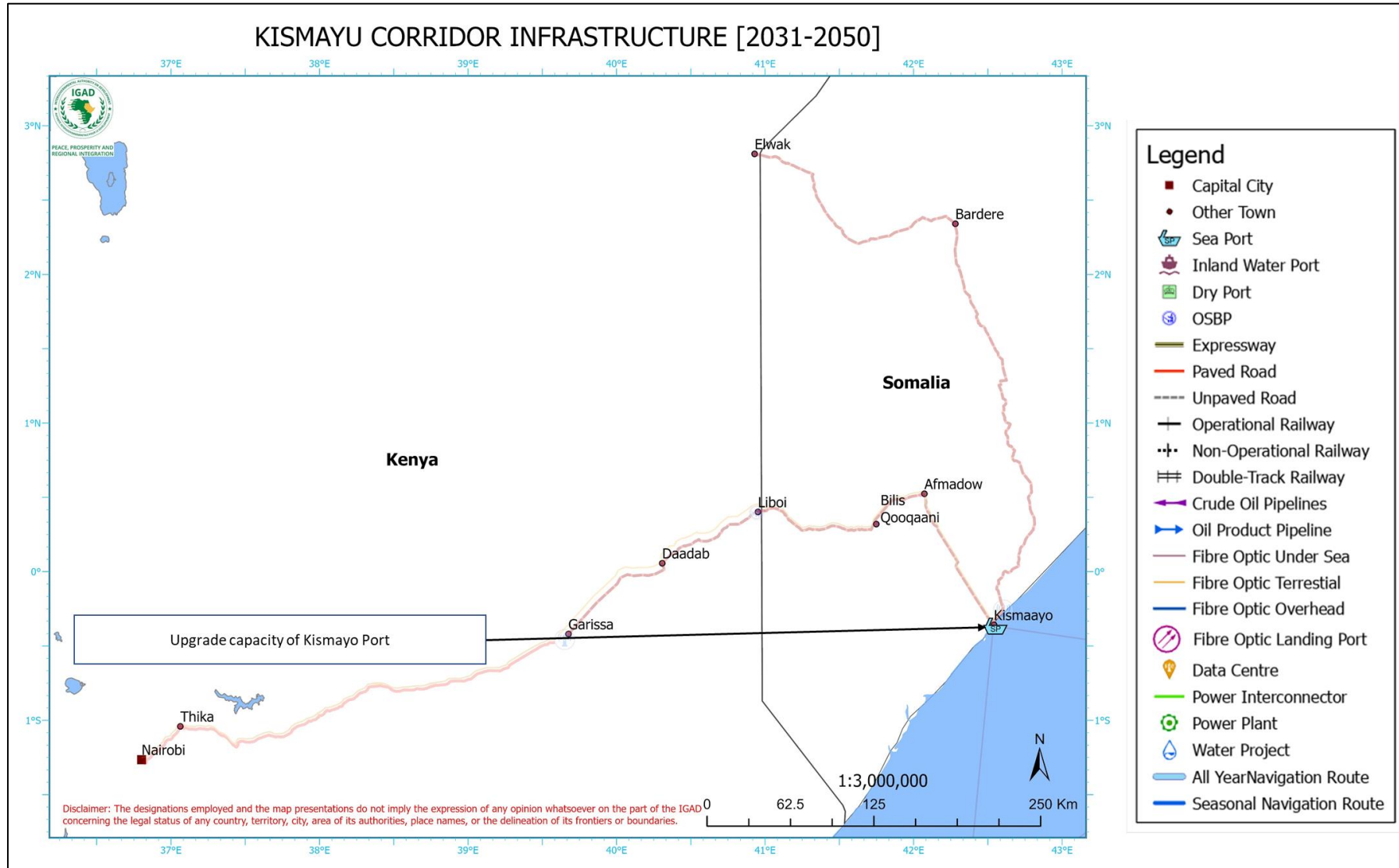




Table 3.33: Planned physical infrastructure projects on the Kismayo Corridor, 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TSPK07	Upgrade Capacity of Kismayo Port	Sea Port	Subject to assessment of demand, an expansion of the Mogadishu port is likely to be required in the long-term	S1 Project Definition	100	Private sector	Somali Port Authority	Long-term vision project to be further developed in future IRIMP revision





Economic Infrastructure Development Initiatives: Kismayo Corridor

Physical infrastructure is just one component of an effective corridor. To maximise the impact of physical infrastructure investments it is essential to also invest in the enabling environment, or economic infrastructure, of the corridor, specifically in the following three areas: 1) institutional arrangements; 2) harmonisation of regulations and standards; and 3) logistics services. To complement and enhance the impact of the physical infrastructure investments and support the development of the Kismayo Corridor from a basic transport corridor to a fully-fledged economic development corridor, a number of economic infrastructure interventions are recommended, sequenced, and presented in the following table.

Kismayo Corridor is currently not actively utilised as a trade route between Somalia, and Kenya due to the dilapidated state of infrastructure in Somalia as the main highway is not constructed. The road sections comprising the Kismayo Corridor have remained neglected as a result of insecurity due to war and banditry thereby negatively impacting on interconnectivity and cross border trade that once existed within the wider Somali region. With the advent of peace resuming in Somalia, it is expected that Kismayo Corridor will be a crucial corridor that serves the North Eastern region of Kenya thereby promoting trade, interconnectivity, and integration. It is recommended that bilateral agreements be signed between Somalia and Kenya to support the development of infrastructure especially the One Stop Border Post (OSBP) to facilitate trade between the two countries.

Table 3.34: Economic infrastructure initiatives for the Kismayo Corridor

Initiative type	Current status	Measure	Timeframe	Responsibility
Securing the Corridor routes	Kismayo corridor on the Somalia section remains to be one of the most insecure corridors within the IGAD region and the general safety of the route is yet to be guaranteed.	Systematic removal of illegal roadblocks and working together with regional governments to secure the corridor routes	2030	Regional Governments and Central Somali
Harmonisation of regulations on gross vehicle mass and axle loads	Harmonisation unclear	Recommend the adoption of limits as set by COMESA (Somalia is not a member of COMESA, but neighbouring countries are) through implementation of CVTFS (as with all IGAD corridors)	2050	CMI (once established) and Governments of Kenya, Ethiopia, and Somalia (including regional government within Somalia) (with IGAD oversight)
Harmonisation of customs procedures and the use of pre-clearance	No harmonisation of procedures.	Recommended to use CVTFS which will ensure harmonisation (as with all IGAD corridors)	2050	Kenya Revenue Authority (KRA); Somalia Customs and Revenue Authority
Establishment of Corridor Management Institution (CMI)	No corridor management institution in place	A corridor management institution should be established through at least a bilateral agreement between the	2050	Governments of Kenya and Somalia (including regional government where the corridor traverses) with IGAD oversight





		Government of Kenya and the Government of Somalia		
Agency and budget for joint infrastructure planning, investment and maintenance	The CMI will be jointly funded by member states and will have responsibility for coordinating investment and maintenance	CMI should assume responsibility for maintaining and implementing physical infrastructure through the creation of a joint agency to which member states contribute budget	2050	CMI (once established) and Governments of Kenya and Somalia (with IGAD oversight)
Corridor monitoring and reporting system	No harmonised system in place to monitor and report on the logistical performance and physical condition of the corridor	CMI should put in place a system to collect data on the four dimensions of corridor performance: volumes; time and uncertainty; prices and costs; services and infrastructure	2050	CMI
Spatial Development Initiative (SDI)	The corridor is not operational and has not attracted any significant inward investment	CMI should formulate an SDI / Economic Development Strategy for the corridor to identify spatially and sectorally targeted interventions to promote private sector investment	2050	CMI
Corridor PPP framework	Individual member states have their own PPP frameworks	Adopt a harmonised PPP framework (adapt from an existing framework where possible, e.g. COMESA)	2050	CMI
Investment Promotion Agency	Low trade volumes along the corridor have hampered initiatives to promote investments on the corridor	Following the SDI, CMI should set up an agency to oversee its implementation and actively promote inward investment to the corridor	2050	CMI
Removal of remaining non-physical barriers to the flow of goods, services and people		Ultimately the aim should be to remove all restrictions on the flow of goods, services and people along the corridor, including removal of tariffs, visa requirements and separate licenses and harmonisation of external tariffs – thus creating a single market and customs union and removing the need for borders	2050	CMI (once established) and Governments of Kenya and Somalia (including regional government) with IGAD oversight





Section 3.11 Civil Aviation Sector

Aviation is a global industry which transcends continents, expands access to foreign markets for goods and services and hence provides valuable opportunities for economic growth through transportation of passengers and freight and promoting cultural and social exchanges. In addition, it enhances emergency and humanitarian response capabilities during crisis and public health emergencies. It is in this context that the aviation sector should be analysed and assessed within IGAD.

The IGAD region has over twenty airports that take international flights. These airports comprise all the capital cities airports plus others in the regions which serve maritime ports, major tourist areas or areas with large industrial and commercial interests.





Figure 3.35: Development of civil aviation infrastructure 2020-2024

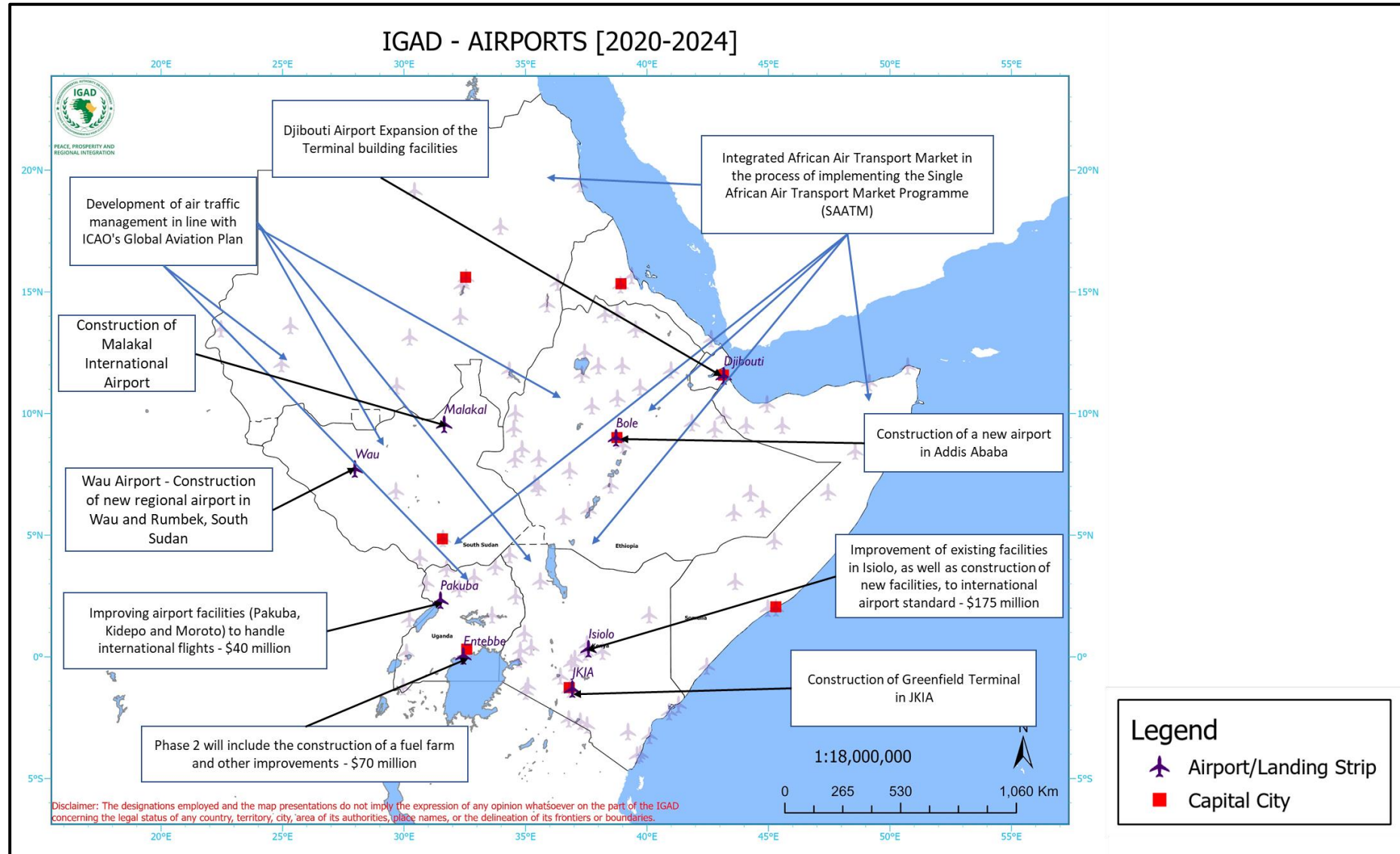




Table 3.35: Civil aviation infrastructure projects to be implemented 2020-2024

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TAIR01	Integrated African Air Transport Market Under Implementation of the Single African Air Transport Market (SAATM) Programme	Airport	The SAATM project will replace the BASAs regime with a single multilateral agreement covering all the AU members in order to grant market access to all national operators flying between IGAD member states. This project has two components: 1) Single African Air transport Market intended to replace the BASAs; and 2) Unified Single African Sky intended to create a seamless single air navigation system using the ICAO approved CNS/ ATM systems. The main task will be to build harmonise policy, regulatory and institutional framework to facilitate consensus and build capacity at both national and regional levels to implement the SAATM programme. The project will support the IGAD vision by providing increased air transport connectivity. It will further support the AU all African Free Trade Area (AfCFTA) covering both trade in goods and services.	S1 Project Definition	8	Donor grants and government funds	Member states' civil aviation authorities	Feasibility and detailed terms of reference
TAIR02	Development of Air traffic management in line with ICAO Global Aviation Plan	Airport	Development of Air traffic management in line with ICAO Global Aviation Plan	S1 Project Definition	4	Concessional Financing	Member states' civil aviation authorities	Detailed terms of reference
TAIR03	Isiolo International Airport	Airport	Upgrading of existing facilities at Isiolo, as well as construction of new facilities, to international airport standard. 3km runway completed in Isiolo. Construction works on the terminal building ongoing with an estimated completion rate of 90%.	S4B Construction	175	PPP	Kenya Airports Authority; LAPSET Corridor Development Authority	Upgrading of existing facilities is ongoing, next phase is construction of new facilities
TAIR04	Entebbe International Airport	Airport	Phase 2 will involve construction a fuel farm and other upgrades.	S2B Feasibility	70	Concessional Financing -	Civil Aviation Authority of Uganda	Finalise construction of Phase 1,





	Expansion Phase 1					China Exim Bank		undertake feasibility
TAIR05	Construction of Malakal International Airport	Airport	Construction of a new international airport at Malakal, South Sudan	S1 Project Definition	40	PPP	South Sudan Civil Aviation Authority	Project definition and feasibility
TAIR06	Wau Airport	Airport	Construction of new regional airport in Wau, South Sudan	S1 Project Definition	40	PPP	South Sudan Civil Aviation Authority	Project definition and feasibility
TAIR07	Rumbek Airport	Airport	Construction of new regional airport in Rumbek, South Sudan	S1 Project Definition	40	PPP	South Sudan Civil Aviation Authority	Project definition and feasibility
TAIR08	Pakuba Airport Upgrade to International Status	Airport	Upgrade airport facilities to handle international flights.	S2B Feasibility	40	PPP	Civil Aviation Authority of Uganda	Undertake feasibility
TAIR09	Construction of a new Addis Ababa Airport	Airport	Construction of a new Addis Ababa Airport	S1 Project Definition	4000	PPP	Ethiopian Airports Enterprise	Project definition and feasibility
TAIR10	Djibouti Airport Expansion of the Terminal building facilities	Airport	The objective of the expansion of the Terminal building is to achieve an adequate level of service for 0.5 million pax/year and a new and modern architectural image for the period of time necessary for the construction of the new Djibouti civil Airport.	S2B Feasibility	100	CONCESSIONAL FINANCING	Ministry of Transport, Djibouti	
TAIR11	Construction of Greenfield Terminal in JKIA	Airport	Construction of new terminal at Jomo Kenyatta International Airport in Nairobi. Project will also include construction of a new 4.9km long and 75m wide runway and connecting taxiways including: -construction of drainage works, construction of an Earth Embankment as noise barrier between the runway and Syokimau Community; Construction of a firefighting station (ARFF) and provision of associated equipment	S1 Project Definition	220	PPP	Kenya Airports Authority	Project definition and feasibility





Figure 3.36: Development of civil aviation infrastructure 2025-2030

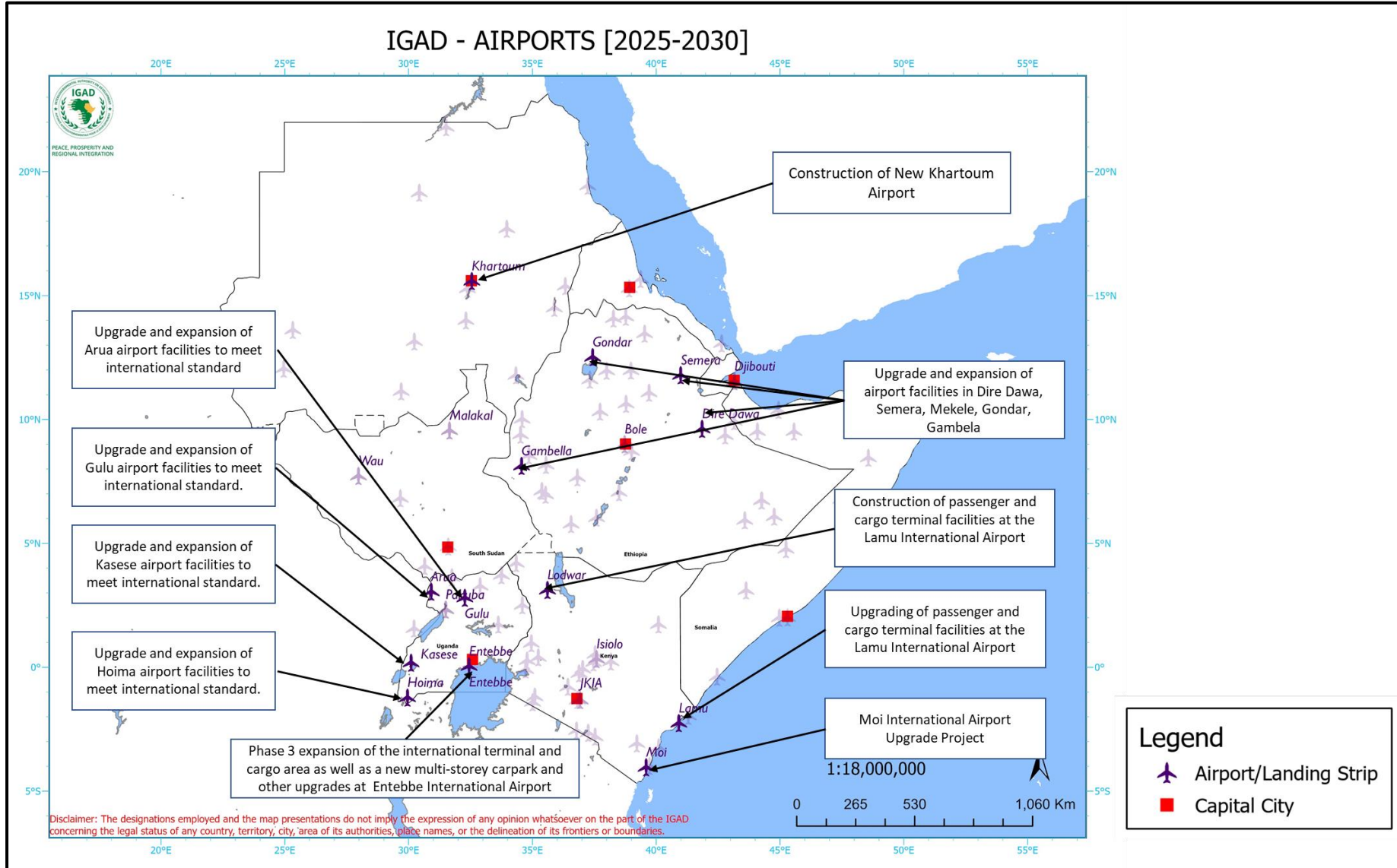




Table 3.36: Civil aviation projects to be implemented 2025-2030

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TAIR12	Entebbe International Airport Expansion Phase 3	Airport	Phase 3 will involve further expansion of the international terminal and cargo area as well as a new multi-storey carpark and other upgrades.	S2B Feasibility	161	Concessional Financing - China Exim Bank	Civil Aviation Authority of Uganda	Complete Phase 2, undertake feasibility study
TAIR13	Arua Airport Upgrade to International Status	Airport	Upgrade and expansion of Arua airport facilities to meet international standard.	S2B Feasibility	15	Concessional Financing	Civil Aviation Authority of Uganda	Undertake feasibility study
TAIR14	Gulu Airport Upgrade to International Status	Airport	Upgrade and expansion of Gulu airport facilities to meet international standard.	S2B Feasibility	15	Concessional Financing	Civil Aviation Authority of Uganda	Undertake feasibility study
TAIR15	Hoima Airport Upgrade to International Status	Airport	Upgrade and expansion of Hoima airport facilities to meet international standard.	S2B Feasibility	100	Concessional Financing	Civil Aviation Authority of Uganda	Undertake feasibility study
TAIR16	Kasese Airport Upgrade to International Status	Airport	Upgrade and expansion of Kasese airport facilities to meet international standard.	S2B Feasibility	40	Concessional Financing	Civil Aviation Authority of Uganda	Undertake feasibility study
TAIR17	Lamu International Airport	Airport	In consideration of public nature of an international airport, the basic civil facilities should be constructed, owned, and maintained by the Government of Kenya. The passenger and cargo terminals are better to be constructed, owned and operated by qualified private entities under the PPP Framework.	S2B Feasibility	190	PPP	Kenya Airports Authority; LAPSSET Corridor Development Authority	Undertake feasibility study
TAIR18	Moi International Airport Upgrade Project	Airport	Rehabilitation of airport infrastructure. Procurement of modern ATC equipment, ambulifts, navigational aids, and meteorological systems.	S2A Pre-feasibility	370	Concessional Financing	Kenya Airports Authority	Undertake feasibility study
TAIR19	Construction of New Khartoum Airport	Airport	Construction of new international airport in Khartoum, Sudan	S1 Project Definition	1200	PPP	Sudan Airports Authority	Project definition and feasibility
TAIR20	Turkana International Airport	Airport	In consideration of public nature of an international airport, the basic civil facilities should be constructed, owned, and maintained	S2B Feasibility	143	PPP	Kenya Airports Authority; LAPSSET	Undertake feasibility study





			by the Government of Kenya. The passenger and cargo terminals are better to be constructed, owned and operated by qualified private entities under the PPP Framework.				Corridor Development Authority	
TAIR21	Upgrade and expansion of airport facilities in Dire Dawa, Semera, Mekele, Gondar, Gambela	Airport	Phased upgrading and expansion of regional airport facilities in Ethiopia	S1 Project Definition	500	Concessional Financing	Ethiopia Airports Enterprise	





Figure 3.37: Development of civil aviation infrastructure 2031-2050

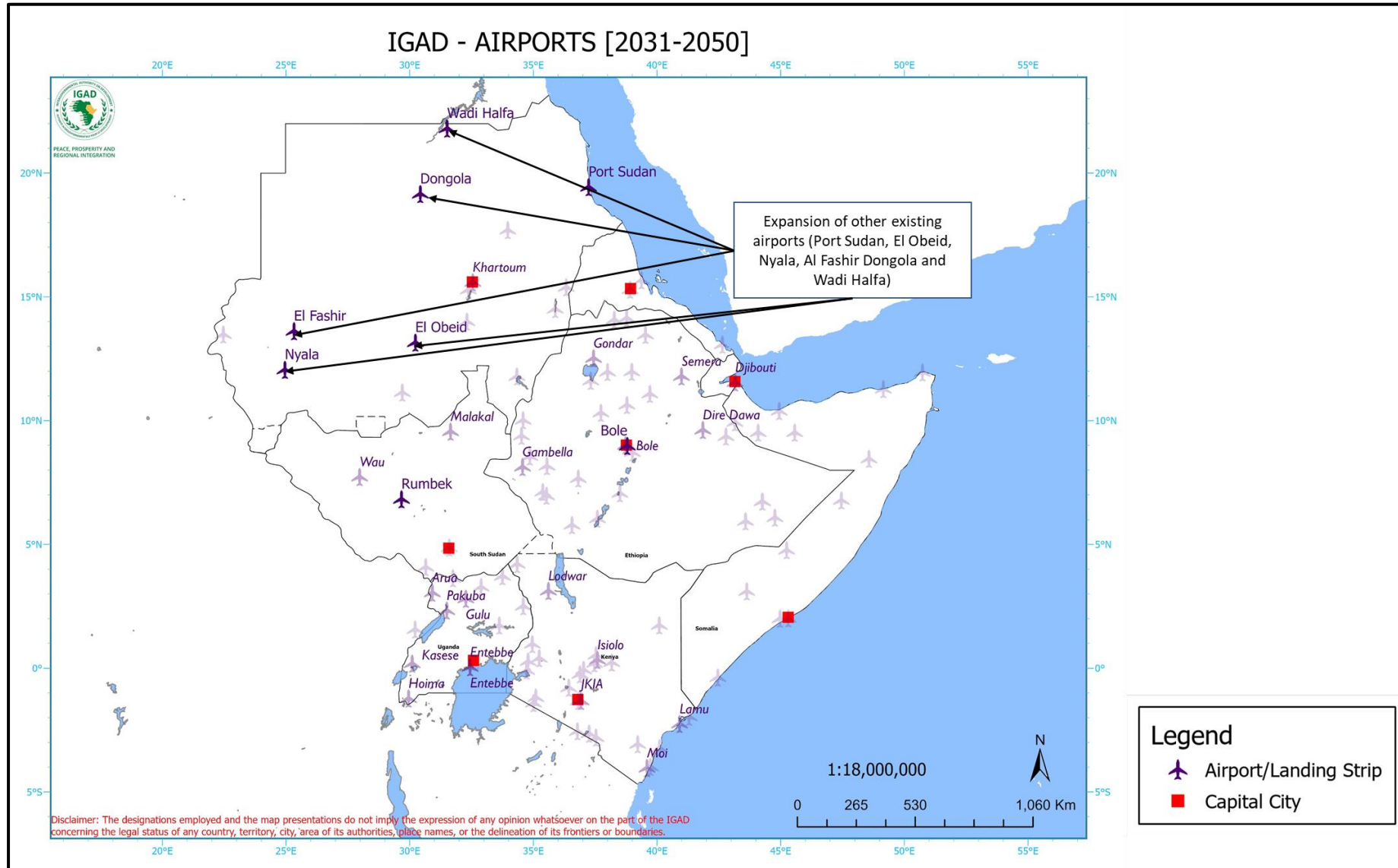




Table 3.37: Civil aviation projects to be implemented 2031-2050

Project ID	Name	Sub-sector type	Description	Stage	Cost (\$m)	Financing	Implementing agency	Next steps
TAIR22	Expansion of other existing airports (Port Sudan, El Obeid, Nyala, Al Fasha Dongola and Wadi Halfa)	Airport	Expansion of national airports in Sudan	S1 Project Definition	600	PPP	Sudan Airports Authority	Project definition and feasibility



Chapter Four: The Action Plan and Implementation Strategy

Chapter Four: The Action Plan and Implementation Strategy

Section 4.1 Introduction

This chapter presents the Action Plan projects to be implemented by 2024 and the next steps required to make them bankable, followed by the strategy for financing and implementing the IRIMP. The Action Plan projects are a *sub-set* of the full list of short, medium, and long-term Infrastructure Development Programme (IPD) projects (Chapter 3) as summarised in Tables 4.1, 4.2, 4.3 and 4.4. Table 4.1 summarises the full Master Project list by sector and disaggregated by timeframe.

The IDP covers all sectors, corridors and member states and provides a framework for economic transformation. The process for prioritising the projects for selection in the short-term Action Plan is summarised in Section 4.2. Short profiles, project briefs, of all Action Plan projects are given in Section 4.3. Section 4.4, outlines how the IRIMP should be implemented, including institutional arrangements based on the designated economic development corridors, capacity building requirements, financing strategies and the process for monitoring and reviewing the IRIMP.

Section 4.2 Getting the Timing and Phasing Right: Prioritisation Criteria and Process

The IRIMP is a comprehensive multi-sector infrastructure investment framework bringing together all the IGAD member states into a long-term holistic economic transformation initiative; the IDP is a portfolio of investment needs and opportunities across the member states and the key economic development corridors they are part of (Tables 4.1-4.4).

All projects in the IRIMP have merit and will progress over the planning period; it is important to get the timing and phasing sequenced to ensure effective and efficient investment decisions and sound use of public investment funds and capital budget planning. It is also important to send clear signals to the private sector on the investment pipeline as well as to ensure all stakeholders have visibility of future investment priorities and the net benefits these will generate.

The approach to prioritising the projects is based on international best practice, adapted for the capacity and data constrained context of the IGAD region. The detailed approach, methodology and criteria is described in Chapter 8 of *Volume Two: The Evidence Base*. The approach was discussed, refined, and validated with member states at the Mombasa workshop in December 2018. The overall approach to screening, sequencing, and prioritising projects for the IDP (Chapter 3) and the Action Plan (Chapter 4) is illustrated in Figure 4.1.

Figure 4.1: IRIMP Project Selection Process

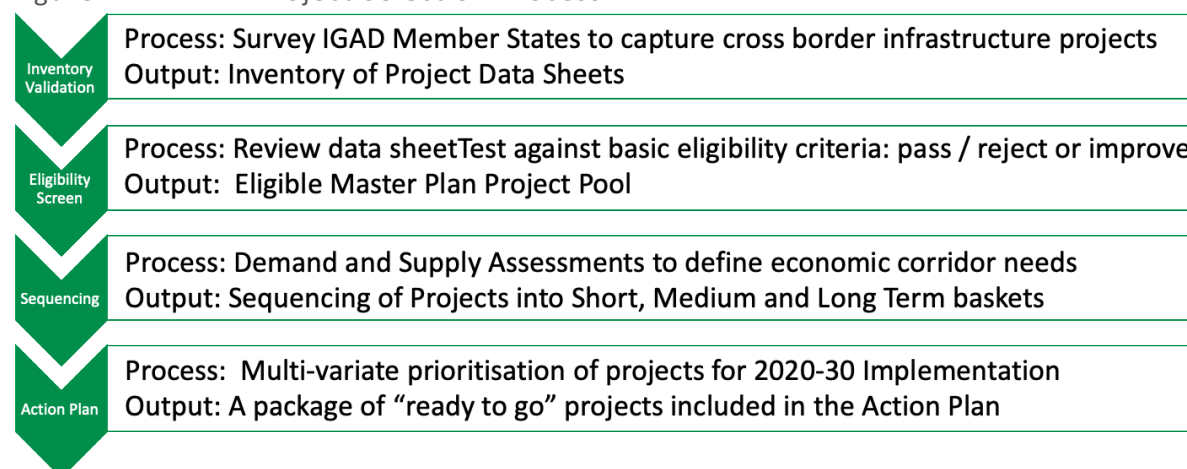




Table 4.1: Summary of IDP Projects: Sector Portfolio Breakdown by Implementation Phase

Sector	Subsector	Short-term (2024)		Medium-term (2030)		Long-term (2050)		Total	
		Projects	Cost \$m	Projects	Cost \$m	Projects	Cost \$m	Projects	Cost \$m
Transport	Roads	23	9,312	23	13,179	7	8,224	53	30,715
	Railways	4	8,442	5	9,668	21	47,960	30	66,070
	Inland Container Depots (ICDs)	3	209	2	200	0	0	5	409
	Border Posts	11	129	2	14	2	40	15	183
	Inland Waterways	4	61	6	3,337	0	0	10	3,398
	Sea Ports	6	5,041	4	4,200	5	4,680	15	13,921
	Aviation	11	4,737	10	2,734	1	600	22	8,071
	Subtotal	62	27,931	52	33,331	36	61,504	150	122,766
Energy	Petroleum/Gas Pipeline	3	5,214	5	7,235	0	0	8	12,449
	Power Interconnector	6	2,342	6	675	6	2267.5	18	5,285
	Subtotal	9	7,556	11	7,910	6	2267.5	26	17,734
ICT	Fibre Optic Links	10	396	4	264	0	0	14	660
	Data Centre	1	173	1	70	0	0	2	243
	Internet Exchange Point (IXP)	2	7	0	0	0	0	2	7
	Subtotal	13	576	5	334	0	0	18	910
Transboundary Water	Multi-purpose Reservoir	4	662.65	1	2,000	0	0	5	2,663
	Water Aquifer Management	1	2.7	0	0	0	0	1	2.7
	Subtotal	5	665.35	1	2,000	0	0	6	2,665
Grand Total		89	36,728	69	43,575	42	63,772	200	144,075





Table 4.2: Infrastructure Development Programme: Short-term Plan (2020-2024)

Project	Cost (\$m)	Corridor	Sector	Sub-sector type
1 Mombasa Port Second Container Terminal, Phase 3	300	Northern Corridor	Transport	Sea Port
2 Mombasa – Nairobi Expressway	2,180	Northern Corridor	Transport	Road
3 Naivasha –Kisumu (Phase 2B) SGR	3,700	Northern Corridor	Transport	Railway
4 Kenya-Uganda Petroleum Products Pipeline (Uganda Section)	600	Northern Corridor	Energy	Petroleum/Gas Pipeline
5 Kampala – Jinja Expressway	1,000	Northern Corridor	Transport	Road
6 Kampala – Jinja Highway	7	Northern Corridor	Transport	Road
7 Kampala Outer Beltway	1250	Northern Corridor	Transport	Road
8 Rehabilitation of Meter Gauge Rail Between Tororo and Gulu	40	Northern Corridor	Transport	Railway
9 Gulu Logistics Hub	9	Northern Corridor	Transport	Inland Container Depot
10 Nimule – Juba Road Rehabilitation	73	Northern Corridor	Transport	Road
11 Rehabilitation of Jinja Port Facilities	3	Northern Corridor	Transport	Inland Port & Waterway
12 Rehabilitation of Kisumu Pier	30	Northern Corridor	Transport	Inland Port & Waterway
13 Rehabilitation of Port Bell Facilities	3	Northern Corridor	Transport	Inland Port & Waterway
14 Improvement of Navigation Aids on Lake Victoria	25	Northern Corridor	Transport	Inland Port & Waterway
15 Uganda – South Sudan Interconnector (400kV)	300	Northern Corridor	Enegy	Power Interconnector
16 Juba-Kampala Fibre Optic Link (South Sudan Section)	19	Northern Corridor	ICT	Fibre Optic Cable
17 Kocholia Trans-boundary Multipurpose Water Storage	55	Northern Corridor	Water	Multi-purpose Reservoir
18 Nyimur Multipurpose Water Resources Project Studies	2	Northern Corridor	Water	Multi-purpose Reservoir
19 Angololo Multipurpose Water Resources Development Project	1.65	Northern Corridor	Water	Multi-purpose Reservoir
20 Transborder Submarine Fibre Points of Presence (PoPs) and Regional Smart Hub Facility and Data centre	70	Northern Corridor	ICT	Fibre Optic Cable and Data Centre
21 Konza National Data Centre and Smart City Facilities	173	Northern Corridor	ICT	ICT Data Centre
22 Liquefied Natural Gas (LNG) Terminal, Demadjorg	2,800	Djibouti Corridor	Transport	Sea Port and Petroleum/Gas Pipeline
23 Djibouti to Ethiopia Pipeline (Horn of Africa Initiative)	1,550	Djibouti Corridor	Energy	Petroleum/Gas Pipeline
24 Djibouti City - Hol Hol - Ali Sabieh - Galile Highway (Horn of Africa Initiative)	129	Djibouti Corridor	Transport	Road
25 Balho One Stop Border Post	10	Djibouti Corridor	Transport	Border Post
26 Dikhil-Galafi Highway - Djibouti (Horn of Africa Initiative)	70	Djibouti Corridor	Transport	Road





27	Galafi One Stop Border Post	10	Djibouti Corridor	Transport	Border Post
28	Galile/Dewele One Stop Border Post	10	Djibouti Corridor	Transport	Border Post
29	Adama-Awash Expressway (Horn of Africa Initiative)	540	Djibouti Corridor	Transport	Road
30	Dima-Raad Highway	40	Djibouti Corridor	Transport	Road
31	Raad/Boma One Stop Border Post	10	Djibouti Corridor	Transport	Border Post
32	Raad-Boma-Kapoeta Highway	336	Djibouti Corridor	Transport	Road
33	Second Ethiopia – Djibouti 230kV Power Transmission Interconnector	100	Djibouti Corridor	Energy	Power Interconnector
34	Djibouti Africa Regional Express (DARE)	100	Djibouti Corridor	ICT	Fibre Optic Cable
35	Installation of 681 km Fibre Optic Cable	32	Djibouti Corridor	ICT	Fibre Optic Cable
36	Doraleh Terminal Extension Phase 2	600	Djibouti Corridor	Transport	Sea Port
37	Loyada One Stop Border Post	10	Djibouti Corridor	Transport	Border Post
38	South Sudan Internet Exchange Point (IXP)	3	Djibouti Corridor	ICT	Internet Exchange Point (IXP)
39	Djibouti – Juba Fibre Optic Link	30	Djibouti Corridor	ICT	Fibre Optic Link
40	Juba – Kampala Fibre Optic Link	19	Djibouti Corridor	ICT	Fibre Optic Link
41	Development of Deep-Water Berths at Osama Digna Port (Suakin)	500	Port Sudan Corridor	Transport	Sea Port
42	Al Damazin-Kurmuk Highway	40	Port Sudan Corridor	Transport	Road
43	El Mujlad-Abyei Highway	120	Port Sudan Corridor	Transport	Road
44	Wau-Gogrial-Abyei Highway	360	Port Sudan Corridor	Transport	Road
45	Metema - Galabat One Stop Border Post	3.5	Port Sudan Corridor	Transport	Border Post
46	Ethiopia-Sudan (500KV) Transmission Interconnector	514	Port Sudan Corridor	Energy	Power Interconnector
47	Assessment and Management of Bagara Transboundary Groundwater Aquifer	2.7	Port Sudan Corridor	Water	Water Aquifer Management
48	Lamu Port Phase 2: Berths 4 to 7	500	LAPSSET Corridor	Transport	Sea Port
49	Lamu – Garissa – Isiolo Highway (Horn of Africa Initiative)	700	LAPSSET Corridor	Transport	Road
50	Crude Oil Pipeline: Lamu to South Sudan	3,064	LAPSSET Corridor	Energy	Petroleum/Gas Pipeline
51	Isiolo-Lokichar Highway	402	LAPSSET Corridor	Transport	Road
52	Nadapal One Stop Border Post	10	LAPSSET Corridor	Transport	Border Post
53	Juba-Torit-Kapoeta-Nadapal Road	294	LAPSSET Corridor	Transport	Road
54	Modjo – Hawassa Expressway	420	LAPSSET Corridor	Transport	Road
55	Multiple 220kV Power Transmission Interconnectors to power the LAPSSET corridor	232	LAPSSET Corridor	Energy	Power Interconnector





56	Nadapal – Juba Fibre Optic Cable	62	LAPSSET Corridor	ICT	Fibre Optic Cable
57	Isiolo Inland Container Depot	100	LAPSSET Corridor	Transport	Inland Container Depot
58	LAPSSET Railway Detailed Design	4000	LAPSSET Corridor	Transport	Railway
59	Berbera Port Upgrade Phase 2	341	Berbera Corridor	Transport	Sea Port
60	Berbera – Hargeisa - Kalabaydh–Togachale Road (Horn of Africa Initiative)	35	Berbera Corridor	Transport	Road
61	Togachale OSBP	10	Berbera Corridor	Transport	Border Post
62	Jigjiga Dry Port	100	Berbera Corridor	Transport	Inland Container Depot
63	Berbera – Togochoale Fibre Optic Cable	10	Berbera Corridor	ICT	Fibre Optic Cable
64	EU Road Rehabilitation	23	Massawa Corridor	Transport	Road
65	Rehabilitation of road between Adigrat and Zalambessa	10	Massawa Corridor	Transport	Road
66	Zalambessa / Serha One Stop Border Post	10	Massawa Corridor	Transport	Border Post
67	OSBP infrastructure and upgrading of border road at Aligider	25	Massawa Corridor	Transport	Border Post
68	Rehabilitation of Massawa – Asmara – Aligider Narrow Gauge Railway line and upgrading of gauge	702	Massawa Corridor	Transport	Railway
69	Upgrading of Kassala – Aligider – Berentu road	10	Massawa Corridor	Transport	Road
70	Sudan - Eritrea 66kv power interconnector (Eritrea Section)	8	Massawa Corridor	Energy	Power Interconnector
71	Construction of the Isiolo – Modogashe – Wajir – El Wak – Rhamu – Mandera Highway (Horn of Africa Initiative)	995	Mogadishu Corridor	Transport	Road
72	Dawa River Multi-purpose Dam	604	Mogadishu Corridor	Water	Multi-purpose Reservoir
73	Ethiopia – Somalia Interconnector (500KV) (Horn of Africa Initiative)	1188	Mogadishu Corridor	Energy	Power Interconnector
74	Nairobi – Mogadishu Fibre Optic Link (Kenya Section) and Point of Presence (PoP)	34	Mogadishu Corridor	ICT	Fibre Optic Cable
75	Somalia Internet Exchange Point (IXP)	4	Mogadishu Corridor	ICT	Internet Exchange Point (IXP)
76	Construction of Liboi – Daadab/Hagadera - Garissa road (Horn of Africa Initiative)	278	Kismayo Corridor	Transport	Road
77	Garissa - Kismayo Fibre Optic Link (Kenya Section)	20	Kismayo Corridor	ICT	Fibre Optic Cable
78	Construction of Liboi OSBP	20	Kismayo Corridor	Transport	Border Post
79	Integrated African Air Transport Market Under Implementation of the Single African Air Transport Market (SAATM) Programme	8	Civil Aviation	Transport	Airport
80	Development of Air traffic management in line with ICAO Global Aviation Plan	4	Civil Aviation	Transport	Airport
81	Isiolo International Airport	175	Civil Aviation	Transport	Airport





82	Entebbe International Airport Expansion Phase 1	70	Civil Aviation	Transport	Airport
83	Construction of Malakal International Airport	40	Civil Aviation	Transport	Airport
84	Wau Airport	40	Civil Aviation	Transport	Airport
85	Rumbek Airport	40	Civil Aviation	Transport	Airport
86	Pakuba Airport Upgrade to International Status	40	Civil Aviation	Transport	Airport
87	Construction of a new Addis Ababa Airport	4000	Civil Aviation	Transport	Airport
88	Djibouti Airport Expansion of the Terminal building facilities	100	Civil Aviation	Transport	Airport
89	Construction of Greenfield Terminal in JKIA	220	Civil Aviation	Transport	Airport





Table 4.3: Infrastructure Development Programme: Medium-term Plan (2025-2030)

Project	Value (in million USD)	Corridor	Sector	Sub-Sector
1 Kisumu – Malaba (Phase 2C) SGR	1,230	Northern Corridor	Transport	Railway
2 Malaba – Kampala SGR	2,638	Northern Corridor	Transport	Railway
3 Construction of a New Bukasa Port Facilities	180	Northern Corridor	Transport	Inland Port & Waterway
4 Dire Dawa-Awash Expressway	1,000	Djibouti Corridor	Transport	Road
5 Musingo-Tsertenya – Ikotos - Torit Road	210	Djibouti Corridor	Transport	Road
6 Ethiopia – South Sudan Interconnector (400KV)	235	Djibouti Corridor	Energy	Power Interconnector
7 Ethiopia – South Sudan Interconnector (230KV)	100	Djibouti Corridor	Energy	Power Interconnector
8 Expansion of Djibouti Free Zone Phase 2	3,500	Djibouti Corridor	Transport	Port/Free Zone
9 South Sudan – Djibouti port crude oil pipeline	5000	Djibouti Corridor	Energy	Pipeline
10 Loyada – Borema – Hargeisa – Berbera Highway (Horn of Africa Initiative)	1096	Djibouti Corridor	Transport	Road
11 Hargeisa – Burao (Burco) Highway	310	Djibouti Corridor	Transport	Road
12 Port Sudan- Haya -Atbara-Khartoum SGR	1,400	Port Sudan Corridor	Transport	Railway
13 Weldiya-Gondar-Metema – Al Qadaref SGR	2,900	Port Sudan Corridor	Transport	Railway
14 Sudan-Ethiopia Petroleum Pipeline	300	Port Sudan Corridor	Energy	Petroleum/Gas Pipeline
15 Sudan-South Sudan Petroleum Pipeline	250	Port Sudan Corridor	Energy	Petroleum/Gas Pipeline
16 South Sudan/Sudan (Renk) One Stop Border Post	10	Port Sudan Corridor	Transport	Border Post
17 Juba-Bor-Malakal-Renk-Sudan Border Road	200	Port Sudan Corridor	Transport	Road
18 Kurmuk One Stop Border Post	10	Port Sudan Corridor	Transport	Border Post
19 Asosa-Kurmuk Highway	900	Port Sudan Corridor	Transport	Road
20 Improvement of port facilities (Juba, Bor, Malakal and Renk) on the White Nile	900	Port Sudan Corridor	Transport	Inland Port & Waterway
21 Improvement of port facilities at Kosti on the White Nile	150	Port Sudan Corridor	Transport	Inland Port & Waterway
22 Rehabilitation of facilities for ports on Sobat River	1804	Port Sudan Corridor	Transport	Inland Port & Waterway
23 Provision of Navigation Aids on the White Nile	200	Port Sudan Corridor	Transport	Inland Port & Waterway
24 El Showak-Kono-Sabarna- El Homara	1200	Port Sudan Corridor	Transport	Road





25	El Fasher – Kabkabiya – El Geneina-Adri	900	Port Sudan Corridor	Transport	Road
26	Nyala - Rihaid El Birdi – Om Dafuq	900	Port Sudan Corridor	Transport	Road
27	Khartoum – Juba fibre optic cable	25	Port Sudan Corridor	ICT	Fibre Optic Cable
28	Dredging of River Channel (Juba to Renk) and Rehabilitation of 11 ports and Provision Navigation Aids	102.5	Port Sudan Corridor	Transport	Inland Water Ways
29	Product Oil Pipeline: Kenya to Ethiopia	885	LAPSSET Corridor	Energy	Petroleum/ Gas Pipeline
30	Nairobi to Isiolo SGR	1,500	LAPSSET Corridor	Transport	Railway
31	Crude Oil Pipeline: Jonglei to Nadapal	800	LAPSSET Corridor	Energy	Petroleum/ Gas Pipeline
32	Kenya – South Sudan Interconnector (220KV)	85	LAPSSET Corridor	Energy	Power Interconnector
33	Moyale Inland Container Depot	100	LAPSSET Corridor	Transport	Inland Container Depot
34	Lokichogio Inland Container Depot	100	LAPSSET Corridor	Transport	Inland Container Depot
35	High Grand Falls Multi-Purpose Dam	2,000	LAPSSET Corridor	Water	Multi-purpose Reservoir
36	Lamu Special Economic Zone	500	LAPSSET Corridor	Transport	Special Economic Zone
37	Transborder Submarine Fibre Points of Presence (PoPs) and Regional Smart Hub Facility and Data centre	70	LAPSSET Corridor	ICT	Fibre Optic Cable and Data Centre
38	Construction of Moyale – Banisa – Rhamu road	330	LAPSSET Corridor	Transport	Road
39	Ethiopia – Somalia Interconnector (230KV) (Horn of Africa Initiative)	40	Berbera Corridor	Energy	Power Interconnector
40	Massawa Port Expansion Phase 1	100	Massawa Corridor	Transport	Sea Port
41	Eritrea – Sudan Interconnector (230KV)	140	Massawa Corridor	Energy	Power Interconnector
42	Eritrea – Ethiopia Interconnector (230KV) (Horn of Africa Initiative)	75	Massawa Corridor	Energy	Power Interconnector
43	Sudan-Eritrea Fibre-optic Link	10	Massawa Corridor	ICT	Fibre Optic Cable
44	Rehabilitation and upgrading of Assab Port	100	Assab Corridor	Transport	Sea Port
45	Construction of Bure – Assab Port road (Horn of Africa Initiative)	163	Assab Corridor	Transport	Road
46	Rehabilitation of the Mellondi – Manda – Bure – Assab Road	700	Assab Corridor	Transport	Road
47	Upgrading and rehabilitation of the Negele – Filtu – Siftu highway (Horn of Africa Initiative)	393	Mogadishu Corridor	Transport	Road
48	Upgrading and rehabilitation of the Ginir – Gode - Ferfer highway (Horn of Africa Initiative)	253	Mogadishu Corridor	Transport	Road





49	Rehabilitation of the Mogadishu – Afgooye – Baidoa – Dollow highway (Horn of Africa Initiative)	600	Mogadishu Corridor	Transport	Road
50	Construction of Aware – Warder - Ferfer /Somalia border highway (Horn of Africa Initiative)	764	Mogadishu Corridor	Transport	Road
51	Construction of Kebridahar – Warder – Turdibi /Galdogobi highway (Horn of Africa Initiative)	148	Mogadishu Corridor	Transport	Road
52	Construction of Mogadishu – Beled weyne - Galkayo highway (Horn of Africa Initiative)	796	Mogadishu Corridor	Transport	Road
53	Construction of Mogadishu -Jowhar - Beled weyne - Ferfer highway (Horn of Africa Initiative)	338	Mogadishu Corridor	Transport	Road
54	Galkayo – Bossaso	700	Mogadishu Corridor	Transport	Road
55	Mogadishu-Baidoa-Mandera Road	270	Mogadishu Corridor	Transport	Road
56	Nairobi – Mogadishu Fibre Optic Link (Somalia Section) and Point of Presence (PoP) at Mogadishu	134	Mogadishu Corridor	ICT	Fibre Optic Cable
57	Construction of Kismayo – Elwak road	681	Kismayu Corridor	Transport	Road
58	Construction of Kismayo-Bilis Qooqani – Liboi highway	327	Kismayu Corridor	Transport	Road
59	Garissa - Kismayo Fibre Optic Link (Somalia Section) and Point of Presence (PoP) in Kismayo	25	Kismayu Corridor	ICT	Fibre Optic Cable
60	Entebbe International Airport Expansion Phase 3	161	Civil Aviation	Transport	Airport
61	Arua Airport Upgrade to International Status	15	Civil Aviation	Transport	Airport
62	Gulu Airport Upgrade to International Status	15	Civil Aviation	Transport	Airport
63	Hoima Airport Upgrade to International Status	100	Civil Aviation	Transport	Airport
64	Kasese Airport Upgrade to International Status	40	Civil Aviation	Transport	Airport
65	Lamu International Airport	190	Civil Aviation	Transport	Airport
66	Moi International Airport Upgrade Project	370	Civil Aviation	Transport	Airport
67	Construction of New Khartoum Airport	1200	Civil Aviation	Transport	Airport
68	Turkana International Airport	143	Civil Aviation	Transport	Airport
69	Upgrade and expansion of airport facilities in Dire Dawa, Semera, Mekele, Gondar, Gambela	500	Civil Aviation	Transport	Airport





Table 4.4: Infrastructure Development Programme: Long-term Plan (2031-2050)

Project	Value (in million USD)	Corridor	Sector	Sub-Sector
1 Tororo – Gulu SGR	1,900	Northern Corridor	Transport	Railway
2 Gulu –Nimule –Juba – Wau SGR	4700	Northern Corridor	Transport	Railway
3 Nairobi – Nakuru Expressway	1256	Northern Corridor	Transport	Road
4 Nakuru – Kisumu Expressway	1464	Northern Corridor	Transport	Road
5 Kisumu – Busia Expressway	968	Northern Corridor	Transport	Road
6 Nakuru – Eldoret – Malaba Expressway	2320	Northern Corridor	Transport	Road
7 Malaba – Kampala Expressway	1128	Northern Corridor	Transport	Road
8 Conversion of Mombasa – Nairobi SGR to double track + electrification	100	Northern Corridor	Transport	Railway
9 Kenya – Uganda upgrade on Uganda side to 400kV	520	Northern Corridor	Energy	Power Interconnector
10 Expansion of Mombasa Port	380	Northern Corridor	Transport	Sea Port
11 Asayta - Tadjourah Port SGR	1,300	Djibouti Corridor	Transport	Railway
12 Hara Gebeya - Asayta SGR	1,300	Djibouti Corridor	Transport	Railway
13 Addis Ababa - Jimma - Dima - Raad SGR	4,400	Djibouti Corridor	Transport	Railway
14 Raad-Boma-Kapoeta SGR	2,400	Djibouti Corridor	Transport	Railway
15 Upgrade Djibouti – Adama SGR to double track / double stack	2000	Djibouti Corridor	Transport	Railway
16 Djibouti - Somalia 230kV Power Transmission Interconnector	100	Djibouti Corridor	Energy	Power Interconnector
17 Haya-Kassala-Gedarif – Metema SGR	1,000	Port Sudan Corridor	Transport	Railway
18 Gedarif-Sennar-Kosti-Babanusa-Meram SGR	2,000	Port Sudan Corridor	Transport	Railway
19 Ad-Damazin - Kurmuk Railway SGR	750	Port Sudan Corridor	Transport	Railway
20 Juba-Bor-Malakal-Renk-Sudan Border Railway	4,800	Port Sudan Corridor	Transport	Railway
21 Ambo – Nekemte–Asosa–Kurmuk SGR	3,300	Port Sudan Corridor	Transport	Railway
22 Juba-Wau-Meram SGR	5200	Port Sudan Corridor	Transport	Railway
23 Khartoum – Kosti – Renk – Malakal – Juba high voltage power transmission interconnector	111.6	Port Sudan Corridor	Energy	Power Interconnector
24 Lamu Port Phase 3: Remaining Berths	4,000	LAPSSET Corridor	Transport	Sea Port
25 Lamu to Isiolo SGR	1,500	LAPSSET Corridor	Transport	Railway
26 Isiolo to Moyale SGR	1,600	LAPSSET Corridor	Transport	Railway
27 Modjo-Awassa-Moyale SGR	6,400	LAPSSET Corridor	Transport	Railway
28 Isiolo to Nakodok/Nadapal SGR	3,900	LAPSSET Corridor	Transport	Railway





29	Nadapal-Kapoeta-Juba SGR	1,900	LAPSSET Corridor	Transport	Railway
30	2nd Kenya – Ethiopia 400kv Power Interconnection (Horn of Africa Initiative)	1115	LAPSSET Corridor	Energy	Power Interconnector
31	Berbera – Dire Dawa SGR	1,800	Berbera Corridor	Transport	Railways
32	Berbera – Burao (Burco) – Lascanood – Garowe	600	Berbera Corridor	Transport	Road
33	Misrak Gashamo -Bohotle – Quyale – Burao - Berbera	500	Berbera Corridor	Transport	Road
34	Massawa Port Expansion Phase 2	100	Massawa Corridor	Transport	Sea Port
35	Mekele – Massawa SGR	2,000	Massawa Corridor	Transport	Railway
36	Upgrade Capacity of Mogadishu Port	100	Mogadishu Corridor	Transport	Sea Port
37	Mandera OSBP	20	Mogadishu Corridor	Transport	Border Post
38	Ferfer OSBP	20	Mogadishu Corridor	Transport	Border Post
39	Kenya – Somalia power transmission line (Somalia section) (Horn of Africa Initiative)	192	Mogadishu Corridor	Energy	Power Interconnector
40	Garissa – Wajir – Mandera 220KV power transmission line	192	Mogadishu Corridor	Energy	Power Interconnector
41	Upgrade Capacity of Kismayo Port	100	Kismayu Corridor	Transport	Sea Port
42	Expansion of other existing airports (Port Sudan, El Obeid, Nyala, Al Fasha Dongola and Wadi Halfa)	600	Civil Aviation	Transport	Airport





Step 1, Inventory: more than 200 potential projects were identified during the course of the IRIMP study and a standardised Project Data Sheet was completed (as far as possible) for each using information collected from combination of desk based / web research, field visits and selected key informant interviews across the target countries and sectors. The Mombasa workshop was used to validate the project data sheets and critically, to confirm that the most important projects are included in the inventory. The inventory forms the pool of projects that were considered for inclusion in the IRIMP.

Step 2, Screening: projects in the inventory were screened against three criteria for inclusion in the Infrastructure Development Programme:

- **Cross-border Integration:** the project involves – or will materially impact on – two or more IGAD member countries.
- **Strategic fit:** the project is part of one of the priorities corridors.
- **Ownership:** the project is in at least one member states' National Development Plan (or equivalent) and / or an MoU has been signed.

Step 3, Sequencing: projects that met the above criteria were sequenced into short (2024), medium (2030) and long-term (2050) planning horizons based on the need for the project as evidenced through the capacity / demand gap analysis presented in the *Annex 3*.

Step 4, Prioritisation: multivariate criteria were used to prioritise projects to be implemented in the short-term to identify those that are likely to be high-impact and also bankable to investors:

- **Market Demand Justified:** the project addresses an immediate capacity shortfall demonstrated by the demand / capacity analysis.
- **High Developmental Impact:** In line with wider AU / REC screening processes, including PIDA, a fundamental consideration is the overall developmental impact of the proposed investment. In principle priority is given to projects where the balance between benefits and costs is weighted strongly in favour of benefits. Poverty reduction is central. Of specific concern is potential job creation – direct, indirect, and induced – and the distribution of those jobs between vulnerable/excluded groups and gender mix. The contribution to achieving the SDGs and Paris Agreement is a benchmark against which projects need to be measured.
- **IGAD Value-added:** Selected projects should be those where IGAD is the most appropriate REC to champion investment and delivery. IGAD may well have a role in advocating and influencing other projects where other RECs have a comparative advantage and/or jurisdictional preferences.
- **Committed to Implementation:** Demonstrated to have a high level of buy-in among the participating member states responsible for the investments – there needs to be clear evidence of the level of buy-in and commitment as manifest by the existence of MoUs or Letters of Intent covering the proposed investments, funding commitments in national budgets and institutional readiness to take the project forward within the Action Plan planning horizon. MoUs can take a considerable period time to execute – perhaps 2-3 years from start to finish depending on priorities and wider political relationship – and thus their existence or otherwise will have a material impact on timing and sequencing.
- **“Ready to Go” – Fine Tuning:** The Action Plan will focus on those projects that fulfil the two previous criteria and are sufficiently defined to attract at least initial financing interest – thus, the maturity and quality of project preparation is sufficient for an initial go / no go – requires provide further project preparation detailing;



- **Portfolio Balance:** The Action Plan must respond to the collective of Member States and what matters most to them in terms of their regional economic development priorities and peace and stability. The Action Plan reflects a balance between Member States and across the sectors.

Section 4.3 The IRIMP Action Plan and Project Briefs

The application of the prioritisation process and criteria to the full IDP project inventory provides a logical and empirically based method to organise the investment pipeline into short, medium, and long-term opportunities. The next step is to detail up the short-term, Action Plan, investments to provide guidance on project purpose, objectives, indicative costs, benefits, safeguards, and implementation requirements. In line with strategic focus on economic corridors, the projects are clustered by the corridor they contribute to developing

The detailed IRIMP Action Plan which comprises of projects selected according to the prioritisation criteria is presented below, followed by profiles of each project.

Table 4.5: IRIMP Action Plan Projects

Project	Sector	Sub-Sector	Cost (US\$ M)	Corridor	Country(ies)
1 Juba – Nimule Road Rehabilitation	Transport	Road	73	Northern	South Sudan
2 Kampala – Jinja Expressway	Transport	Road	1,000	Northern	Uganda
3 Kisumu – Malaba SGR (Phase 2C)	Transport	Railway	1,230	Northern	Kenya
4 Malaba – Kampala SGR	Transport	Railway	2,638	Northern	Uganda
5 Uganda – South Sudan 400kV Power Transmission Interconnector	Energy	Power Interconnector	300	Northern	South Sudan, Uganda
6 Djibouti City – Hol Hol – Ali Sabieh – Galile Highway	Transport	Road	129	Djibouti	Djibouti
7 Raad – Boma – Kapoeta Road	Transport	Road	336	Djibouti	South Sudan
8 Second Ethiopia – Djibouti 230kV Power Transmission Interconnector	Energy	Power Interconnector	100	Djibouti	Djibouti, Ethiopia
9 El Mujlad – Abyei Highway Upgrade	Transport	Road	120	Port Sudan	Sudan
10 Wau – Gorgrial – Abyei Highway Upgrade	Transport	Road	360	Port Sudan	South Sudan
11 Ethiopia – Sudan 500kV Power Transmission Interconnector	Energy	Power Interconnector	514	Port Sudan	Ethiopia, Sudan
12 LAPSSET Port Phase 2	Transport	Port	1,760	LAPSSET	Kenya
13 Isiolo – Lokichar Highway	Transport	Road	402	LAPSSET	Kenya
14 Juba – Torit – Kapoeta – Nadapal Road Upgrade	Transport	Road	294	LAPSSET	South Sudan
15 Transborder Submarine Fibre PoPs and Regional Smart Hub Facility and Data center	ICT	Fibre Optic Cable	70	LAPSSET Corridor	Kenya, Ethiopia, South Sudan, Uganda
16 Nairobi – Mogadishu Fibre Optic Link (Isiolo – Mandera fibre optic link)	ICT	Fibre Optic Cable	35	Mogadishu Corridor	Kenya, Somalia
17 LAPSSET Crude Oil Pipeline	Energy	Petroleum/Gas Pipeline	3,064	LAPSSET	Kenya

18	Nadapal – Juba Fibre Optic Cable	ICT	Fibre Optic Cable	15	LAPSSET	South Sudan
19	Togochoale Border Post and Road Upgrade	Transport	Road / Border Post	50	Berbera	Somalia
20	Berbera – Togochoale Fibre Optic Cable	ICT	Fibre Optic Cable	10	Berbera	Somalia
21	Ethiopia – Somalia Power Transmission Line	Energy	Power Interconnector	1188	Berbera	Ethiopia, Somalia
22	Single African Air Transport Market	Transport	Civil Aviation	8	N/A	All
23	Djibouti Africa Regional Express (DARE)	ICT	Fibre Optic Cable	100	N/A	Djibouti, Somalia, Kenya
24	Sudan - Eritrea 66kv power interconnector (Eritrea Section)	Energy	Power Interconnector	8	Massawa	Sudan, Eritrea
25	Kenya – Somalia Power Transmission Line	Energy	Power Interconnector	192	Mogadishu	Somalia, Kenya
26	Dawa River Multi-purpose Dam	Water	Multi-purpose Reservoir	604	Mogadishu	Ethiopia, Kenya, Somalia

Project Briefs

Northern Corridor

Nimule – Juba Road Rehabilitation (reference number: TRDN10)

Member states: South Sudan	Corridor: Northern	Sub-sector: Road	Status: S2A Pre-feasibility
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Project Description

The current road was completed in 2012 at a cost of USD 220 million with funding from USAID. It is 192Km long and comprises of a 7m wide carriageway with 1.5m shoulders with a double bituminous surface treatment (DBST) surfacing. The road has a winding alignment with sharp curves nearly every 3km, and travel speeds average 40kph at best. The road reserve is approximately 120m (in theory) but is not gazetted. The route has a total of seven steel trussed bridges which average 3.3m wide and will require to be widened to comply with set regional highway standards.

The road has not received any maintenance since 2014, despite being heavily trafficked as the only tarmacked road link to the capital Juba. The 2013 conflict worsened the situation since there has been virtually no enforcement of traffic laws on the corridor which has operated without axle load controls since it was upgraded, resulting in heavy damage to the inbound lanes. Insecurity is a major challenge on the corridor and the road reserve was also heavily mined during the conflict.

The project requires complete upgrading with geometric realignments and pavement reconstruction, which is expected to reduce the length of road by approximately 17% to 160Km. The government is considering two options for the alignment: 1) Completely new alignment for the Nimule-Juba corridor while retaining the old alignment for the local economy; and 2) retain the existing alignment with geometric improvements. Either way, the road reserve for the revised alignment will be fenced off to avoid encroachment. Though expensive, a new alignment is favoured since it avoids dealing with historical issues on the corridor, including the required extensive de-mining exercise to render it safe for international traffic. Notably, the existing settlements in the area comprise mainly temporary villages which may not therefore interfere with land acquisition for the new/revised corridor to a great extent. A pole-suspended fibre optic cable has been installed over the alignment as a temporary measure. Cable infrastructure on the new alignment will be installed underground.



The rehabilitation of the corridor will be guided by the South Sudan Road Design Manual or any other design guide nominated by the implementing authority. It is worth noting that South Sudan is a member of the COMESA which recently issued guidelines on standards for international highways for its member states; and these are expected to be observed during the design for rehabilitation of the Nimule-Juba segment of the Northern Corridor.

Costs

The total **CAPEX cost for the project is estimated to be \$73m**. The annual OPEX cost is estimated to be \$3m, with a total project life cost of \$133m.

Benefits, Economic and Financial Impact

The Nimule-Juba Road is part of the Northern Corridor, which, at present, forms Juba's only connection to a port. It also forms part of the COMESA corridor network, and connects to the Djibouti, LAPSET and Port Sudan Corridors at Juba (though these are all currently incomplete / missing links), ultimately connecting Uganda to Ethiopia and Sudan. The corridor carries a mix of international and domestic traffic, with international goods traffic predominating. It also carries a significantly high volume of passenger transport vehicles, particularly regional bus transit to South Sudan. By 2016 the road carried an estimated 20,000 DWT of all goods traffic destined for South Sudan. This volume is expected to increase significantly.

Due to the poor condition of the road, the economic benefits have gradually been eroded to bare minimum as vehicle operating costs picked due to poor journey times coupled with high vehicle maintenance costs. The riparian lands are lined with empty villages as entire populations migrated from the area partly due to declining agricultural production fuelled by lost access to markets

Rehabilitation of the road will reduce travel times and costs, increase trade and integration between Uganda and South Sudan, but also between Uganda and Sudan and Ethiopia as the primary route between these countries. There will also be added benefits to local communities from improved access to regional markets for agricultural products.

The economic and financial impact will be quantified during the full feasibility.

Environmental, Social, Gender and Land Issues

Negative Impacts and mitigations:

1. Possible explosions of mines laid along sides of the road corridor during political tension.
 - The existing road has been demined at width of 50 that is 25 meters for the centre line of the existing road at both sides; this needs to be extended to cover the full 120m road reserve

Loss of vegetation cover to protect soil and provide habitat for wildlife:

2. Possible destruction of flora and fauna (birds, mammals, and reptiles) within protected areas in areas where need of diversions will be necessitated.
 - a. Vegetation should only be cleared where it interferes with road construction and/or presents a hazard to traffic and design.

Water quality:

2. Impact on water, existing water supply may be reduced especially if the project is done during dry season sanitation and water pollution due to oil spillages from the machinery which will be undergoing servicing.
3. Consult hydrological to ensure boreholes for construction do not tap into the same aquifer supplying the community borehole.
 - a. Limit abstraction from rivers to ensure a minimum flow downstream.

Waste management:

3. Construction debris (concrete, timber, rocks, etc.) and domestic waste, (plastic, paper, etc.)



- a. Ensuring that waste materials are properly disposed of in protected locations. Inert construction-waste materials (for example, concrete from bridge reconstruction) can be used as fill materials in borrow pits and quarries.

Landscape degradation and soil erosion:

4. Degradation of scenic vistas and landscapes; soil erosion at stream crossing,
 - a. Spoil materials, if inert, can be used for infilling of borrow pits, quarries and sand mines, if terrestrial; solid and human wastes produced at the contractor's camp(s) and ancillary construction facilities should be properly treated and discharged as required.
 - b. Rehabilitate quarries and borrow areas as suggested in environmental guidelines

Air quality:

5. Impact of air quality due to dust and smoke emanating from the road site and quarry as well as exhausts from the machines that will be used, wastes and aesthetics include: visual impact, road aesthetics, and solid waste emanating from the workers construction sites.

Increased waste generation:

6. Construction debris (concrete, timber, rock, etc.) and domestic waste, (plastic, paper, etc.)
7. Construction and domestic wastes (from contractor's camp) should be stored only in specially designated places, removed and disposed of regularly at a site approved by the Engineer.

Public health issues:

- Increased spread of HIV/AIDS and other communicable diseases during the implementation and after completion and its advisable that;
- Regular HIV/AIDS awareness and prevention campaigns in the project area are to be conducted.

Land and property acquisition:

- Acquisition of land and property along the road reserve.
- A comprehensive and final RAP is required after all alignments are selected. Compensation for properties and assets is required in keeping with regional values for structures and assets.

Proposed Financing Plan and Funding Options

The economic benefits of the project are likely to be high, and it is likely that a toll road could be commercially viable and should be considered as an option in the feasibility study.

Next Steps, Responsibilities and Implementation Plan

The project will be implemented by South Sudan Roads Authority (SSRA). A full feasibility and detailed design including topographic surveys, traffic studies, geotechnical/materials investigations as well as ESIA are required as the next step.

Item	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Approve PFS	x																	
Feasibility Study	x	x	x	x	x	x												
Approval FS						x												
Detailed Design and Contract Packaging				x	x	x	x	x										
Procurement									x									
Construction and Supervision										x	x	x	x	x	x	x	x	x
Commissioning/handover to client																		x

Kampala – Jinja Expressway (reference number: TRDN05)

Member states: Uganda	Corridor: Northern	Sub-sector: Road	Status: S3A Project Structuring
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Project Description

The Kampala Jinja Expressway (KJE) is a 77.1km, four lane dual carriage toll highway connecting Kampala and Jinja which forms part of the Northern Corridor of the Trans-Africa Highway, linking the Indian Ocean port of Mombasa, Kenya with the Atlantic Ocean port of Matadi, Democratic Republic of the Congo (DRC). The expressway project was conceptualised to mitigate on the problem of the existing Kampala – Jinja highway which does not cater adequately for the current road traffic movement; the road was at/over operational capacity and there were severe resilience problems causing congestion and delays, particularly on the approach to Kampala.

The principal reasons for increasing capacity were therefore to resolve issues concerning the following:

- Congestion, delays and unreliable journey times across the network adversely affecting traffic, business and freight travel in particular as well as bus and matatu services. It will also address local political, business and resident concerns about traffic congestion and poor journey time reliability.
- Future capacity requirements to cater for economic development of the eastern part of Uganda. Providing extra capacity and achieving more reliable journey times will help facilitate additional housing and commercial development.
- Lower the cost of doing business, improve the investment climate and competitiveness through quality infrastructure;
- Contribution to urban Development, inducement of new land use, and betterment of developments along the corridor;
- Decentralisation of business activities currently centralised in the Kampala Central Business District (CBD) and provide opportunities to develop outskirts of Kampala CBD;
- Improvement of traffic conditions through reduction of traffic congestion, air pollution, noise, accidents etc; and
- Reduction in Travel time and costs. The project is expected to result in faster travel times and reduced vehicle operating costs between Kampala city and the neighbouring urban areas.

Costs

The expressway has an estimated design life of 30 years with a **CAPEX of \$1 billion** and an O&M cost of \$300 million. This sums up the total life cost of the project to stand at \$1.3 billion.

Benefits, Economic and Financial Impact

The KJE brings with it a wealth of quantifiable and qualitative benefits:

- (i) Road users will experience greater time savings averaging 70mins between Kampala and Jinja (upon full delivery of the project through lots 1 and 2) including reduced vehicle operating costs;
- (ii) At a macro level, indirect benefits of the Project will include an increased GDP, Foreign Direct Investments during the construction period;
- (iii) The project will result in creation of 1500 jobs during construction and 250 jobs during operations;
- (iv) Government will also gain tax revenue of at least \$600m over the concession term;
- (v) The local industry will be significantly improved and strengthened as a result of implementing the Project through a very strong local content focus; and,
- (vi) Other benefits will include greater public satisfaction, agglomeration along the road corridor and reduced accidents on account of the expressway being limited access.

Environmental, Social, Gender and Land Issues





Waste generation: The largest amounts of waste are likely to be demolition waste from land clearance and demolition activities during Project land acquisition, and construction waste.

Mitigation: excavated material, timber, bricks, concrete, asphalt and steel can be recycled or reprocessed. This is expected to help avoid excessive waste from being channeled to landfill, thereby reducing potential environmental and social impacts associated with waste generation hence help fight in climate change.

Air quality and greenhouse gasses: Air emissions especially during the dry season are a major issue in Kampala, especially as the city grows and the use of vehicles increases. In particular, the impacts of fine particulates from vehicle emissions is well known to affect the health of people living in proximity to major roads.

Mitigations: The Project is expected to generate more greenhouse gas emissions when compared to baseline emissions (under the 'Do Minimum' scenario) due to the increased traffic flows under the Project development scenario. Greening of the expressway route through the planting of vegetation has the potential to at least partly mitigate greenhouse gas emissions generated from vehicles using the expressway.

Noise: Noise generated by expressways will be significant during construction phase. Noise activities will primarily be associated with the clearing of land, earthworks and hauling of construction materials. Some noise and vibration are also expected during the construction phase will be associated with rock blasting, excavation of rock, road cuttings, construction of overpasses and annoyances to community and wetland wildlife, However, impacts will be short term

Mitigation: Noise mitigation via sound barriers will be required in certain sections of the expressway to ensure that noise emissions are within regulatory requirements, enabling remaining residences to not be severely impacted by the development.

Surface and Ground Water quality: The Project passes through alternating swamp and hilly terrain and will involve substantial earthworks in the form of a frequent succession of cuts and fills along much of its length. Therefore, there is the potential that significant quantities of sediment could make their way into downstream environments resulting in impacts on downstream water quality, land and water/land users.

Mitigation: A project specific Water Management Plan has been prepared which outlines a variety of measures to minimise water quality impacts from the Project, including a proposed monitoring program. Furthermore, the storm water drainage system of the Project will need to be designed to manage these increased flows throughout the Operation Phase and particularly during high rainfall events

Ecology and Biodiversity: Habitat clearance and disturbance arising from noise, vibration, air blast, light spill, and other human activity during construction will result in the displacement of fauna and the permanent loss of a small proportion of habitat for nationally and / or globally rare or threatened birds and mammals (i.e. hooded vultures, grey crown crane, saddle billed stork and sitatungas).

Mitigation: Project is aligned with best practice with plans to avoid, minimise and restore adverse impacts to biodiversity. However, it is recognised that even after all feasible mitigation measures are put in place, residual impacts will remain for some priority habitats and species.

Socially the project will impact in a way that the KJE Project will contribute to key strategic transport priorities for the region and help meet the objectives of regional integration, socio-economic development and investment in transportation infrastructure outlined in key national policies such as the Uganda Vision 2040, the National Development Plan II (2015/16 –2019/20) and National Transport Master Plan

Gender: The management program for the Project includes several gender-based practical measures and strategic gender initiatives to help ensure women are not disproportionately impacted by the Project. These include specific measures to enhance the provision of prevention programs and response services for those at risk of Gender Based Violence in the Project area.





Cultural Heritage: The proposed Kampala Jinja Expressway Project proposed corridor passes an area in the northern side of Lake Victoria. Archaeological records indicate the presence of agricultural communities in the Project area from approximately 500B.C onwards. The first agricultural communities introduced what is known as the Urawa culture of the great lake's region. Urawa pottery pot shards are found in cultivated fields in the region surrounding the Project Area. The area transitioned to the late Iron Age (LIA) around 1000 A.D which is represented by roulette decorated pottery and is associated with the start of the great lake's kingdoms. The countryside is littered with many roulettes decorated pot shards Increased overall efficiency of the road network with a consequent improvement of the national/international road freight traffic through improving the reliability of transportation (UNRA, 2016); Road users will experience greater time savings of 70mins between Kampala and Jinja; Improved road safety through a high standard expressway with dual carriageway, improved alignment, improved road geometry, more overtaking opportunities and limited access; Increased operations and maintenance efficiency along the road network; Skills development and capacity building in the field of motorway infrastructure management by involving; prospective international concessionaires; and Reduction in cost of doing business in the region through an improved road network and more reliable journey times.

Land: In terms of land for the project, compensation of the affected landowners will play a key role in transitioning affected persons through the land acquisition process and assisting them in re-establishing their livelihoods and a place of residence. The Project's Resettlement and Livelihood Restoration Plan Implementation of the expressway will be completed in stages depending on the alignment section and in accordance with the Land Act Cap 227 and Land Acquisition Act, 1965

Proposed Financing Plan and Funding Options

A blended finance PPP model is recommended, with IFIs and / or donors providing 40% of the total value as loans and / or grants and the private sector providing 60% through a debt and equity split of 80:20. It is likely that the debt will need to be sourced from international commercial lenders as the domestic market is not sufficient.

Next Steps, Responsibilities and Implementation Plan

The project being proposed by UNRA is the construction of a Greenfield limited access tolled expressway between Kampala and Jinja to relieve the current congestion on the existing Kampala Jinja highway and to cater for future growth. The Project is referred to as the Kampala Jinja Expressway PPP Project ("KJE").

UNRA will therefore be seeking bids from the private sector to design, build, finance, operate and transfer a limited access tolled expressway with a design speed of up to 120kph between Kampala and Jinja. The Project will comprise a 77km mainline (the "Kampala Jinja Mainline") and an 18km bypass to the south of Kampala city (the "Kampala Southern Bypass").

Kisumu – Malaba Standard Gauge Railway (SGR Project Phase 2C) (reference number: TRAN14)

Member states:	Corridor:	Sub-sector:	Status:
Kenya	Northern	Railway	S2B Feasibility

Project Description

The Kisumu – Malaba SGR project is a railway development project which is aimed at upgrading the railway line between Kisumu and Malaba from the existing Meter Gauge line. The Kenyan railway network forms a part of regional railway system of the East African Community (EAC). While the current connectivity of railway infrastructure is weak at present, the SGR network being deployed in the EAC and IGAD regions has been harmonised and the proposed networks will enhance regional connectivity. The LAPSET Corridor railway network will interface the Ethiopia and South Sudan and Uganda once the proposed segments are developed in those countries.





Route selection has been based on providing that best alignment that meets the design standards. The following factors were considered:

- The railway link is part of the integrated regional network developed under the East African Railway Masterplan.
- Choice of alignment based on gentle grade to allow operation of long freight cars;
- Alignment also considered existing national parks and attempted to minimise conflict with animals; and
- Passes through key towns and areas of economic both active and potential

The development of the Kisumu - Malaba SGR will achieve the following objectives:

- Directly connect Kenya and Uganda;
- Boost intra-African trade among several countries in IGAD and beyond; and
- Enhance the African continent's regional and continental air connectivity

Costs

The SGR design life is proposed to be 100 years for the rail carriageway and super Bridges, other smaller structures have been designed for 40 years and culverts to 30 years replacement. The total **CAPEX cost of the project is estimated at \$1.23 billion.**

Benefits, Economic and Financial Impact

The project benefits will include lower transport costs and reduced transit time for both freight and passengers. The SGR will introduce faster rail speeds which will shorten the time travel between the towns and will also promote increased trade through the amount trade volume that will be hauled by the wagons. This will essentially lead to reduced road maintenance costs as most of the cargo will be transported through the SGR.

Another benefit is that of regional integration where the seamless connectivity supported with right policies between states will lead to deepened trade relations between nations and therefore lead to strengthened integration. The economic and financial benefits of the SGR will lead to improved socio-economic wellbeing of the people by promoting safe and fast connectivity between regions and promote trade between people.

Environmental, Social, Gender and Land Issues

Environmental benefits arise from a reduction of flooding incidences it is expected that the installation of new culverts and repair of inadequate ones along the railway line will reduce on the flooding incidences along the railway area of influence. Decongestion along the major highways hence reduction of carbon emission.

Negative impacts include:

- Loss of flora and displacement of fauna during implementation; the lands in the project areas are generally composed of intensive settlement and agriculture and displacing the mammal species, reptiles and birds inhabiting the project corridor.
- Noise pollution emanating from the machinery used in the construction.
- Waste from project works; different types of waste will emanate during the process.
- Encroachment on Mau forest reserve.
- Impact on vegetation under diversion routes, camps and borrow sites.
- Impact of material excavation from quarries and borrow pits such as accidents from flying stones.
- There may be increased human-wildlife conflict emanating from the human activities and infrastructure materials employed during the construction and operation phases of this project
- Impact of excavated quarries and borrow pits such as creation of breeding grounds for disease causing vectors and posing an accident hazard to man and animals.





- Impact on wetlands of the project area.
- Air pollution (dust, fuel emissions).
- water quality and quantity and flow in wetlands and streams of the project area is compromised by pollution and.
- Human accidents.
- Oil Leaks and Spills.
- Solid Waste Disposal.

On social issues, there will be some negative social issues that will need to be mitigated during the construction of the SGR such as teenage pregnancies, child labour employment, HIV/AIDS etc.

The social safeguards officer shall coordinate and supervise the implementation of the social safeguard activities and advise relevant authorities and Client on social issues in order to ensure a smooth implementation of the project. The duties of the social safeguards officer include:

- Restriction of unauthorised persons access to site;
- Enforcing the social safeguards;
- Attending all the site meetings;
- Coordination and harmonisation with the construction management team on HIV/AIDS issues;
- Community Liaison and sensitisation;
- Conduct Community and institutional baseline survey for sensitisation;
- Evaluate the impact of the project on the social life of the population; and
- Work with the district local authorities to ensure the social safeguards laws are implemented.

On land issues, Land acquisition in Kenya is provided for under Cap 295 and contains provisions on compensation for acquisition of land. It provides for Notice of acquisition, Effect of acquisition on plant and machinery, Award of compensation, Notice of award and Grant of land in lieu of award. Payment of Compensation.

Land is to be used in compliance with relevant national laws. The Act also provides that land in Kenya whether alienated or not, is subject to all existing public rights of way which are reserved and vested in the Government on behalf of the public, and that all such rights of way are maintained by the public uninterrupted unless they are terminated or altered by the decision of the Minister in writing.

Under the Act, an authorised undertaker executing public works on land shall promptly pay compensation to any person having an interest in the land for any damage caused to crops or buildings and for the land and materials used for the works or taken.

Proposed Financing Plan and Funding Options

A loan application has been made to the Chinese Exim Bank who will provide 85% of the total project value with the remaining 15% coming from Government of Kenya budget.

Next Steps, Responsibilities and Implementation Plan

There is need to develop the capacity for the management, operation and maintenance prior to the implementation of the SGR operations. The current human resource in railway industry are aged and the young one lack experience in railway. A programme for training of railway industry experts (Engineers, technicians, signallers and general railway operations and management)

Malaba – Kampala Standard Gauge Railway (reference number: TRAN15)

Member states: Uganda	Corridor: Northern	Sub-sector: Railway	Status: S2B Feasibility
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Project Description

The Malaba – Kampala SGR project is a 273 km railway upgrade project from the current defunct meter-gauge line. The current Meter Gauge Railway (MGR) in Uganda is more than 100 years old





and is in dilapidated state which poses an absolute risk for goods being transported as runs through highly industrial and populated set of towns that are approaching a conurbation and encumbered by serious traffic congestion. As such, the current line is unable to attract investment in the country that intends to industrialisation status. The MGR is prone to accidents due to derailment which prompted the Government of Uganda (GoU) to give it out on concessional terms which has since failed as well. As a result of this most goods revert to road carriage transport for their goods from the sea, this has since seen the cost of fixing the roads shot up in both construction and maintenance.

The SGR line will directly link Uganda to Kenya and Rwanda and provide a continuous link from Mombasa port to Kampala and Kigali along the Northern Corridor. It will also provide access to the wider East African and global markets for products produced in Uganda and other countries and reduce the cost of transport for international, regional and domestic trade. The following are some of its primary impacts:

- Enhancement efficiency, reliability and safety in transport through an SGR network that is designed, constructed in accordance with agreed technical standards and sustainable environmental considerations.
- Boosting the economic growth through increased industrialisation of the country and provision of jobs to the people of Uganda and the rest of the Northern Corridor countries

The proposed rail starts Malaba to Kampala and links with the Kenyan network from Mombasa. From Kampala, it eventually proceeds into Rwanda and Congo DR. This has been supported the member countries through a protocol signed between Kenya, Uganda, Rwanda and South Sudan to develop jointly the seamless SGR railway corridor to spur economic growth of the NCIP member countries. These countries happen to be the same member states in the IGAD region.

Costs

The SGR design life is proposed to 100 Year for the rail carriageway and super Bridges, other smaller structures have been designed for 40 years and culverts to 30 years replacement. However, the entire structure could last for approximately 300 years before fill replacement is required. With this in mind, the **CAPEX is estimated to be \$2.64 billion.**

On the costs of land acquisition for the project, the GOU will secure land meant for the project according to the stipulations of the law. Land acquisition measures according to the Land Act Cap 227, provide that all land in Uganda, whether alienated or not, is subject to all existing public rights of way which are reserved and vested in the Government on behalf of the public, and that all such rights of way are maintained by the public uninterrupted unless they are terminated or altered by the decision of the Minister in writing. Under this Act, an authorised undertaker executing public works on land shall promptly pay compensation to any person having an interest in the land for any damage caused to crops or buildings and for the land and materials taken or used for the works.

Benefits, Economic and Financial Impact

The project benefits will include lower transport costs and reduced transit time for both freight and passengers. The SGR will introduce faster rail speeds which will shorten the time travel between the towns and will also promote increased trade through the amount trade volume that will be hauled by the wagons. This will essentially lead to reduced road maintenance costs as most of the cargo will be transported through the SGR.

Another benefit is that of regional integration. The seamless connectivity supported with right policies between states will lead to deepened trade relations between nations and therefore lead to strengthened integration. The economic and financial benefits of the SGR will lead to improved socio-economic wellbeing of the people by promoting safe and fast connectivity between regions and promote trade between people.





Environmental, Social, Gender and Land Issues

Environmental benefits include increase in abundance of herpetile species. There will be increased abundance of some opportunistic species such as those of genus *Ptychadena* that breed in small pools of water that will be created as a result of project activities such as excavation. Elimination of flooding incidences it is expected that the installation of new culverts and repair of inadequate ones along the railway line will reduce on the flooding incidences along the railway area of influence. Decongestion along the major highways hence reduction of carbon emission.

Negative impacts

- Loss of flora and displacement of fauna during implementation; the lands in the project areas are generally composed of intensive settlement and agriculture and displacing the mammal species, reptiles and birds inhabiting the project corridor.
- Noise pollution emanating from the machinery used in the construction.
- Waste from project works; different types of waste will emanate during the process.
- Encroachment on West Bugwe forest reserve for firewood.
- Impact on vegetation under diversion routes, camps and borrow sites.
- Impact of material excavation from quarries and borrow pits such as accidents from flying stones.
- There may be increased human-wildlife conflict emanating from the human activities and infrastructure materials employed during the construction and operation phases of this project
- Impact of excavated quarries and borrow pits such as creation of breeding grounds for disease causing vectors, and posing an accident hazard to man and animals.
- Impact on wetlands of the project area.
- Air pollution (dust, fuel emissions).
- water quality and quantity and flow in wetlands and streams of the project area is compromised by pollution, human accidents, oil leaks and spills, and solid waste disposal

Environmental Sensitive areas include Mabira Central forest reserve, West Bugwe and Bojanala (River Nile) area are some wetlands, lake shores and small forest patches along the corridor are identified as highly sensitive and unique habitats and ecosystems that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are essentially no-go areas for a developmental perspective and should be avoided at all costs. The project is well aligned with climate change policy and has a long-term benefit to the environment compared to vehicular carbon emission.

Social Impacts

The SGR project will be associated with some negative social issues that need to be mitigated like teenage pregnancies, child labour employment, HIV/AIDS etc.

The social safeguards officer shall coordinate and supervise the implementation of the social safeguard activities and advise relevant authorities and Client on social issues in order to ensure a smooth implementation of the project. The duties of the social safeguards officer include:

- Restriction of unauthorised persons access to site;
- Enforcing the social safeguards;
- Attending all the site meetings;
- Coordination and harmonisation with the construction management team on HIV/AIDS issues;
- Community Liaison and sensitisation;
- Conduct Community and institutional baseline survey for sensitisation;





- Evaluate the impact of the project on the social life of the population; and
- Work with the district local authorities to ensure the social safeguards laws are implemented.

Proposed Financing Plan and Funding Options

Loan application submitted to Chinese Exim Bank for 85% of the project value with Government of Uganda financing 15% through budget contributions.

Next Steps, Responsibilities and Implementation Plan

There is need to develop the capacity for the management, operation and maintenance prior to the implementation of the SGR operations. The current human resource in railway industry are aged and the young one lack experience in railway. A programme for training of railway industry experts (Engineers, technicians, signallers and general railway operations and management)

Uganda – South Sudan 400kV Power Transmission Interconnector (reference number: EPIN11)

Member states:	Corridor:	Sub-sector:	Status:
Uganda, South Sudan	Northern	Power Interconnector	S2B Feasibility

Project Description

The Karuma hydropower plant (600MW) is scheduled to be commissioned in 2020. A 400kV line is being constructed from Karuma to a new substation near to Kampala. The line extends further north from Karuma to another new substation at Olwiyo. This project involves a new 380km 400kV transmission line from Olwiyo to Juba via Gulu and Nimule, which whilst constructed for 400kV would initially be energised at 220kV. The line will run for approximately 190km in each of the two countries, and could form the basis of a nascent grid in South Sudan. Technical parameters would be optimised in the feasibility study – it is for example possible that a lower voltage might be initially considered. The selection of a 400kV design voltage is based on the standardisation proposed within the region for interconnectors, though it is recognised that the Uganda / Rwanda line is designed for 220kV.

No feasibility study for the project yet exists, but it might be expected that it might include for the future inclusion of a substation at the border town of Nimule – the site of the proposed Fula Falls hydropower plant, a 1080MW project 34km downstream from Nimule that was first proposed in 1983, and most recently mooted in 2013 to have been financed by the Norwegian government, South Sudan, and international development finance institutions, but the project is currently not progressing due to the security situation in South Sudan. A World Bank study from 2011, and NELSAP study from 2007, identified additional hydropower potential at Fula totalling several hundred MW. A new substation will also be required at Juba.

Costs

In the absence of any feasibility study it is not possible to accurately estimate the capital costs of the project. Transmission line costs will be dependent on:

- the sort of terrain being crossed;
- conductor type, size and configuration;
- need to underground the line for environmental reasons; and
- the costs of river crossing (Nile) which may need higher towers.

The substation at Olwiyo will need to be amended to allow an additional line bay, with a new 400kV substation needed for the second phase of the project when the line is energised at 400kV. At this time the 400kV substation at Karuma will also need to be amended, with the line from Olwiyo going in to a new bay. The costs of the substations will vary depending on the layout (busbar configuration, switchgear arrangement etc), number of transformers and capacity.





The costs of land costs are also uncertain – it is understood from UETCL that land acquisition costs are an issue, with owners inflating their expectations for compensation when routing is finalised. Arrangements for land acquisition in South Sudan are not known.

Project construction costs are likely to be high, as the area is relatively remote and transportation costs will be significant.

Finally, any requirement for reactive power compensation can only be determined after detailed technical load flow analysis have been undertaken – this is possible in the early years after commissioning when flows will be smaller, generating reactive power which needs to be absorbed through the installation of inductive compensators.

Indicative analysis, based on experience of other high voltage transmission lines in the region, indicates that the project cost could lie within the range from **\$250-\$300m**, covering both phases of the project.

Benefits, Economic and Financial Impact

At present the electrical infrastructure in South Sudan is poor, with several isolated systems. Reliability of supply is poor. At present it is understood that the operational capacity in Juba is only 4.5 MW with an additional 21MW planned to be commissioned and operated as an IPP by Ezra Company in the immediate short term. The power station comprises diesel generators. It is thought the level of suppressed demand may be around 80 MW. Total installed capacity in the country is 131MW, a significant proportion of which is located in the oil fields at Paloch. Suppressed demand nationally is estimated to be 300MW. Limited cross border connections at 33kV are in existence, but these only supply a limited number of areas adjacent to Uganda. These areas are remote from Juba and are electrically isolated from other networks in South Sudan.

The transmission line will allow suppressed demand to be realised and will form the first part of a nascent transmission network in South Sudan. In the short term it will allow the import of hydro power from Uganda, displacing thermal generation. In the longer term it is possible that power could flow from South Sudan to Uganda as some of the hydro projects in South Sudan are developed – i.e. Fula Falls projects.

The construction of new power stations in South Sudan is an alternative option, though the marginal cost of generation may be higher than that of supply from hydro plants in Uganda. Other alternatives include interconnectors to Kenya, Sudan or Ethiopia; however, interconnectors with these member states would be substantially more costly due to the greater distance to Juba. Moreover, none of these projects are at as an advanced stage of development.

In the absence of a full economic impact analysis, an indication as to the economic rationale may be given by consideration of the system marginal costs in both countries. Whilst these might change over the period prior to commissioning of the interconnector, it might be expected that South Sudan will continue to be supplied with thermal power generated from reciprocating diesel engines burning light fuel oil, whereas at the margin Uganda will be generating with hydro plant. The difference in marginal costs between the two is between US\$ 0.1/kWh and US\$ 0.2/kWh. If it were assumed that the project costs were US\$300 million, and that the saving in marginal costs is US\$0.15/kWh, with energy transfers of 200GWh initially rising by 15% pa to 1 000GWh, with a project evaluation period of 30 years, the indicative economic internal rate of return would be 20%.

Environmental, Social, Gender and Land Issues

Full feasibility and ESIA is required. It is acknowledged that land acquisition costs are an issue in Uganda, with owners inflating their expectations for compensation when routing is finalised.

Proposed Financing Plan and Funding Options





Financial analysis of the project returns would be dependent on the actual costs agreed by both countries under a prospective Power Purchase Agreement. It might, however, be expected that any financiers with an interest in the project would not be prepared to lend unless it could be shown the financial internal rate of return was sufficient to guarantee repayment of loans.

A possible option for structuring could be for the South Sudan portion to be funded through grant and the Ugandan portion to be funded via a domestic loan to be repaid through cost recovery from electricity sales.

Next Steps, Responsibilities and Implementation Plan

The project proponents are the Ministry of Energy and Mineral Development (Uganda) and the Ministry of Electricity, Dams, Irrigation and Water Resources (South Sudan), while it is to be implemented by Uganda Electricity and Transmission Corporation Ltd (UETCL) (Uganda side) and South Sudan Electricity Corporation (SSEC) (South Sudan). The next step is to undertake a full feasibility study.



Djibouti Corridor

Djibouti – Hol Hol – Ali Sabieh – Galile Highway (reference number: TRDD03)

Member states: Djibouti	Corridor: Djibouti	Sub-sector: Road	Status: S2B Feasibility
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Project Description

The Djibouti – Hol Hol – Ali Sabieh – Galile Highway is a vital highway in Southern Djibouti as it is a main arterial route linking Djibouti with the hinterland in the Horn region of Africa. The highway traverses main towns in Djibouti such as Ali Sabieh and Galile and is a gateway to Ethiopia through Dewele. The highway is the most direct route linking majority of the eastern regions in Ethiopia to Djibouti port and the shorter link by road to Addis Ababa and also runs close and almost parallel to the Djibouti/Addis SGR railway which would also operate as a service and relief route for the railway. The terrain is much smoother than the existing Djibouti/Galafi road, and its routing will cause minimum displacement of existing settlements or facilities and areas of historical significance. There will also be limited negative environmental impacts. Feasibility studies and detailed engineering designs for the project have already been carried out.

The proposed road is 71 in length and goes through two administrative regions namely; Djibouti region and Al Sabieh. The road joins the existing paved segment at Al Sabieh city. This segment will need to be upgraded in order to link with the newly completed Dewele/Dire Dawa trunk road in Ethiopia which has a shorter distance to Addis Ababa and other large towns west of Awash City.

The highway is part of the Djibouti road network that is categorised as a national road that will improve logistics and road access to seaports for Ethiopia and deepen regional integration in the economy, trade and transport. The project is intended to have asphalt concrete pavements with double-wheel, single-axis 100 KN load as standard axle load, apply the minimal theory of elastic layered system under double circular loading for analysis and calculation, and select allowable deflection, allowable bending stress and allowable shear stress as the indexes of design and verification, to calculate and determine the thickness of pavement. The road designs are in accordance with the medium level of traffic loading and set a 20-year design life for asphalt concrete pavements. Surface layer will be 4 cm thick asphalt concrete.

Costs

The estimated design life of the project is 20 years and the total **CAPEX cost of \$129 million**. This is as detailed in the table below:

	A	B	C	D
	Project	Scale	Unit cost (Million USD)	Cost (Million USD) (B x C)
i)	Land Cost	Hectare or land unit		
ii)	Construction Cost	71 Kilometres,	1.5	106.50
iii)	Feasibility, Detailed Design and Supervision	10% of cell D i)	0.15	10.65
iv)	Base Cost	Sum D i) to D iii)	1.65	117.15
v)	Contingencies	10% of D iii)		11.75
vi)	Total Construction cost	Sum D iv) & D v)		128.9
vii)	Resettlement & rehabilitation cost (if any) - Lump sum			
viii)	Environmental mitigation cost (if any) - Lump sum			
ix)	Total Project Cost	Sum D iv) & D vii)		

Benefits, Economic and Financial Impact

The project has a number of benefits and some of the key benefits are as follows:





- Time savings for transporters between Djibouti and Addis Ababa through shorter route including reduced vehicle operating costs;
- Indirect benefits will include creation of 1500 jobs during construction and 250 jobs during operations;
- Government will also gain tax revenue of at least \$600m over the concession term;
- Local industry will gain through utilisation of local content focus; and,
- Other benefits will include greater public satisfaction and reduced accidents better road alignment.

Adverse impacts can be controlled preferably through taking specific pollution control measures and reinforcing management during construction and operation. The ecological and social environment in construction areas will have the considerable improvement on completion of works. Economic activities during the construction phase are expected generate employment of locals and on completion there will be increased volumes of transit vehicles plying the route.

Negative Environmental Impact

1. Damage to local ecological environment due to the heavy excavation impact.
2. Soil erosion and dust emission during construction phase that may lead to health-related complications
3. Heavy noise pollution as a result of heavy machinery used during the construction face and blasting equipment's during blasting and excavation.
4. Liquid and solid waste generation.

Mitigation.

Noise pollution

Control of Noise Pollution Construction management departments shall reinforce the management of noise problems on construction sites. Building engineering quality supervision departments shall measure and supervise noise on construction sites. It should be used as one of conditions of voting the Civilised Construction Enterprise and the High-Quality Construction Engineering. Ecological Environment Protection

Levelling and afforestation shall be performed simultaneously. The earth shall be borrowed as scheduled and the refilling for lowland and landscape restoration shall be performed promptly

The Prevention and Control of Water Pollution

Asphalt, oil, chemicals etc. shall not be piled around residential water use and measures shall be taken to prevent rain from entering into the water due to scouring.

Environmental Protection Measures in the Operation Period

Impacts on the environment mainly are traffic noise and vehicle exhaust after the completion of the Project.

The Prevention and Control of Air and Water Pollution

Selective examination of vehicle emissions will be performed where vehicles with serious excessive of exhaust emission, shall be limited. In order prevent water pollution, oil spillages will highly be prohibited. A sewage treatment station shall be set in the quarters of highway traffic management departments. Various sewages could be discharged after reaching standards through their treatment.

Environmental, Social, Gender and Land Issues

Land is not a serious challenge to the project as the alignment of the road is close to the SGR and it is sparsely settled mainly by nomadic communities who do not have permanent structures or farms that may need to be compensated and resettled. The land is primarily owned by government, community and private individuals.

The road will provide for increased capacity to enable the handling of increased traffic volume and speeds. This expected to reduce the freight transport and lower cost of travelling. This can also be reflected in increased freight movement.

The project beneficiaries will include businesses people within the agriculture, trade and import-export sectors, including 3000 truckers who drive the 900 km between Djibouti and Addis Ababa



and youths who will receive over 95% of the job opportunities during the construction. Djibouti will benefit from increased trade, port revenues and jobs as well as bankable projects, improved capacity in management of the transport sector.

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Proposed Financing Plan and Funding Options

The forecast traffic levels on this road should make a toll road commercially viable. It is recommended to conduct a feasibility study for the tolling of the route. In the meantime, assuming concessionary debt can be secured then it is recommended to construct the road and convert to a toll road once constructed.

Next Steps, Responsibilities and Implementation Plan

The project will be managed by the Djibouti Roads Authority who have an experience in constructing and maintaining roads in Djibouti. Some of the policy and regulatory actions required for the project implementation include:

- Design risk
- Construction risk
- Environmental and Social risk
- Performance/ price risk
- Maintenance risk
- Force Majeure risk
- Political risk
- Strategic risk\Disruptive technology risk

Raad – Boma – Kapoeta Highway (reference number: TRDD11)

Member states: South Sudan	Corridor: Djibouti	Sub-sector: Road	Status: S2B Feasibility
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Project Description

The Raad – Boma – Kapoeta highway project is an extension of the Djibouti Corridor that will link Juba and Djibouti Port through Ethiopia. The current road starts from Raad on the South Sudan/Ethiopia border is 276 Km long and is primarily a narrow un-engineered gravel/earth track, which is 3 to 5 metres wide. The road alignment mostly traverses flat (81%) and rolling (16%) terrain, with towns and villages taking up the remainder (3%); it has a winding alignment with gentle curves over the entire alignment but travel speeds average 30-40kph at best due to the condition of the alignment. The road reserve is not gazetted.

The alignment largely traverses virgin land with a number of intermittent settlements including Boma market town (72.1km), Lopet village (83.2km), Kassangor village (139.7km) and Mogos Village (226.1km). It also traverses through Boma National Park, a wildlife conservation camp is located at Km 61. There are only three significant junctions at Km40.4 (LHS spur to Pochala), KM58.9 (RHS spur to Pibor) and Km144.1 (LHS spur to Pibor). The road has only one significant river crossing at Raad over the border with Ethiopia. Like other significant corridors in South Sudan, some sections of the road were heavily mined during the conflict which remains a challenge for the safety of travellers. The current route has no drainage but will be required as part of upgrading the corridor. There is one perennial river crossing at Raad and several seasonal rivers that require crossing structures. The road upgrading on South Sudan segment will be guided by the South Sudan Road Design Manual

and any other design guide nominated by the implementing authority; as well as COMESA standards for international highways for its member states. Currently there is no data on the volume of goods traffic on the current road. Future traffic will be estimated by simulation using data from other similarly established roads in the region.

Some of the available options to address the project need include upgrading to a paved road with geometric accompanying geometric improvements and a new pavement structure, which is expected to reduce the length of road by approximately 12% to 243 Km. A Feasibility Study commissioned by the government identified the optimum route to be considered for detailed engineering design; Acquisition and demarcation of the right-of-way will be mandatory in order to secure space for future upgrading works and safeguard the corridor against encroachment. Notably, the existing settlements in the area comprise mainly temporary villages which may not therefore interfere with land acquisition for the new/revised corridor to a great extent.

Costs

With a feasibility study in place, the **capital cost of the project is estimated to be \$336 million** while the O&M costs are estimated to be \$12 million annually. The project construction costs are high as the area is relatively remote and transportation costs will be significant. The capital cost table is as detailed below:

	A	B	C	D
	Project	Scale	Unit cost (USD)	Cost (USD) (B x C)
i)	Land Cost	Hectare or land unit	-	0
ii)	Construction Cost	Km (245.1)	1,106,575.70	271,258,503.9
iii)	Feasibility, Detailed Design and Supervision	11% of cell D i)		29,838,435.40
iv)	Base Cost	Sum D i) to D iii)		301,096,939.30
v)	Contingencies	10% of D iii)		30,109,693.90
vi)	Total Construction cost	Sum D iv) & D v)		331,206,633.20
vii)	Resettlement & rehabilitation cost (if any) - Lump sum			3,000,000.00
viii)	Environmental mitigation cost (if any) - Lump sum			1,500,000.00
ix)	Total Project Cost	Sum D iv) & D vii)		335,706,633.20

The planned upgrading works, together with accompanying geometric realignments and right of way (RoW) acquisition, will observe route planning guidelines to accommodate future developments and capacity improvements. Route planning for geometry is expected to cover at least 50 years, while pavement design life is ordinarily 20 years. As such, the total life costs of the project is estimated to stand at \$ 580 million.

Benefits, Economic and Financial Impact

At present, there exists no road between Raad in Ethiopia and Boma in South Sudan. In addition, the road network between Kapoeta and Boma is an earthen road which requires upgrading to a paved road. Some of the quantifiable and qualitative benefits of the project include lower transport costs and reduced transit time for both freight and passengers between Juba and Addis Ababa through Kapoeta, Boma and Raad towns. There will also be increased safety in transport and lower pollution due to fewer cars deployed on roads.

Due to inaccessibility of the towns along the project area, there has been skewed growth of the regions thereby contributing to rural urban migration. The project will promote accessibility of the town thereby promoting economic growth in the 3 towns of Raad, Boma and Kapoeta.

Environmental, Social, Gender and Land Issues

A full feasibility and ESIA has been undertaken for the project. The project envisions impacts such as:



- Economic and social development which will be easy and rapid with the result that the life of people living in the area will be improved.
- Enhanced agricultural development.
- The road will create an easy access to an area having a high agricultural and livestock development potential.
- Development for physical and social.
- The project will reduce vehicle operating cost and will reduce travel time.
- It will increase non-agricultural employment opportunities.
- It will improve access to import and export, market, health and school facilities.

The project will have other impacts as follows.

Social Impacts

- Women in the project area could work as daily laborers and in other similar activities during project implementation and operation.
- Skills development among women who are involved in the road project work.
- Local Income-generation During Construction
- Communicable/sexually transmitted diseases including HIV are expected to increase as a result of road construction processes due to influx of people and workers in the community.

On water resources impacts:

- Water Pollution from Sanitary and their Wastes and Spillages Rivers, groundwater and ponds are used for potable supply purposes throughout the project area for drinking, washing purposes and cattle watering.
- Inappropriate disposal of refuse and some materials used in construction can also lead to public and animal health hazards.
- Surface water and ground water may be contaminated by improper utilisation or storage of construction materials which are toxic or hazardous, including chemical or petroleum products such as diesel fuel and lubricants.

Mitigations

1. Specific and adequate provision for the disposal of sanitary and other wastes in such a way as will not result in any form of pollution or hazard to human or animal health.
2. Prohibiting using water points and water sources that are used by the public and allowing the contractor to use his own sources by tapping ground water (boreholes) or by creating storage during the rainy seasons

The Natural Vegetation impacts are:

- (i) The corridor area in which the project road traverses is described as woodland, riparian forest and bush land mixed with grass land. The most important sensitive area exists on the Boma National Park which is located from km 220-km 270. There is a real possibility of the workforce engaging in illegal timber extraction to the detriment of the environment.

Mitigations

During operation stage; the Boma National Park Management should design awareness program against deforestation or any charcoal selling especially in Boma National Park and other forest areas along the corridor.

Impact on Land Resources

Land acquisition will also be required for material access roads and for the stretches taken up for construction in order to allow easy flow of traffic. For these uses, land under cultivation, housing units and utilities in town sections, and natural vegetation will be mostly affected.

Mitigations

- Provide adequate and timely compensation for the land to be acquired

Soil Erosion and contamination: Disposal of waste materials from cuts and other earthworks, compaction with heavy machinery and disposal of used oils and lubricants and spills of oils and fuel from engines of vehicles and diesel operating machinery as well as accidental spillage.

Mitigations

Avoid disposing of any volatile chemical or leakages to the soils such as bitumen and engine oils.

Air Pollution

Quarry activities such as, crushing and concrete batching plants, and construction works (blasting, excavation as well as movement of heavy machinery, trucks and trailers) construction equipment's and emissions from vehicles have the potential to negatively affect air quality in the vicinity of the construction sites and access roads. The burning of wastes also has the potential to affect air quality.

Mitigation:

Construction machinery should be well maintained to minimise excessive gaseous emissions. The engines of construction machinery and vehicles will be inspected and adjusted as required to minimise pollution levels.

Public Health and Safety

Communicable/sexually transmitted diseases including HIV are expected to increase as a result of road construction processes due to influx of people and workers in the community.

Wildlife Corridor

Destruction of valuable wildlife habitats at Boma National Park and impediments to wildlife movements is also expected during construction and/or operation of the Project Road.

Mitigations

- Educate/orient construction workforce that hunting is completely forbidden and illegal
- The work force should not hunt animals for food and sport
- To reduce night-time disturbance from construction noise in the park area, that is unavoidable, the practice of conducting construction activities should be limited between the hours of 2100 and 0600 in areas which are within 500 meters of the park area.

On land acquisition for the project, provision of land in South Sudan will be guided by the Land Act which stipulates the rights of the citizens on land and the compensation modalities covering individuals, households and communities' ownership and/or use of land affected by public interventions. According to Sections 74, 75 and 77 of the Land Act, "expropriation of land for public interests should be based on a consultation process with the communities, negotiation and agreements endorsed by the impacted community and individuals evidenced by a written protocol between the individual or traditional authorities and their communities and signed by the local government and traditional authority

Proposed Financing Plan and Funding Options

Traffic levels on the road are probably too light to justify a toll road at present, leaving grant or concessionary financing as the available options. Given the political situation and sovereign debt situation in South Sudan, grant financing is the most likely option. However, toll roads could be introduced after construction is complete, as traffic levels rise, and do not necessarily have to be at full cost recovery. It is recommended to undertake a pre-feasibility study into the potential viability of toll roads based on future demand forecasts.

Next Steps, Responsibilities and Implementation Plan

Detailed engineering designs are required for the selected feasible alternatives. The design will be implemented by a consultant who will be responsible for implementation of all studies and investigations required for the study. The implementing agency will be South Sudan Roads Authority (SSRA) (on behalf of the GOSS) and SSRA will be responsible for supervision of the consultants for the study, including reviewing and approval of outputs. Pre-feasibility or feasibility for toll road.



Second Ethiopia – Djibouti 230kV Power Transmission Interconnector (reference number: EPID12)

Member states: Djibouti; Ethiopia	Corridor: Djibouti	Sub-sector: Petroleum/Gas Pipeline	Status: S3A Project Structuring
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Project Description

The first Ethiopia to Djibouti power transmission interconnector, from Dire Dawa, was commissioned in 2011 at a voltage of 230kV and has a capacity to supply 60MW per annum from Ethiopia to Djibouti. There is, however, sufficient demand and surplus capacity to justify a second interconnector. The proposed second interconnector will consist of a new 292km (190km in Djibouti, 102km in Ethiopia) 230kV double circuit transmission line connecting the substations of Semera, Ethiopia and Nagad, Djibouti. The project also includes extension of the existing substations at Semera and Nagad. An MoU for the project between the two countries was signed in July 2013, and a feasibility study was completed in 2017, undertaken by Tractebel and funded by the Kuwait Fund.

Costs

The total CAPEX cost is \$100m split between the three project components as follows: 230kV line, \$90.8m; Semera substation upgrade, \$5m; Nagad substation upgrade, \$4.2m.

Benefits, Economic and Financial Impact

The benefits are expected to arise from reduced operational costs and replacement of fossil fuel derived electricity in Djibouti with hydropower supplied from Ethiopia. The total NPV, estimated as the discounted reduction in operating costs per annum between 2020 and 2030, is \$93.25m, and the EIRR is 21.8%. The project will be profitable for investors at an energy tariff of over \$10/MWh, while the average cost of generation in Djibouti ranges from \$29/MWh to \$69/MWh, so there is significant scope for profitability.

Environmental, Social, Gender and Land Issues

There are not considered to be any significant negative environmental and social impacts. Positive impacts will arise from the reduced use of fossil fuels to generate electricity in Djibouti and subsequent reduction in CO2 emissions.

Proposed Financing Plan and Funding Options

The feasibility study was financed by the Kuwait Fund who had initially expressed an interest in financing the project. The government of India through the Indian ExIm Bank have also expressed interest in financing the project.

Next Steps, Responsibilities and Implementation Plan

The project will be implemented by Ethiopian Electric Power (EEP) and Electricité de Djibouti (EDD). The next steps for the project are for the member states and the IGAD Secretariat to market the project to potential investors, including those identified above. Then to agree the Financial Structuring for the project and initiate the detailed design.



Port Sudan Corridor

El Mujlad – Abyei Highway Upgrade (reference number: TRDP03)

Member states: Sudan	Corridor: Port Sudan	Sub-sector: Road	Status:
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Project Description

The El Mujlad- Abyei Highway is on Port Sudan Corridor and is one of the important links between Sudan and South Sudan. The highway runs to the common border and links with the Wau-Gogrial-Abyei Highway. This highway passes through a large farming area and also serves the various active oilfields. The road also runs close and almost parallel to the Babanusa/Wau Cape gauge railway and complement it and also operate as a service and relief route for the railway. The highway routing will cause minimum displacement of existing settlements or facilities and areas of historical significance. It was indicated that feasibility studies and detailed engineering designs for the project have already been carried out and documentation was in Sudan. The road is approximately 200 kilometers in length.

As an extension of Port Sudan Corridor network, the road will improve logistics to the seaport and between the two countries. The road designs are in accordance with the medium level of traffic loading and set a 20-year design life for asphalt concrete pavements. Surface layer will be 4 cm thick asphalt concrete.

Costs

US\$ 120 Million

Benefits, Economic and Financial Impact

The following are some of the project benefits:

- Time savings for transporters within Sudan and between Sudan and South Sudan through shorter route including reduced vehicle operating costs;
- Indirect benefits including job creation during construction and operations;
- Local industry will gain through utilisation of local content focus;
- Greater public satisfaction and reduced accidents with better road alignment; and
- Economic activities during the construction phase are expected generate employment of locals and on completion there will be increased volumes of transit vehicles plying the route.

Environmental, Social, Gender and Land Issues

The project is likely to generate the following environmental impacts:

- Some damage to local ecological environment due to the heavy excavation impact.
- Soil erosion and dust emission during construction phase that may lead to health-related complications;
- Heavy noise pollution as a result of heavy machinery used during the construction face and blasting equipment's during blasting and excavation; and
- Liquid and solid waste generation.

Mitigation Measures

The following are the mitigation measures which will need to be adopted during project execution:

- Control of noise pollution through management of noise problems on construction sites;
- Ecological Environment Protection;
- Levelling and afforestation shall be performed simultaneously;
- The earth shall be borrowed as scheduled and the refilling for lowland and landscape restoration shall be performed promptly;
- Prevention and control of water pollution;
- Asphalt, oil and chemicals not be piled around residential water use and measures shall be taken to prevent rain from entering into the water due to scouring

The social impacts of the project include:

- Increased accidents caused by vehicles to humans and livestock;



- Exploitation of women and children labour during construction
- Loss of access to property resources:
- Increased morbidity;
- Public health and occupational safety; and
- Cultural Heritage Facilities:

Mitigation Measures

- Installation of warning signs along the road and the construction of underpasses to be used by livestock crossing the road;
- Observance of employment codes including equal pay for similar work and exclusion of child labour in employment;
- Minimisation of land acquisition and adequate compensation;
- Demining of areas and sites identified to avoid casualties during construction and maintenance;
- Compensation for communal land, quarries to communities limiting individual members' compensation to the private structures and crops at the market rates;
- Compensation for land in the form of construction of schools, hospitals, boreholes and other social infrastructure to be agreed in the RAP; and
- Cultural heritages to be considered and preserved where and whenever possible.

Land and Natural Vegetation impacts

The following are the potential land and natural resources impacts:

- Land acquisition road construction and building material which includes land under cultivation, housing units and utilities in urban areas;
- Destruction of woodland, riparian forest and grazing lands; and
- Possibility of the workforce engaging in illegal timber extraction to the detriment of the vegetation and environment.

Mitigations Measures

- Provide adequate and timely compensation for the land to be acquired;
- Design awareness programmes against deforestation or any charcoal selling especially in Boma National Park and other forest areas along the corridor; and
- Replanting/reafforestation of vegetation destroyed during construction

Proposed Financing Plan and Funding Options

The traffic levels on the road may not high enough to justify a toll road at present, leaving grant or concessionary financing as the available options. Given the current economic conditions in the Sudan, grant financing is the most likely option. There is a potential for co-financing the road with oil companies undertaking oil exploitation in adjacent oilfields

Next Steps, Responsibilities and Implementation Plan

Since it is indicated that detailed engineering designs were prepared many years back, design reviews will need to be undertaken. This will be undertaken by a consultant who will be responsible to the Sudan National Highways Authority on behalf of the Government of Sudan. The SNHA will be responsible for supervision of the Consultant and will review and approve the outputs



Wau – Gorgrial – Abyei Highway Upgrade (reference number: TRDP04)

Member states: South Sudan	Corridor: Port Sudan	Sub-sector: Road	Status:
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Project Description

The Wau-Gorgrial-Abyei Highway is on the Port Sudan Corridor. It runs from the town of Wau to the border and links with the El Mujglad Abyei highway in Sudan. It passes through potential farming and grazing areas and also serves the various active oilfields.

The road also runs close and almost parallel to the Babanusa/Wau Cape gauge railway. The road complements the railway and will also operate as a service and relief route for the railway. The highway routing will cause minimum displacement of existing settlements or facilities and areas of historical significance.

It was indicated that feasibility studies and detailed engineering designs for the project have already been carried out and documentation was in Sudan. The road is approximately 360 kilometers in length. As an extension of Port Sudan Corridor network, the road will improve logistics to the seaport and between the two countries

Costs

US\$ 360 Million

Benefits, Economic and Financial Impact

The benefits of the road project include lower transportation costs and reduced transit time for both freight and passengers. There will also be increased safety in transport and lower pollution due to fewer cars deployed on roads

Construction of the road will open up the area which has great agricultural potential. The upgraded corridor is expected to carry a mix of international and domestic traffic, with international goods traffic predominating. The road does not receive any maintenance though it is lightly trafficked. Currently economic benefits are at minimum levels due to high vehicle operating costs

Environmental, Social, Gender and Land Issues

The environmental impacts associated with this project will mainly be on the local hydrology and proper installation of drainage structures for efficiency of drainage structures and their mitigation measures are as follows:

- Soil erosion and degradation;
- Control earth works by Installing erosion control measures;
- Grouted stone pitching and rock fill gabion works to protect culverts inlets and outlets;
- Landscape embankments and re-vegetate gravel sites with indigenous grass for drainage ditches along the road scour checks will be necessary in steep section;
- Management of excavation activities; and
- Replacement of damaged drainage or rehabilitation with better ones
- Minimise vegetational losses through controls on clearing, and planting trees/shrubs to provide new habitat where vegetation has been destroyed;

The social impacts of the project include:

- Increased accidents caused by vehicles to humans and livestock;
- Loss of access to property resources;
- Increased morbidity;
- Public health and occupational safety; and
- Cultural Heritage Facilities:

Mitigation Measures

- Installation of warning signs along the road and the construction of underpasses to be used by livestock crossing the road.





- Minimisation of land acquisition and adequate compensation;
- Demining of areas and sites identified to avoid casualties during construction and maintenance;
- Compensation for communal land, quarries to communities limiting individual members' compensation to the private structures and crops at the market rates;
- Compensation for land in the form of construction of schools, hospitals, boreholes and other social infrastructure to be agreed in the RAP.; and
- Cultural heritages to be considered and preserved where and whenever possible.

Proposed Financing Plan and Funding Options

The traffic levels on the road may not high enough to justify a toll road at present, leaving grant or concessionary financing as the available options. Given the political situation and sovereign debt situation in South Sudan, grant financing is the most likely option. There is a potential for co-financing the road with oi companies undertaking oil exploitation in adjacent oilfields

Next Steps, Responsibilities and Implementation Plan

Since it is indicated that detailed engineering designs were prepared many years back, design reviews will need to be undertaken. This will be undertaken by a consultant who will be responsible to the South Sudan Roads Authority (SSRA) as the implementing agency on behalf of the GOSS. The SSRA will be responsible for the procurement of consultants to undertake the assignment and to review and approve the outputs



Ethiopia – Sudan 500kV Power Transmission Interconnector (reference number: EPIP06)

Member states: Ethiopia, Sudan	Corridor: Port Sudan	Sub-sector: Power Interconnector	Status: S3A Project Structuring
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Project Description

The Ethiopia – Sudan 500kV Power Transmission Interconnector Project is one component of the fast-track projects that were identified for implementation under the Eastern Nile Subsidiary Action Program (ENSAP). It also forms part of the Blue Nile Energy Corridor, and the North-South High Voltage Corridor of the Eastern Africa Power Pool (EAPP) Master Plan. The Project comprises a double circuit power transmission interconnector between Ethiopia and Sudan, including 580km of new 500kV transmission lines, of which approximately 16km will be in Ethiopia, starting at the Grand Ethiopian Renaissance Dam (GERD), and approximately 564km will be in Sudan, terminating in Khartoum. The Project also includes two new, 500 kV substations at Rabak and Jebel Aulia (both in Sudan), and power line bay extensions at the following existing substations: Grand Renaissance (500kV Ethiopia), Rabak (220kV, Sudan) and Jebel Aulia (220kV, Sudan). The total capacity of the project will be 3,000 MW.

An MoU and power purchasing agreement (PPA) already exist between the two member states, and a 230kV interconnector between Ethiopia and Sudan was commissioned in December 2013 to facilitate the exchange of power between the two countries. The 500kV line is designed to complement this existing interconnector and also serves as a vital connection in the EAPP North-South High Voltage Corridor, which will ultimately link Egypt to the Southern African Power Pool (via Sudan, Ethiopia, Kenya, Tanzania and Zambia).

Costs

The total project **CAPEX cost is estimated at \$514m**: \$485m incurred to Sudan; and \$29m to Ethiopia. The original feasibility study has estimated the annual OPEX costs to be 1% of CAPEX (i.e. \$5.14m); however, the IRIMP team considers this to be too low / optimistic, recognising the nature of the project and the topography through which it passes. The estimated design life of the project is 40 years, giving a total project life cost of approximately \$620m.

Benefits, Economic and Financial Impact

This is a priority project from the perspective of the member states and development agencies in the region. It aligns with the objects of EAPP and allows Sudan to benefit from low marginal cost hydro power from Grand Ethiopian Renaissance Dam (GERD), which can displace costly thermal generation. In addition, it will allow the wheeling of power through Sudan to Egypt.

The economic and financial assessment was conducted across four scenarios, based on different levels of integration between the regional power markets. The IRR and benefit: cost ratio was very high in all four scenarios and all were robust to all sensitivities analysed, but the 'integrated' scenario is the most beneficial as it is designed in such a way that Ethiopian and Sudanese electricity markets become one, assuming distribution and regulatory integration. On the other hand, the 'market' scenario, which requires a single power purchase agreement (BLTA) and the 'regional' scenario which requires multiple power purchase agreements and wheeling agreements, are still highly beneficial.

Indicator	Coordinated	Integrated	Market	Regional
NPV (\$ '000)	10,209,305	41,080,515	39,665,209	38,999,634
IRR	169%	186%	168%	171%
Benefit:Cost ratio	20.56	79.70	13.27	12.30

The modelling exercises undertaken as part of the Feasibility Study forecasts that both sections of the project will result in positive net present values however, the Ethiopian section will have a





significantly longer payback period. The returns forecast presuppose that each utility will be able to recover the revenues calculated for the two sections of the Project via its tariff mechanism.

Description	Ethiopia	Sudan
Discount Rate (Wacc assumed)	6.77%	9.04%
Project IRR (pre-tax)	10.2%	13.8%
Project IRR (post-tax)	9.9%	13.0%
Equity IRR (post-tax)	17.2%	20.7%
Pay-back period	24 years	18 years
NPV (pre-tax)	\$12,823,590	\$258,478,330

Environmental, Social, Gender and Land Issues

To minimise the negative impacts of the Project while enhancing the positive impacts, an Environmental and Social Management Plan (ESMP) framework has been adopted. The ESMP recommends mitigation measures to manage and reduce these potential impacts to minimal or insignificant levels. For each construction or operational risk identified, a series of specific mitigation actions is presented. The Plan also recommends creating a management structure to address the concerns of stakeholders, and to establish an M&E programme for environmental management practices during all phases of development. In addition, the ESPM aims at identifying measures that could optimise the beneficial impacts of the Project.

Among the risks identified, the Project considered the social risk of resettlement as being particularly serious. According to the pre-ESIA, neither dwellings nor people will need to be resettled within the right-of-way (ROW) of the proposed alignment, whose width is approx. 56m. However, this condition cannot be excluded, as it may still be valid by the time construction works commence. Therefore, a Resettlement Action Plan (RAP) has been developed. The Plan meets the requirements defined by the Governments of Ethiopia and Sudan, in relation to physical resettlement requirements and the requisite financial compensation.

Proposed Financing Plan and Funding Options

The recommended financing plan is a 20:80 equity / senior debt split for the Ethiopian portion (\$29m) and for the Sudan portion (\$485m) the split is 20% equity; 60% senior debt; and 20% zero coupon bond.

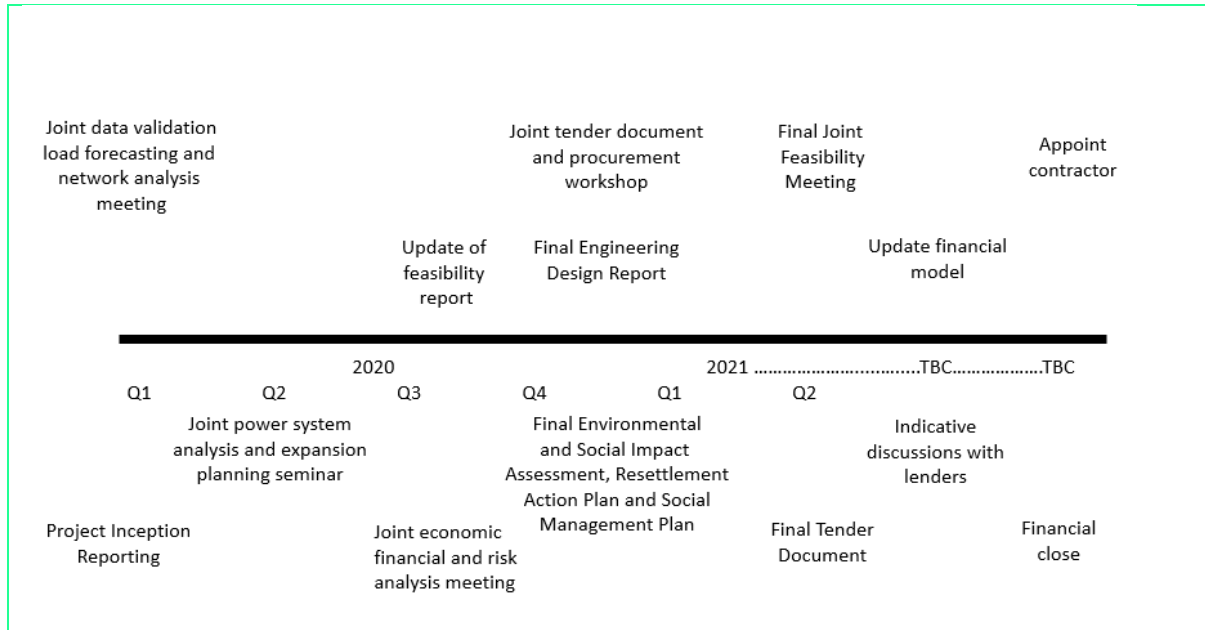
The World Bank have expressed interest in financing the project, assuming Sudan re-enters their lending programme.

Next Steps, Responsibilities and Implementation Plan

The project is being implemented under the auspices of the Eastern Nile Technical Regional Office (ENTRO) and the power authorities in both Ethiopia and Sudan, namely, the Ethiopian Electric Power (EEP) in Ethiopia and the Electricity Transmission Company in Sudan, which is under the Ministry of Electricity and Dams.

The next steps for the project are for the member states and the IGAD Secretariat to market the project to potential investors, including those identified above. Then to agree the Financial Structuring for the project and initiate the detailed design. The next steps and timeline are illustrated below.







LAPSSET Corridor

Lamu Port Phase 2 (reference number: TSPL01)

Member states: Kenya, Ethiopia, South Sudan	Corridor: LAPSSET	Sub-sector: Sea Port	Status: S3A Project Structuring
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Project Description

The Lamu Port is one of the flagship infrastructure projects identified by the Government of Kenya in Vision 2030. The port will be linked with Garissa, Isiolo, Maralal, Lodwar and Lokichogio and branching at Isiolo to Moyale at the border with Ethiopia and proceeding to the border with Southern Sudan. The proposed site for New Lamu Port is located in Manda Bay which has deep and sheltered bay and a wide navigable entrance channel. Hydraulic and geotechnical surveys have confirmed that the area is suitable for port construction. The 10Km shore length has the capacity to accommodate up to Twenty-Three (23) berths.

The first berths construction program does not include any cargo handling system, equipment in the terminal, related storage facilities and delivery systems. Bulk unloading operations during the initial stage of the bulk terminal will be carried out by using mobile type unloading equipment accompanied with movable wharf hopper(s), till the ship-unloader(s) will have been installed at the quayside and the fully mechanised storage facilities will also have been built in the terminal. Tyre-mounted jib type level luffing crane (MLC) that may be introduced into the general cargo berth and/or ship gears/cranes with grab buckets will be used for discharging grains and/or fertilisers from vessels.

The port development will include the long-term physical planning of Lamu Metropolis area to demarcate sections which will accommodate complimentary cargo handling facilities such as railway terminal, godowns, container freight stations, tank farms, refinery, lorry terminals and also the social facilities for migrant workers.

Associated infrastructures required will be the connection of Lamu to the main electricity grid from Hindi, increase of portable water supply within the region and upgrading of access roads.

Costs

The capital Investment Cost of the Port Civil Facilities are for the Lamu Port Phase 2 is USD \$1.76 billion

No	Working Item	Unit	Qty	Unit Rate	Amount	Remark
1	General Requirement	Ls.	1	36,000,000	36,000,000	5 years
2	Dredging port basin	m3	28,500,000	5.42	154,470,000	Cutter Suction
3	Reclamation	m3	28,500,000	1.75	49,875,000	Compaction & Leveling
4	Retaining Wall	m	2,740	24,400	66,856,000	400 + 1680 + 660 = 2740 m
5	North Revetment	m	1,000	7,450	7,450,000	
6	West Revetment	m	2,740	7,450	20,413,000	
7	Berth Container	m	400	108,500	43,400,000	-16.0 m
8	Berth Container improvement	m	400	1,700	680,000	-16.0 m General to Container
9	Berth General Cargo	m	1,680	72,000	120,960,000	-12.0 m
10	Berth Bulk Cargo	m	660	104,500	68,970,000	-17.5 m
11	Navigation Aid	nos.	6	55,000	330,000	6 Buoys
12	Crude Oil Single Buoys	nos.	2	175,000,000	350,000,000	
13	Oil Production Jetty	nos.	2	35,000,000	70,000,000	
14	Yard Construction Container	m2	280,000	110	30,800,000	Pavement, Drainage, etc.
15	Container improved	m2	280,000	29	8,120,000	400 x 700
16	General	m2	1,176,000	95	111,720,000	1680 x 700
17	Bulk	m2	462,000	95	43,890,000	660 x 700
18	Utilities	Ls.	1	104,100,000	104,100,000	
19	Building Works	Ls.	1	109,600,000	109,600,000	
20	Road in Port	m	5,480	3,800	20,824,000	2740 x 2 W=50.0 m
21	Interchange	Ls.	1	40,000,000	40,000,000	
22	Security	Ls.	1	14,312,000	14,312,000	
	Sub-Total				1,472,770,000	
23	Equipment	Ls.	1	220,000,000	220,000,000	
24	Tug Boat and Others	Ls.	1	70,000,000	70,000,000	
	Total				1,762,770,000	

Benefits, Economic and Financial Impact

The facilities at Lamu port once complete will lead to creation of substantial job opportunities that covers not only direct jobs related to the Port operation but also indirect jobs of all fields (Agriculture, fishery, manufacturing, logistics, transport, trade, commerce, etc.)



The port is expected to attract larger cargo ships if run efficiently will also provide direct benefits within the region by passing on savings derived from lower marine costs due to faster ship turnaround time and at the same time of reducing the cost of doing business

The new access and links with neighbouring countries created by the LAPSSET corridor will foster regional economic development and growth through trade facilitation. This will in turn lead to further creation of substantial job opportunities and increased income in the area of value addition especially on processing of agricultural products and cash-crop exports. The alternative destinations created by development of Resort Cities in Lamu, Isiolo and Turkana are expected to increase international tourist arrivals and push up the foreign exchange earnings.

The opening of the Northern part of Kenya will not only pave way for exploiting the existing natural resources like oil and coal but will also encourage the exploration of new finds.

It is expected that the port of Lamu would attract some of the cargo which would traditionally pass through the ports of Sudan, Djibouti and Mombasa. The traffic forecast for this corridor predicts that in that inclusive of demand from both South Sudan and Ethiopia, the Lamu traffic is expected to reach 23.9 million tons by 2030.

Environmental, Social, Gender and Land Issues

The following are the major impacts expected with development of the proposed Lamu Port and possible mitigation measures that can be employed. Each phase will involve a further detailed Environmental Impact Assessment (EIA), Archaeological Impact Assessments (AIA) and Land Acquisition Studies.

Water Quality: Port development activities such as excavation and dredging are a source of dispersal and settlement of resuspended sediments (turbidity). The effect of this depends on the direction and level of turbidity plume as well as whether the suspended solids are a contaminated. Lamu being an undeveloped area has a very natural state of the environment due to lack of industrial and residential activities that can introduce harmful substances/chemicals into the area. Water samples taken during baseline surveys in the area show a lack of harmful substances within Manda Bay. The challenge of port development, however, will be to control the introduction of contaminants from port activities and hinterland effluent, particularly from the industrial EPZ. Port effluent includes wastewater, storm water (run-off), etc. untreated discharge can lead to increase in Dissolved Oxygen (DO) and Chemical Oxygen Demand (COD) and nutrients. Key environmentally sensitive areas that can be affected also include coral reefs and mangrove plantations within the bay. In the event that offshore dumping is required and done inappropriately, impacts to the marine ecosystem can be adverse. For the construction of the first three berths, no offshore dumping is anticipated as all the dredged material will be used for reclamation of the berth structures.

Impacts on Mangrove Forests: The development of the proposed port will be carried out along a 6km stretch of the Manda Bay coastline which Mangrove vegetation exists. Baseline surveys in the area found that common species found in the Lamu Archipelago are *Sonneratia Alba*, *Rhizophora mucronata*, *Avicennia Marina* and *Ceriops Tagar*. This stretch of mangrove forest will be cleared for the long term port development. Mangroves are classified as forests and are therefore protected under the Forestry Act. Previous scenarios have seen the project proponent carry out afforestation schemes to compensate for the felled forest cover. Indirect impacts will also need to be carefully monitored to avoid. Mangrove forests will also be at risk from direct human impacts. With the influx of population, the risk of Mangroves being felled for commercial and personal use will increase. Port development should go hand-in hand with conservation efforts to protect mangrove forests. The risk of pollution will similarly increase with the development of the hinterland.

Impacts on Archeological, Historical and Cultural Sites: UNESCO inscribed Lamu Old Town on the World Heritage List in 2001. Lamu is the oldest and the best-preserved living settlement among the Swahili towns along the East African coast. Its buildings and applied architecture are the best preserved and carries a long history that represents the development of Swahili technology. The old town is thus a unique and rare historical living heritage with more than 700 years of continuous settlement. Since the 19th century Lamu has been regarded as an important religious Centre in East



Africa. Every year, thousands of pilgrims from the region flock to Lamu town for the famous Maulidi, or Milad-un-Nabi, celebrations that are held during the third month of the Muslim calendar to mark the birth of the Prophet Mohammed. There are some gazette historical monuments within and around the project site. The relevant monuments to port development are Mkokoni, Mashundwani, Ungu, Kiliana, Manda, Takwa, Pate, Shanga, Siyu and so on. Of those, Takwa and Siyu fort are well-known historical sites as well as a tourism spot where the magnificent scenery of mangrove forests and Indian Ocean can be seen at the same time.

In terms of intangible heritage, the construction and existence of the proposed port and hinterland, there will be an influx of migrant workers from other districts in search for employment and business opportunities. This can cause a “dilution” of the local culture. Efforts have to be made by the local authority and National Museums of Kenya to preserve and promote the intangible heritage.

Impact on Land Ownership: The land in Lamu is either government land or private land. In order to secure the land for the proposed port development project, the proponent will need to acquire land. Land ownership in Lamu district is highly emotive issue which should be implemented with caution by the Ministry of Lands in collaboration with the local authority and the proponent. For acquisition of land that is inhabited by squatters, there is need to determine datum date as a “cutoffdate” to establish genuine squatters from speculative squatters who should be compensated and resettled.

The resettlement and land acquisition should follow an approved action plan which will follow the basic principles;

- Involuntary resettlement should be avoided.
- Where involuntary settlement is unavoidable, all people affected by it should be
 1. compensated fully and fairly for lost assets.
 2. livelihoods of the affected people and undertaken accordingly.
- All people affected by involuntary resettlement should be consulted and involved in resettlement planning to ensure that the mitigation of adverse effects as well as the benefits of resettlement is appropriate and sustainable.
- Establish Grievance Redress system.
- Monitoring should be undertaken.

Proposed Financing Plan and Funding Options

It is proposed that the second phase of the Lamu port is financed by the private sector, with a private investor taking on the concession for the operation of the first 3 berths under construction, plus the development and operation of the next 4 berths.

Next Steps, Responsibilities and Implementation Plan

Considering the key environmental issues and the possible mitigation measures, the construction of the proposed Lamu port is considered environmentally feasible if robust EIA and AIA studies are carried out at every phase of implementation.

Isiolo – Lokichar Highway (reference number: TRDL04)

Member states: Kenya	Corridor: LAPSSET	Sub-sector: Road	Status: S2B Feasibility
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Project Description

The Isiolo – Lokichar Highway is 416 km long. A 49 km section is already upgraded under a separate Isiolo-Moyale project. The section to be constructed under LAPSSET project is therefore 367 km. Currently no direct road link exists along the proposed routing, but some segments have unpaved road tracks. The road will be largely new construction requiring paving, drainage and road furniture. The road is intended to divert transit traffic from Mombasa Port and the Northern Corridor via





Uganda to Juba in South Sudan. The LAPSSET highway will present a shorter route from Lamu Port to Juba of 1,643km as opposed to the current congested route measuring 1,798km.

The highway will provide critical infrastructure necessary for market access and open up the Northern Kenya region for economic activities. This project will contribute towards achieving the IGAD Strategy and Implementation plan of 2016-2020 within the following pillars:

- Pillar 1 – The corridor will promote the development of industries and businesses in areas that are rich in livestock (Kenya), and Minerals (South Sudan). These areas have been largely underdeveloped despite their high potential due to limited infrastructure.
- Pillar 2 – The two partner states have had little opportunity to trade with each other due to lack of connectivity. The LAPSSET Corridor, together with ongoing intergovernmental policy reforms will open up the countries to each other and take advantage of the large market provided by their populace.
- Pillar 3 – The introduction of roads in these remote areas has given the people a way to access the markets in the larger towns/cities. This allows them to engage in various economic activities such as ranching, farming, service provision etc. The opportunity to create revenue and run businesses has led to a reduction in the number of cases of banditry and cattle rustling in the areas traversed by the corridor.

The design standards adopted are an asphalt paved single carriageway highway with carriageway width 7m and 2.0m wide paved shoulders. General design speed is 100 – 120 km/h and maximum gradients 3% except for 20km mountain section with 60 -90 km/h design speed and 10-12% gradients. The road section commences east of Isiolo town, proceeds north along Isiolo Moyale highway for 49km before branching west at Lerata to Wamba , Baragoi, across Suguta Valley to Lokori and Lokichar located along the Kitale – Lodwar – South Sudan highway. The road traverses a fairly easy flat to rolling terrain except for the 20km mountainous escarpment section descending to the 28km flat floor of the Suguta valley. The notable bridge structures cross several perennial and dry season rivers and the Suguta floodplain. The key junctions are at the intersection with Isiolo-Moyale highway and the Kenya-Sudan highway where grade separated interchanges are proposed. In order to cater for future increase in capacity, the road reserve to be acquired for the project is 100m wide which will allow for construction of a future second carriageway.

Costs

Total CAPEX cost is estimated at \$402m.

Benefits, Economic and Financial Impact

The project will boost the economic development of the northern Kenya region by: (i) improving access to markets for products by reducing transport costs; (ii) improving marketability of perishable goods through timely and cheaper transport that will provide a direct incentive for more market-oriented agriculture and livestock, with more profitable meat and leather processing which in turn lead to an increase in rural income and also additional employment opportunities; (iii) facilitate cross – border trade and investment between Kenya and South Sudan and reduce travel time for traders to and from Lamu Port and hinterland goods production factories; (iv) improvement of security accessibility to social infrastructure such as schools and health centres found in towns and trading centres; and improvement of social interaction and mobility , which are important for social and economic development and integration.

Environmental, Social, Gender and Land Issues

The project envisions impacts such as:

- Economic and social development which will be easy and rapid with the result that the life of people living in the area will be improved.
- Enhanced agricultural development.
- The road will create an easy access to an area having a high agricultural and livestock development potential.
- Development for physical and social.
- The project will reduce vehicle operating cost and will reduce travel time.



- It will increase non-agricultural employment opportunities.
- It will improve access to import and export, market, health and school facilities.

The project will have other impacts as follows.

Social Impacts

- Women in the project area could work as daily laborers and in other similar activities during project implementation and operation.
- Skills development among women who are involved in the road project work.
- Local Income-generation During Construction
- Communicable/sexually transmitted diseases including HIV are expected to increase as a result of road construction processes due to influx of people and workers in the community.

On water resources impacts:

- Inappropriate disposal of refuse and some materials used in construction can also lead to public and animal health hazards.
- Surface water and ground water may be contaminated by improper utilisation or storage of construction materials which are toxic or hazardous, including chemical or petroleum products such as diesel fuel and lubricants.

Mitigations

- Specific and adequate provision for the disposal of sanitary and other wastes in such a way as will not result in any form of pollution or hazard to human or animal health.
- Prohibiting using water points and water sources that are used by the public and allowing the contractor to use his own sources by tapping ground water (boreholes) or by creating storage during the rainy seasons

The Natural Vegetation impacts are:

The corridor area in which the project road traverses is described as bush land mixed with grass land.

Impact on Land Resources

Land acquisition will also be required for material access roads and for the stretches taken up for construction in order to allow easy flow of traffic. For these uses, land under cultivation, housing units and natural vegetation will be mostly affected.

Mitigations

Provide adequate and timely compensation for the land to be acquired

Soil Erosion and contamination: Disposal of waste materials from cuts and other earthworks, compaction with heavy machinery and disposal of used oils and lubricants and spills of oils and fuel from engines of vehicles and diesel operating machinery as well as accidental spillage.

Mitigations

Avoid disposing of any volatile chemical or leakages to the soils such as bitumen and engine oils.

Air Pollution

Quarry activities such as, crushing and concrete batching plants, and construction works (blasting, excavation as well as movement of heavy machinery, trucks and trailers) construction equipment's and emissions from vehicles have the potential to negatively affect air quality in the vicinity of the construction sites and access roads. The burning of wastes also has the potential to affect air quality.

Mitigation:

Construction machinery should be well maintained to minimise excessive gaseous emissions. The engines of construction machinery and vehicles will be inspected and adjusted as required to minimise pollution levels.

Public Health and Safety





Communicable/sexually transmitted diseases including HIV are expected to increase as a result of road construction processes due to influx of people and workers in the community.

Proposed Financing Plan and Funding Options

The results of the feasibility study indicate that the EIRR is negative and the project is not commercially viable. Concessional finance or grant finance is the only option.

Next Steps, Responsibilities and Implementation Plan

Construction of the highway will be the responsibility of KeNHA and detailed engineering designs are complete for the road sections from Lamu to Nadapal.

Juba – Torit – Kapoeta – Nadapal Road (reference number: TRDL06)

Member states: South Sudan	Corridor: LAPSSET	Sub-sector: Road	Status: S3A Project Structuring
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Project Description

The Juba-Torit-Kapoeta-Nadapal road is a 365 km gravel/earth single carriageway road in South Sudan. It is 5 to 10 metres wide which mostly traverses hilly to flat terrain and has a winding alignment with gentle curves over the entire alignment but travel speeds average 40-50kph at best due to the condition of the alignment. The road starts from Juba, the capital of South Sudan and passes through Torit, Lobira (Junction to Uganda through Kitgum and Gulu), Kapoeta (junction to Ethiopia and Djibouti through Boma) to Nadapal (the border between South Sudan and Kenya) and is about 360 km in length. The road reserve is not gazetted. The alignment largely traverses virgin land with several towns and settlements including Liria, Torit, Kapoeta, Lolimi and Narus, with Nakodok at the border. There are five significant junctions at Juba (Nadapal Highway), Torit, Lobira, Kapoeta and Narus. The road has eight significant river crossings with two major ones over the Nile and at Narus. The current road carries significant traffic up to Kapoeta, but the situation is expected to change once upgrading of the Lodwar-Nadapal section is complete.

The road serves 3 major corridors in the region i.e. the Northern, LAPSSET and Djibouti Corridors. It becomes part of the Northern Corridor and links Juba to Mombasa port through Lokichoggio, Lokichar, Lodwar, Marich Pass, Kitale-Laseru, and Eldoret where it joins the loop through Uganda. It is also part of the LAPSSET Corridor and an extension of EAC corridor No.3 (the Biharamulo-Mwanza-Musoma-Sirari-Lodwar- Lokichoggio corridor) linking South Sudan, Kenya, Tanzania and Rwanda, and further connecting to the Dar es Salaam–Dodoma–Isaka corridor, which joins the Trans East African Highway at Dodoma. The Juba-Kapoeta section of the corridor serves the Djibouti Corridor (i.e. Kampala-Juba-Addis-Djibouti) Corridor, which links Uganda, South Sudan and Ethiopia, and further connects to Djibouti port. The road needs upgrading to a paved status with accompanying geometric improvements, acquisition and demarcation of the right-of-way in order to secure space for future upgrading works and safeguard the corridor against encroachment. The project aims at enhancing interstate and regional connectivity, through upgrading of priority road sections along the critical international corridor connecting South Sudan and Kenya. The project will contribute to the overarching goal of integrating South Sudan to the regional markets and supporting the state of South Sudan to function as a nation as well as enhancing trade and socio-economic development in the region.

Costs

It is expected that the planned upgrading works, together with accompanying geometric realignments and right of way (RoW) acquisition, will observe route planning guidelines to accommodate future developments and capacity improvements. Route planning for geometry is expected to cover at least 50 years, while pavement design life is ordinarily 20 years. The planning life of the corridor accommodates future capacity improvements as dictated by level of service (LoS) requirements. The need for capacity improvements will be determined through surveillance through the highway's lifecycle as part of operation and maintenance (O&M) operations.



The capital cost of the project is estimated at \$294 million.

	A	B	C	D
	Project	Scale	Unit cost (USD)	Cost (USD) (B x C)
i)	Land Cost	Hectare or land unit	-	0.00
ii)	Construction Cost	(kms, width, or m2)	682,997.12	237,000,000.00
iii)	Feasibility, Detailed Design and Supervision	11% of cell D i)		26,070,000.00
iv)	Base Cost	Sum D i) to D iii)		263,070,000.00
v)	Contingencies	10% of D iii)		26,307,000.00
vi)	Total Construction cost	Sum D iv) & D v)		289,377,000.00
vii)	Resettlement & rehabilitation cost (if any) - Lump sum			3,000,000.00
viii)	Environmental mitigation cost (if any) - Lump sum			1,500,000.00
ix)	Total Project Cost	Sum D iv) & D vii)		293,877,000.00

The O&M costs are estimated to stand at \$10.5 million USD with a total life cost of USD \$ 504 million.

Benefits, Economic and Financial Impact

The benefits of the road project include lower transportation costs and reduced transit time for both freight and passengers. There will also be increased safety in transport and lower pollution due to fewer cars deployed on roads

Construction of the road will open up the area which has great agricultural potential. The upgraded corridor is expected to carry a mix of international and domestic traffic, with international goods traffic predominating. The road does not receive any maintenance though it is lightly trafficked. Consequently, economic benefits are at minimum levels due to high vehicle operating costs. The riparian lands are lined with empty villages with insignificant economic activity.

Environmental, Social, Gender and Land Issues

The **environmental impacts** associated with this project will mainly be on the local hydrology and proper installation of drainage structures for efficiency of drainage structures and their mitigation measures are as follow:

Soil erosion and degradation;

- Control earth works by Installing erosion control measures
- Grouted stone pitching and rock fill gabion works to protect culverts inlets and outlets
- Landscape embankments and re-vegetate gravel sites with indigenous grass for drainage ditches along the road scour checks will be necessary in steep section.
- Management of excavation activities.
- Replacement of damaged drainage or rehabilitation with better ones

Vegetation loss: Keep Controls on clearing, and planting trees/shrubs to provide new habitat where vegetation has been destroyed

Water and soil contamination; Construct parking bays at terminal towns for heavy vehicles with oil interceptors drains.

Maintenance of construction vehicles: Should be carried out in the contractors' camps and only at designated garages in the camps.

Air pollution: Implement standard measures for abating air pollution

Agencies approving Environmental Impact Assessment

Ministry of Environment And natural Resources.





Climate Change Adoption: There is need to review the study report to enable the project accommodate climate adoption polices and strategies.

The social impacts of the project include:

Livestock farming is extensive along the project area: Most lying along the project road making accidents between vehicles and livestock expected to rise and mitigation must include the installation of warning signs erected at intervals along the road and the construction of underpasses to be used by goats and cattle crossing the road.

Loss of access to property resources: Minimise land acquisition and adequate compensation; Demine areas identified as farm sites to enable residents move their farm away from the road project and excavation sites.

Increased morbidity:

Compensation; Should be for communal land, quarries while individual members' compensation should be limited to the private structures and crops at the market rates. Compensation for land in the form of construction of schools, hospitals, boreholes and other social infrastructures to be agreed in the RAP.

Public health and occupational safety; This to be handled in the standard manner

Cultural Heritage Facilities: The cultural heritages of the people need to be considered and preserved where and whenever possible. Concerns are also raised where the road may pass through a graveyard within settlements.

Proposed Financing Plan and Funding Options

Funding for the project was originally discussed with the World Bank. Sovereign debt levels and a fragile political situation rules out concessionary financing. Options include IDA grant financing, or possibly Chinese Exim Bank.

Next Steps, Responsibilities and Implementation Plan

SSRA will be responsible for Operations and Maintenance of the project and no assessments have been carried out on the agency's human resources to undertake the project, however, capacity building will be required in light of the current social-political situation in the country as there are major capacity gaps at all levels in the roads sector. Need to establish a mechanism for hiring, training and retention of staff at all levels for effective management of the national road asset.

SSRA has requisite financial capacity implement the project. There are plans to operationalise the Road Fund to fund O&M for roads in the country. Funding will mainly be sourced from fuel levy and road tolls in addition to funding from the exchequer through the central government.

Lamu Crude Oil Pipeline (reference number: EPPL03)

Member states: Kenya, South Sudan	Corridor: LAPSSSET	Sub-sector: Petroleum/Gas Pipeline	Status: S2B Feasibility
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Project Description

The Lamu Crude Oil Pipeline is a proposed crude oil pipeline that will originate from South Sudan oil fields to the Lamu port and will also be used to evacuate crude oil from the oil rich fields in South Lokichar in Kenya to Lamu Port for export. Crude oil loading to oil tankers will be made through Single Point Mooring (SPM) at Lamu Port.

200,000DWT is considered as the maximum size of the tankers. The location of the refinery has been investigated under this study. Lamu has been considered for the location. Crude oil will be transported through the crude oil pipeline, while Gasoline, Kerosene and Diesel will be transported through the product oil pipeline (multi-product pipeline). Transportation volumes have been set through the analysis by among economists, refinery engineers and pipeline engineers based on the market and economic study.



- 1) **Volume of Crude Oil Imported from Southern Sudan:** Based on the discussion with Southern Sudan government in July 2010, the transportation volume has been set as 500,000bbl/day.

Fluid	From	To	Transportation volumes	Design Flow Rate
Crude oil	Nakodok/Lokichokio	Lamu (tank terminal)	2.9×10^7 m ³ /yr (Approx. 500,000 bbl/day)	3,400 m ³ /hr

- 2) **Volume of Crude Oil Exported:** Some of the crude oil imported from Southern Sudan is refined into product oil, and the remaining crude oil is to be exported through Lamu port. The volume of crude oil to be exported is estimated at 2.44×10^7 m³/yr which accounts for 85% of the crude oil imported to Kenya from Southern Sudan.

Fluid	From	To	Transportation volumes
Crude oil	Lamu (tank terminal)	Lamu (SPM)	2.44×10^7 m ³ /yr

Crude oil is to be transported from the tank terminal beside the refinery to SPMs by two crude oil pipelines. The onshore portion of the pipelines route has been selected to avoid passage through the city centre of Lamu, whereas, the offshore portion has been selected to run along the boundary of port extension plan. The pipelines will run in an easterly direction through Magumba before turning South-east into Wange creek where they will be installed under the seabed to a point just North-west of Pate Island. The lines will make a turn Southwards transversing mainly a mangrove area through Tukutu, Chongoni and Mwamba Pazah. From Mwamba Pazah the lines will be installed under the sea bed and run southwards to the two SPMs in the main channel.

Crude oil stored at Lamu crude oil tank terminal will be transported through crude oil exporting pipelines of 42km length (on-land portion 11km, offshore portion 31km) to Single Point Moorings (SPM) and then to oil tankers (Max.200,000DWT) for export. The duration of loading to the tanker has been set as 30 hours, which is typical loading time in oil exporting countries. The flow rate of loading to a 200,000DWT tanker has been set as 8,000m³/hr accordingly. The design pressure is set to be 2.0MPa as a typical pressure.

As a result of the hydraulic analysis, it has been found that two lines of 48-inch diameter are required.

Costs

The costs indicated herein are only meant to show the order of project magnitude. The scope covered is the pipelines and related facilities within Kenya. The Capital Expenditure (CAPEX) necessary for constructing the LAPSET Pipelines facilities based on the results of the feasibility study. The CAPEX calculated here does not cover any land acquisition but covers;

- Cost of FEED
- Material Cost
- Transportation Cost
- Construction Cost
- Owner's Control Fee and Engineer's Fee

CAPEX of Crude Oil Pipeline: The CAPEX of Crude Oil Pipeline is US\$ 3,063,800,000. Which is broken down as below:

a) Common Corridor Section	1,958.3
b) Crude Oil Exporting Pipelines	342.5
c) SPMs	30.0
d) Pump Stations & Tank Terminal	626.0

SCADA & Telecommunication 107.0

Total 3,063.8



The Operation Expenditure of the Crude Oil Pipeline is estimated at US\$ 167,500,000/Year and its calculation covers the following:

- Maintenance and Operation Staff
- Maintenance and Operation Cost
- Electricity and Fuel for Operation
- Administrative Expenses

The cost breakdown of the annual operation expenditure is summarised below.

	Unit:	US\$ Million
a) Pipeline Maintenance Staff Costs	25.3	
b) Pipeline Maintenance Costs	32.7	
c) Electricity and Fuel	77.4	
d) Other Associated Costs	9.2	

e) Administration Expenses 22.9

Total 167.5

Benefits, Economic and Financial Impact

The relevant economic feasibility criterion is aimed at maximizing the overall objectives of the national economy. Economic feasibility is measured by comparing the Economic Internal Rate of Return (EIRR) of the project with the guidelines established by the government, which stipulate a minimum EIRR of 12 % for infrastructure projects. The discount rate which is also the economic opportunity cost of capital is 12% and is used to calculate B/C, and NPV as well.

The construction costs of the oil pipeline including contingency cost at 10% of the total capital cost were estimated firstly on the basis of the market price as financial costs as of June 2011 and thereafter converted to the economic costs for purposes of economic analysis by deducting value added tax and other taxes. In the economic analysis, it was assumed that the project is owned and operated fully by the public entity under a single operating body. Therefore, the cost estimated therein covers fully the requirement to operate crude oil transmission from Southern Sudan to Lamu.

Environmental, Social, Gender and Land Issues

A risk assessment study of the proposed Lokichar – Lamu Crude oil pipeline in Kenya has revealed environmental and socio-economic risks. Below is a list of key environmental and social issues likely to arise as a result of the project:

No.	Item	Source of Impact/ Issues
1.	Habitat Disruption/ Loss	<ul style="list-style-type: none"> • Clearing of vegetation laying of pipeline • Protected areas. • Introduction of exotic species. • Impacts on Coral Reef and Mangrove forest (SPMB)
2.	Protected Areas	<ul style="list-style-type: none"> • Indirect impacts of construction on nearby protected area. • Indirect impacts of operations to nearby protected area.
3.	Water Quality	<ul style="list-style-type: none"> • Change in Hydrology through change in topography • Construction related pollutants. • Spills and discharges for crude oil and multi-product. • Installation of offshore structures.
4.	Spill	<ul style="list-style-type: none"> • Leakage and damage of pipes, equipment failure. • Accidents and Human error. • Rift Valley
5.	Noise	<ul style="list-style-type: none"> • Construction Activities • Pump Stations & Facilities.

6.	Vibration	<ul style="list-style-type: none"> Construction activities. Pump Stations & Facilities.
7.	Wastes	<ul style="list-style-type: none"> Pipe cleaning products.
8.	Land Acquisition	<ul style="list-style-type: none"> Physical Displacement. Economic Displacement.
9.	Heritage	<ul style="list-style-type: none"> National Museums & Sites. Cultural artefacts. Intangible Heritage.
10.	Safety	<ul style="list-style-type: none"> Fire and Explosion. Occupational Health.
11.	Social	<ul style="list-style-type: none"> Public Consultation. HIV/AIDS Prevalence due to migrant workers. Urban Growth.

A summary of the key environmental issues in each section be considered along the Pipeline is shown below:

Segment	Habitat Disruption	Protected Areas	Water Quality	Hydrology	Spill	Noise	Vibration	Wastes	Land Acquisition	Heritage	HIV/AIDS Prevalence
Segment 1: Lamu – Garissa	A	A	A	A	A	B	A	B	A	A	B
Segment 2: Garissa - Isiolo	A	A	A	C	A	B	A	B	A	B	B
Segment 3: Isiolo – Lokichar	A	A	A	C	A	B	A	B	A	B	B
Segment 4: Lokichar – Nakadok	B	B	A	C	B	B	A	B	A	B	B
Segment 5: Isiolo – Moyale	B	B	A	C	B	B	A	B	A	B	B

Where:

A = Serious Impact is expected

B = Some Impact is expected

C = Little impact is expected or easily prevented or mitigated

Proposed Financing Plan and Funding Options

The pipeline will be financed privately by Tullow Oil.

Next Steps, Responsibilities and Implementation Plan

The Lokichar to Lamu Crude Oil Pipeline is now set to commence in the year 2023. The 820-kilometre-long pipeline is a key component of the Sh 2.5 trillion Lamu Port South Sudan Ethiopia Transport (LAPSSET) Corridor project whose construction is underway in Kililana, Lamu West.

Nadapal – Juba Fibre Optic Cable (reference number: IFOL09)

Member states: South Sudan	Corridor: Northern	Sub-sector: ICT	Status: S2 Pre-feasibility
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Project Description

The Juba – Nadapal Optical Fibre Link is an ICT project to aimed at linking South Sudan to a stable optical fibre link. South Sudan being a landlocked country does not have any connectivity via fibre optic cable and the project will ensure that the country is connected to the rest of the world.



The project supplements the One Area Network initiative in South Sudan which is being implemented under the Northern Corridor initiative proposed by the World bank which is the Single Digital Market (SDM).

The terrestrial optical fibre link Juba-Torit-Kapoeta-Lolimi-Nadapal is 350km long and is expected that the fibre will be 24 pairs with the capacity expected to be 50G which will be sufficient for South Sudan.

The optical fibre link will connect South Sudan to the region and the world via Kenya and the submarine landing points in Djibouti and Mombasa. It will provide sufficient capacity which will contribute to the reduction of the ICT services and e-application prices, increase broadband and Internet connectivity and promote cross border connectivity.

The Government of South Sudan recognised the importance of the link which will be part of the national backbone. This terrestrial optical link is part of SOUTH SUDAN- Eastern AFRICA Regional Transport, Trade and Development Facilitation Program (EARTTDFP) which is funded by the World Bank (WB). The objective of EARTTDFP is to enhance regional connectivity and integration of the Recipient with its Eastern Africa neighboring countries, and its access to seaports. South Sudan Government and World Bank signed an agreement to construct the road and ICT link from Juba to Nadapal, facilitation of regional transport, trade and development and institutional development.

Costs

The optical fibre project is estimated to have a design life of 20 years with an expansion of the capacity, redundancy and complementing slated for the future. The capital cost of the project is estimated at \$15 million USD. The operation and maintenance cost has been estimated at 1.7% from the total capital cost, hence the total operation and maintenance will be \$3.4 million which will be part of the total network operation and maintenance. Smart ICT networks will have affordable operation and maintenance cost over the design life of the project.

Benefits, Economic and Financial Impact

The cities along the route to the border need optical fibre connectivity to promote the usage of the ICT services, Internet and e-applications. This project will enhance the South Sudan national ICT backbone connectivity. The project will connect the towns in the East Equatorial State which means around 15% of South Sudan population will be connected. It will also connect the business sector in the State and attract more investment to it as well as facilitate regional trade. It will create jobs and contribute to the reduction of poverty.

The project will also be profitable with estimate internal rate of return of around 15% since South Sudan requires ICT development to enhance the national and regional connectivity.

Environmental, Social, Gender and Land Issues

Environmentally, the project will have positive impacts on reducing carbon emission because the optical fibre uses less power than microwave system.

Socially, the project will enhance the social integration and solidarity by providing the communications means via internet services and social media.

Proposed Financing Plan and Funding Options

The project was originally proposed by the World Bank to be constructed with the Juba – Torit – Nadapal road. It is proposed that discussion on this arrangement is reopened.

Next Steps, Responsibilities and Implementation Plan

Capacity building of the ministry of ICT in South Sudan is required for the preparation, procurement, implementation and management. The Government of South Sudan will be responsible for the contracting and implementation of the project.





Berbera Corridor

Togochaale Border Post and Road Upgrade (reference number: TRDB02 & TBPB03)

Member states: Somalia	Corridor: Berbera	Sub-sector: Road and Border Post	Status: S1 Project Definition
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Project Description

The project is in the context of the ongoing series of works on the Berbera Corridor, which include the upgrade of the port facilities (financed by DP World), upgrade of the road from the port to Hargeisa (financed by Abu Dhabi Fund), Hargeisa by-pass (financed by UK government) and rehabilitation of the road from outside Hargeisa to Kalabaydh (financed by the EU). The objective is to upgrade the corridor infrastructure to serve as an alternative trade route for Ethiopia with a more than fourfold increase in traffic anticipated between now and 2030.

Currently, however, the road from Kalabaydh to the border with Ethiopia at Togochaale is currently neither being upgraded or rehabilitated. This stretch of 23km is in very poor condition with many potholes, erosion of the tarmac at the shoulders, prone to flash flooding, with some sections impassable where an alternative route has been forged. The border crossing itself is also in urgent need of upgrading and currently consists of a single lane road used by traffic and pedestrians and no customs facilities. Given that the port of Berbera is currently serving the Somaliland region with the bulk of the traffic currently between Berbera and Hargeisa, while the majority of the forecast increase will come from Ethiopia, the number of vehicles crossing the border and using this stretch of road will increase more than tenfold by 2030.

There is inconsistency in the standard to which the road is being constructed across the different segments currently under implementation, with the route from Berbera to Hargeisa being upgraded to 11m width, the new by-pass also being constructed to the same standard, while the project from Hargeisa to Kalabaydh is just resurfacing the existing 7m wide road without widening or upgrading the existing road (e.g. culverts to deal with flooding). In the medium-term, it will make sense to upgrade all of the road to the same standard.

Taking into account the above context, the proposed scope of this project is to upgrade the 23km of road from Kalabaydh to Togochaale to the same 11m width and standard as the Berbera – Hargeisa and Hargaisa by-pass segments, as well as upgrading the border crossing and facilities.

Costs

A previous EU-funded feasibility study estimated the total CAPEX cost at \$35m, \$27.7m construction cost and \$7.3m contingencies, to upgrade the road to 7m width with 2m hard shoulders. This will have to be updated to account for the new wider road design, plus the additional cost of upgrading the border crossing facilities. **The total CAPEX cost of the project is estimated to be \$40-50m.**

Benefits, Economic and Financial Impact

The previous study estimated the EIRR for this section of road to be 21.9%, this will have to be updated. The benefits arise from reduced congestion and travel times, reduced accidents, and increased trade between Somalia and Ethiopia. Ethiopia will benefit from access to an alternative port, increasing competition with Djibouti which should lead to increased efficiency and reduced cargo handling costs. Somaliland regional government will benefit from the increase in revenue from the port. Local businesses will benefit from increased connectivity and trade opportunities.

Environmental, Social, Gender and Land Issues

The natural environment of the corridor road is quite sensitive with limited water resources, highly erodible soils and major flash flood hazards. The environmental risks of the upgrading of the Berbera Corridor road may however be adequately controlled because the road right of way is well established and the recommended widening works will have only very limited impacts on the natural environment and on the communities. It is however recommended: to carefully open, operate and reinstate the areas which will be used for extraction of construction materials; to





impose to the contractor to develop his own water supply systems with adequate precautions for the preservation of the water resources used by the communities; to protect or reconstitute the natural vegetation, mainly trees, in case it needs to be removed; and to enforce a public health information and control programme for the local population and his staff about AIDS and water borne diseases.

Proposed Financing Plan and Funding Options

One option is for Abu Dhabi Fund to finance this final section of the road as they are also financing the first sections from Berbera to Hargeisa, with a donor grant financing the border post upgrade.

Next Steps, Responsibilities and Implementation Plan

Detailed project design followed by update the previous feasibility study to account for new road design, and undertake new feasibility study for the border crossing upgrade. The rest of the Berbera Corridor projects are already underway and the need is urgent. New feasibility study should be undertaken in Q1 2020 with the aim for construction to start by Q3 2020.

Berbera – Togochoale Fibre Optic Cable (reference number: IFOB05)

Member states: Somalia and Ethiopia	Corridor: Berbera	Sub-sector: Fibre Optic Cable	Status: S2B Feasibility
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Project Description

The Berbera – Togochoale Fibre Optic Cable is an ICT project that will link Somalia and Ethiopia telecommunication networks. Somalia currently has connectivity with optical fibre to Djibouti only and has two submarine cables landing at Mogadishu and Bosaso for EASSy and Gulf to Africa (G2A) cables. Somalia requires more connectivity nationally, regionally and globally and currently there is a microwave system which has limited capacity, poor quality of service and high cost of operation and maintenance. The existing link does not provide the capacity for the current demand.

The estimated length of the cable will be 260 km and twenty-four pair with estimated capacity of 100G. The link will be designed according to the ITU standards which is globally accepted. In addition, the project will run along the Berbera – Tagwajila road and contribute to the Berbera corridor development and enhance the Somalia connectivity to the IGAD region. It will result in connectivity for the Ethiopia to the G2A submarine cable and Somalia to the IGAD region via Ethiopia. The project will improve the regional connectivity which will contribute to the achievement of the IGAD master plan objectives.

Costs

The capital cost of the project is estimated at USD \$10 million. The ICT project operation and maintenance is part of the total network operation and maintenance. Smart ICT networks will have affordable operation and maintenance costs over the design life of the project hence the operation and maintenance cost can be estimated as 1.4% from the total capital cost. On the total life cost of the project, it is assumed that the life cycle of the project will be twenty years hence the total operation and maintenance will be \$2.8 million translating to a total life cost of \$12.8 million.

Benefits, Economic and Financial Impact

One of the benefits of the project is that it will connect the Ethiopian Telecommunications Company (ETC) to the Gulf to Africa (G2A) submarine cable landing point at Barbara and will also serve as an alternative and complementing submarine landing point to ETC. In addition, the fibre optic cable will enhance the national connectivity within Somalia and provide services with high capacity, quality and availability to around 20% of Somaliland population thereby creating jobs. It will also enhance social development and integration by providing communications.

On financial and economic assessment, the project will be profitable with an estimated internal rate of return of around 17% since Somalia requires ICT development to enhance the national and regional connectivity.

Environmental, Social, Gender and Land Issues





Environmentally, the project will have a positive impact on reducing carbon emission because the optical fibre uses less power than microwave system. Socially, it will enhance the social integration and solidarity by providing the communications means via internet services and social media. The land requirements for the project will provision of right of way to dig for the optical fibre which is normally along the side of the road.

Proposed Financing Plan and Funding Options

This project is a purely private initiative with no direct government involvement, though political buy-in is necessary. The project is deemed to be economically and financially viable and should be funded exclusively through the private sector, either through internal Telesom funds or commercial borrowing. If the latter, then one option could be to explore financing with ringfenced debt from the Kenya commercial market, as domestic Somali debt markets are not mature.

Next Steps, Responsibilities and Implementation Plan

The project will be managed by Telesom which has the experience of rolling out the project. However, there is need for capacity building for the implementation, operation and management of the project.





Mogadishu Corridor

Dawa River Multi-purpose Dam

Member states: Ethiopia, Kenya, Somalia	Corridor: N/A	Sub-sector: Multi-purpose Reservoir	Status: S2B Feasibility
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Project Description

The Dawa river is a transboundary water resource endowed with abundant natural resources which provide tremendous potential for social economic development. The catchments encompass a wide variety of ecosystems including riverine ecosystem, forests, game reserves, and national parks that are home to a rich variety of fauna and flora of high touristy value. Agriculture is the major socio-economic activity in the project area employing about 62.1% of the people in the basin with only 37.9% being mainly farmers. Poor agricultural practices, exacerbated by inadequate extension services, have resulted in extensive catchment degradation. Intensive land cultivation up to the riverbanks and indiscriminate sand harvesting of riverbanks and riverbeds causing excessive sediment loads and resulting in water quality degradation.

The rivers not only include a complexity of problems related to upstream (Ethiopia) and downstream (Kenya and Somalia) conditions but also a network of river reaches forming an international border. Addressing these challenges therefore calls for judicious joint actions and investments by Ethiopia, Kenya and Somalia to improve the river conditions. The incentives for joint actions like establishment of joint gauging stations, riverbank stabilisation, and exchange of information and promotion of cross border trade are particularly intended for the river reaches.

In the larger Dawa River catchment, the growing population exerts increasing pressure on water and land resources, resulting in increasing degradation of the environment. There is evidence of continuing land degradation and loss of soil fertility, deforestation and absence of reforestation activities and the use of biomass as the main source of energy. Other evidence showing the environmental status of Dawa transboundary sub-catchment include the lack of clean water for household use, insufficient water for grazing, exploitation and degradation of wetlands based on the perception that they are public property available to all. The project area is characterised by widespread poverty and severe degradation of water catchments. The degradation of this trans-boundary catchments has seen reduced water resources flows.

The Government of Ethiopia, Kenya and Somalia noted the above challenges and come up with the proposed MoU on the Management of the Dawa River Waters to be mediated by IGAD. This will help incorporate the necessary legislation, policies, economic tools, institutions, and stakeholders involved in management, regulation, and utilisation of water resources. This will help to establish a sustainable framework for the joint management of the water resources of the Dawa sub-basin. Basin will thus achieve a sustainable development-oriented investment that will go a long way towards improvement of the living conditions of the people and to protect the environment.

Dawa Dam project is intended to mitigate against the present situation and offer the residents of the basin a platform to jointly conserve the environment while utilizing the water resources and other biodiversity benefits of the basin. Hydropower will stimulate the much need agro-industries for value addition of the agricultural potential outputs. Farm by-products will offer the much-needed hay for the animals, thus ensuring the community acquires resilience to the climatic challenges of droughts and floods.

The proposed Dawa dam will be located in River Dawa at Latitude 4.064824 and Longitude 41.043819. The site is located approximately 20 km upstream of Rhamu Dimtu town in Mandera County and 2km upstream of Boni centre in Ethiopia. The estimated dam height is about 90m with a capacity of approximately 4.5 Billion M3 and can be utilised to generate 8.2MW of hydropower.

Costs

The economic life of the irrigation scheme is assumed to be 30 years after which overhaul will be required for the major infrastructures. The dam economic life of the will depend mostly on the



conservation measures implementation. In line with similar dams within the region, the dam is assumed to be 90 years.

The dam's capital cost is estimated at USD \$ 603.5 million. This is detailed in the table below depicting the capital costs

	A	B	C	D
	Project	Scale	Unit cost (USD)	Cost (USD) (B x C)
i)	Land Cost,	873.77 Hectare or land unit	500	436,886.90
ii)	Construction Cost	(kms, width, or m2)		517,779,426.24
iii)	Feasibility, Detailed Design and Supervision			11,500,369.10
iv)	Base Cost	Sum D i) to D iii)		529,716,682.24
v)	Contingencies	10% of D iii)		52,971,668.22
vi)	Total Construction cost	Sum D iv) & D v)		582,688,350.47
vii)	Resettlement & rehabilitation cost (if any) - Lump sum			
viii)	Environmental mitigation cost (if any) - Lump sum			20,900,000.00
ix)	Total Project Cost	Sum D iv) & D vii)		603,588,350.47

The Operation and Maintenance cost has been projected at 5% of the base cost per annum of the water supplies hence the O&M cost of the project USD \$30 million. This translates to a total life cost of USD \$633.7 million.

Benefits, Economic and Financial Impact

Quantifiable benefits of Dawa Dam are mainly provision of irrigation water, hydropower generation, flood mitigation, and a source for drinking water for livestock and human beings. Qualitative benefits are the contribution to climate change as it will increasingly important role in protecting water resources, storing the floods for use during the dry season.

The Dawa dam project has a number of impacts:

Water quality and physical changes

Upper reaches of the reservoir may not be affected very much as the original riverine conditions are still retained in the reservoirs. Downstream of the dam the flow rate in the river will depend on the amount of the compensation flow. Flush gate will be provided to ensure downstream flow is maintained at all times, releasing the sediment needed for fish breeding.

Impact on fish

Fish ladder will be incorporated in the design to allow movement of fish. The reservoir creates a good breeding ground for Tilapia, thus boosting the region fish production. Installation of appropriate screen devices at the PowerStation intake will divert the fish from water intakes.

Effects of impoundment

Installation of the dam on the Dawa River will results into a reservoir with a storage capacity of 4.5 MCM. The dam has a potential to command a total net area of 35,000 hectares under gravity irrigation system that can be equally distributed between Ethiopia and Kenya. This will greatly control flush floods in the lower reach that had been a perennial problem to lower Dawa and Juba River agricultural and urban settlements.

Socioeconomic impact of the dam

A large number of fisher communities living in the area will benefit from fishing for livelihood. The farming communities will benefit from the irrigation potential, changing from peasant irrigation to modern irrigation.

Water supply to the area will be boosted as a reliable source of water will be ponded. This will serve the towns in Ethiopia, Kenya and Somalia.

Environmental impact of the dam

The component of Restoration of degraded upstream sub-catchments will positively restore the river live. Provisions will be made in the laws to oblige the power company to pay for the most efficient mitigation measure and to prove its efficiency. This will ensure the impact is sustainable.

The river flows for a total of 9 months and dry for 3 months in a year. The dam will ensure continuous flow of water throughout the year. 45% of the annual river flow will be released for domestic, livestock, agro-based industrial use and downstream flow, thereby sustaining the downstream biodiversity.

Tourism:

The existence of a reservoir could also create opportunities for tourism ventures. For example, the revival of Malkamari Game Reserve in Kenya and Bole Game reserve in Ethiopia that could lead to the growth of eco-tourism projects, trading and employment for the local communities thus expanding their livelihood options.

Hydropower Development:

Hydropower potential was estimated to yield 8.2 MW with a potential energy yield of 43Gwh. The development hydropower in the region will lead to a cheap source of power for domestic, water supply, irrigation and industrial use hence fostering economic growth among the three countries.

The bridge connecting Kenya and Ethiopia

The opens up the potential for increasing cross border trade in agricultural commodities and livestock is immense as it will Improved river cross safety as compared to current means, thus ease the movement of people and goods. This will enhance and controlled movement of persons and goods, revenue collection, regional integration improvement and improve relationship and security.

Environmental, Social, Gender and Land Issues

The environmental and social impacts of the Dawa dam project are as follows:

Environmental impacts

The positive benefits of the dam are: -

- Resilience to climate: - the dam creates an impounded water system that impounds the flood water for regulated release during the dry season that ensuring the ecosystem of the basin is sustained.
- Hydropower generation: - generation of hydropower and distribution within the basin helps to conserve the environment as the resident will stop/ reduce use of firewood and charcoal.
- Conservation: - project will boost the much-needed upstream conservation of the environment through training, technology transfer and availing of capital to implement the conservation works.

The negative effects of the dam are: -

- Habitat change: the dam creates an impounded water system that may lead to loss of the biodiversity that existed before the dam and invasion of new species that comes with associated impacts leading to increases in water sourced illnesses like typhus, typhoid, fever, malaria and cholera.
- River's flow and sediment transport: - the dam creates a barrier to sediment flow, resulting in river deepening. This resultantly lowers the water table around the river and ultimately affects the accessibility of the water table by to plant roots.
- The sediment loss: - aquatic life depends on sediment load as either source of food or breeding ground, maintenances of productive deltas, barrier islands, fertile floodplains and coastal wetlands.
- Effluent pollution: - effluent from irrigation area is mostly affected by pesticides, thus water quality is negatively affected. There is thus need for finding better methods to process wastes and purification of wastewater

Social Impacts

The positive benefits of the dam are: -





- More secure livelihoods: - beneficiaries in the project are more secure in terms of livelihoods in the project area and will stimulate a higher level of food availability beyond the project area the project.
- Capacity building for improved skills and capacities: - Project will include training of the farmers on how to operate and maintain the infield infrastructures complete with technical training for local operator, agronomy extension services for improved farm practice, that aims at improving farming, livestock practices and range management as well as irrigation practices, ultimately enhancing the sustainability of the farming and livestock output, improving farmers capacities and skills towards self-reliability.
- Social organisation: - Irrigation Water User Associations that will ultimately manage the irrigation scheme will result in an organised group that will easily get support for value addition and joint marketing.
- Improved education: - Increase in income will resultantly led to increased capacity that will enable community take their children to school.
- Youth and Gender balance: - the young generation being the majority will form the highest group of beneficiaries together with women, resulting in youth and gender equality.

The negative impact of the dam are: -

- Loss of land: - impounded area will be lost, resulting in an adverse effects on the ecosystems, disrupt existing way of live for cultivation and pasture, creating a barrier between community displaced of people resulting in increased landlessness and causes social disarticulation.
- Dam failure risk: downstream population will have an increased risk associated with the new dam construction.

On the land requirements, the government of Kenya has already initiated the dialogue via IGAD for consultation on the implementation of the project noting that the project is of transboundary nature. However, experience from other project within the region like the Genale GD3 multipurpose project in Ethiopia and the Manderla water supply and sanitation project in Kenya, land acquisition will not be a challenge. In Kenya and Ethiopia, the land is communal, and the consultation done during the feasibility studies showed willingness to support the project. With political will for the community to have the project implemented, the issue of land is solved and the States will get the community support.

Proposed Financing Plan and Funding Options

Proposed type of financing is 76% of either grant or loan from development bank to cater for the actual work, 19% balance to be equity from respective governments to cater for land acquisition and environmental conservation, while balance of 5% to be from the beneficiaries to cater for operations and maintenance of the infrastructure.

Next Steps, Responsibilities and Implementation Plan

A supervision team reporting to the monitoring team will be hired to ensure the contractor implement the works following the international best practice. Conditions of hiring the supervisor will ensure a competent firm with experienced experts are hired to oversee construction work.





No Corridor

Integrated African Air Transport Market Under Implementation of the Single African Air Transport Market (SAATM) Programme

Member states: All	Corridor: N/A	Sub-sector: Civil Aviation	Status: S1 Project Definition
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Project Description

Currently the air transport market within IGAD is governed largely by Bilateral Air Services Agreements (BASAs). Under the BASAs system, there are restrictions on airlines to provide services where they would wish to due to restricts in the areas of designation, service frequencies, capacity restrictions and on the access to passengers under the Fifth Freedom. The Yamoussoukro Decision which has been intended to liberalise the aviation market in the RECs and eventually in the entire continent has not been implemented in its full form by most of the states in the continent. The SAATM project will replace the BASAs regime with a single multilateral agreement covering all the AU members in order to grant market access to all national operators flying between IGAD member states. This project has two components: 1) Single African Air transport Market intended to replace the BASAs; and 2) Unified Single African Sky intended to create a seamless single air navigation system using the ICAO approved CNS/ ATM systems. The main task will be to build harmonise policy, regulatory and institutional framework to facilitate consensus and build capacity at both national and regional levels to implement the SAATM programme. The project will support the IGAD vision by providing increased air transport connectivity. It will further support the AU all African Free Trade Area (AfCFTA) covering both trade in goods and services.

The SAATM component on Harmonisation of Policy and Legal Frameworks at regional and continental levels is estimated to take 2-3 years. The SAATM Unified Single African Sky for purposes of air navigation and better utilisation of airspace through optimisation of aircraft routing that will need construction of CNS / ATM infrastructure is estimated to up to 10 years.

Costs

The total cost will be \$7.96m.

Activity	Cost (USD)
Development of civil aviation masterplan	2,000,000
Capacity building for implementing entities	320,000
Communication and advocacy	120,000
Sensitisation of Member States and RECs on the Yamoussoukro Decision (YD) Texts	240,000
Improvement of national Safety Oversight	160,000
Establishment of a Single African Sky Architecture (Feasibility Study and Design)	5,000,000
Actualising the Declaration of Solemn Commitment by AU member states on the implementation of the 1999 YD and establishment of SAATM by 2017	120,000

Benefits, Economic and Financial Impact

The advent of a single air transport market will significantly reduce the cost of flying between IGAD member states, leading to increased connectivity, boosting regional trade and the tourism sector. The full benefits will be quantified during the feasibility study.

Environmental, Social, Gender and Land Issues

Increased air travel will lead to increased CO2 emissions that will need to be mitigated if member states are to meet their climate commitments. The full impact will be quantified during the feasibility study.

Proposed Financing Plan and Funding Options

Financing will be a mix of donor grants and member states' contributions. Member states will cost share the budgets on agreed formulae with the African Union guidelines.





Next Steps, Responsibilities and Implementation Plan

The next steps are to commission a feasibility study and draw up a detailed terms of reference for the project.

Djibouti Africa Regional Express (DARE) submarine cable (reference number: IFOD13)

Member states: Djibouti; Kenya; Somalia	Corridor: N/A	Sub-sector: Fibre Optic Cable	Status: S2B Feasibility
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Project Description

The Djibouti Africa Regional Express (DARE) submarine cable system is a 5,400km submarine cable system that will connect Djibouti (Djibouti) and Mombasa (Kenya), with branches to three major coastal cities in Somalia; Mogadishu, Berbera, and Bossaso respectively, to provide an alternative high-capacity and low-latency route to the Horn of Africa and East Africa. With the cable, DARE operators will realise the productivity and cost advantages of a short-haul cable route while still maintaining the capacity and reliability of a much larger long-haul system through the use of TE SubCom's scalable system design.

Before DARE, there existed no regional project that connected the IGAD Member States and with DARE connecting Djibouti, Somalia and Kenya, there is a possibility that it will be extended to Eritrea and other Non-IGAD countries such as Tanzania. The project will provide Somalia with additional three landing points as currently, Somalia has two landing points which are EASSY at Mogadishu and Gulf to Africa at Bossaso.

DARE will offer an alternative ICT route to East Africa and the Horn of Africa by easing congestion across existing systems, promoting competition and supplying the much-needed capacity to a rapidly expanding region. It will also provide redundancy to the existing Kenya Submarine cable TEAMS and contribute to the reduction of prices for the ICT services. Djibouti Telecom connectivity will provide Kenya with affordable, reliable and high capacity to the world. Djibouti Telecom has a plan to expand DARE capacity to landlocked countries within the region such as Ethiopia and Uganda. The reduction in prices will enhance the internet and broadband connectivity usage.

Feasibility studies and business plan for the project have been undertaken by Terabit and Axiom.

Costs

The total cost to design and build the submarine cable is \$100 million US dollars. The O&M costs are assumed to be 1% of the capital costs and with a design life of 20 years, the O&M life costs are estimated to be \$20 million

Benefits, Economic and Financial Impact

The project will enhance the regional connectivity within IGAD and provide connectivity to Kenya and Somalia to the international submarine cables in Djibouti. It will also contribute to the reduction of the cost of ICT services, Internet, e-applications and broadband connectivity. DARE will create jobs and contribute to poverty reduction as it will support ICT services which will translate to high quality of services.

Environmental, Social, Gender and Land Issues

Environmentally, DARE has no significant negative impacts as the submarine cable uses low power and will not require excavation of trenches to lay the cable as the cable will be laid on the seabed. Socially, DARE will enhance the social integration and solidarity by providing the communications means via internet services and social media.

Proposed Financing Plan and Funding Options

This is being financed by a consortium of private sector investors with no public funding input.

Next Steps, Responsibilities and Implementation Plan





Regulations and or legislation are required to allow the construction and operation of the landing point at Berbera in Somalia. Djibouti Telecom has human resources and financial capacity to carry out operation and maintenance, however, there is need for capacity building of the Djibouti Telkom to be able to effectively manage the DARE roll out.





Section 4.4 The IRIMP Implementation Strategy

Developing Efficient Institutional Arrangements

The physical infrastructure projects that comprise the IRIMP will be **implemented by member states, coordinated** at the corridor level **by a Corridor Management Institution (CMI)**, with the **IGAD Secretariat providing oversight**, advocacy and acting as a facilitator for discussions with donors, IFIs and multilateral institutions including other RECs, AU etc. and building consensus among member states. The proposed structure and roles are illustrated in Figure 4.4 below.

Water sector infrastructure will have a similar setup as detailed in the IGAD Water sector institutional setup with structure and roles being as illustrated in Figure 4.3

Role of IGAD Secretariat

As indicated above, the role of the IGAD Secretariat in implementing physical infrastructure projects will be one of advocacy, for example promoting the Action Plan at investor forums, commissioning feasibility studies to demonstrate bankability, ensuring projects appear in continental level plans such as PIDA etc., and consensus building to ensure that the goals and priorities of member states are aligned. In the immediate future, until CMIs are established for corridors (except Northern Corridor which has already established NCTTCA), the IGAD Secretariat will also play the coordination role.

IGAD has an important role to play in the harmonisation of policies and regulations to create a conducive enabling environment for investment in each of the four sectors, and removal of non-tariff barriers to trade. Given the high degree of overlap between IGAD and other RECs in relation to the corridors, it is recommended that, where possible, the IGAD Secretariat adopts successful policies, strategies and systems already operational in other RECs, and that regulations, customs procedures and systems are also harmonised with other RECs. This will accelerate IGADs integration into the Tripartite Agreement and wider Africa Continental Free Trade Area. A good example of this is the adoption of the COMESA Virtual Trade Facilitation System (CVTFS) for use on all IGAD corridors.

Similarly, for corridors that overlap with more than one REC, it may make sense for a REC other than IGAD to play the primary oversight role and for IGAD to take an observer status – this is particularly the case for corridors that traverse member states outside of IGAD (i.e. the Northern Corridor). However, even where IGAD is not the primary REC, the Secretariat may still play an advocacy role, in particular for specific projects implemented in IGAD member states (e.g. the Nimule-Juba road).

Role of Corridor Management Institutions (CMIs)

As discussed in Chapter 1 (Section 1.3), the development of successful economic development corridors (EDCs) has most often been driven by a CMI, which is mandated to coordinate investment along the corridor on behalf of national governments (examples include the Maputo Development Corridor and Walvis Bay Corridor). CMIs are established by a multilateral treaty signed by countries that comprise the corridor, which sets out the agreement for the roles and responsibilities of the CMI. The Northern Corridor Transit and Transport Agreement (NCTTA), for example, has defined 11 Protocols on strategic areas for regional cooperation relating to: *Maritime Port Facilities; Routes and Facilities; Customs Controls and Operations; Documentation and Procedures; Transport of Goods by Rail; Transport of Goods by Road; Inland Waterways Transport of Goods; Transport by Pipeline; Multimodal Transport of Goods; Handling of Dangerous Goods and Measures of Facilitation for Transit Agencies; Traders and Employees.*

Once established, CMIs will be responsible coordinating all investment, operation and maintenance decisions for physical infrastructure projects relating to the corridor, as well as economic infrastructure investments including logistics, SEZs, natural resources etc. and removal of barriers to





trade including road blocks, inefficient border controls, weighbridges etc. The CMI will adopt the recommendations of the IGAD Secretariat on harmonisation of policies and regulations to ensure harmonisation across all corridors in the region, and ultimately the Tripartite Agreement area.

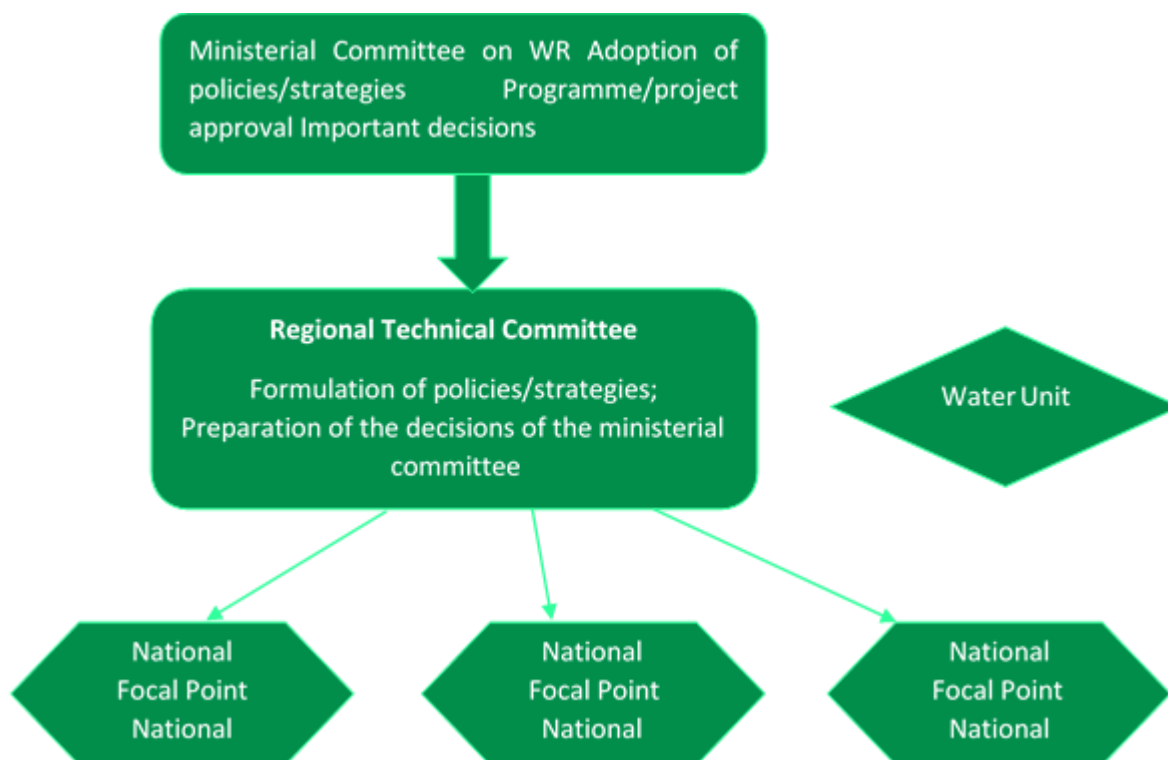
To ensure that the CMI represents the interests of all member states, and is not acting separately to nationally determined development objectives, the most senior organ will be the Council of Ministers, with each relevant ministry from every member state represented, which will be responsible for all decisions of the CMI. Below the Council of Ministers sits the Executive Committee comprised of Permanent Secretaries of the same ministries, and below the Executive Committee are working groups or committees responsible for making recommendations on CMI activities to the Executive Committee. The executing organ of the CMI will be a Permanent Secretariat of staff employed by the CMI and based permanently in a single location (often this is the port city of the corridor) who are responsible for implementing all decisions and activities determined by the Executive Committee and approved by the Council of Ministers. It is recommended that the Permanent Secretariat has a unit responsible for monitoring and evaluation of the CMIs activities, as well as collecting regular data on corridor performance, and a unit responsible for providing assistance and support to member states in implementing projects.

The CMI should be funded from three sources: charges levied on users of corridor infrastructure; contribution from member states; and possible contributions from donors. It is envisaged that, over time, resources from member states will become increasingly pooled and that the Project Support Unit will plan an increasingly active role in the implementation of physical infrastructure projects. In the short and medium-term, however, member states will be responsible for implementing projects, coordinated by the CMI. In a shorter timeframe, the CMI could take on the responsibility for maintenance of corridor infrastructure, assuming all user charges are pooled and made available to the CMI.

IGAD institutional set up for Water Sector

IGAD Water sector institutional setup constitutes the ministerial committee on water resources. This is supported by the regional technical committee that is supported by the water unit. It supports the member states national focal points for water resources.





Role of Ministerial Committee

Ministerial Committee will facilitate adoption of policies/strategies, programme/project approval and important decisions. This is geared towards providing policy directions for regional cooperation in the management of transboundary/shared water resources, and to the approximation/harmonisation of water-related policies, strategies, legislation, programmes and project. It further ensures review and provide guidance on regional water-sector policies and strategies, endorse regional water resources programmes, oversee and monitor the implementation of the IGAD Regional Water Resources Policy and Protocol and spearhead the mobilization of domestic and external resources for water-related programmes, projects and activities.

Role of Regional Technical Committee (RTC)

Regional Technical Committee will be in charge of the formulation of policies/strategies and preparation of the decisions of the ministerial committee, provide strategic guidance with regard to the implementation of regional water programmes, facilitate the implementation of national activities connected to the above in the respective countries and advise the Water Unit on:

- strengthening of WRM information systems and networks in IGAD region;
- regional priorities for water resources development and management;
- implementation of IGAD water programmes and projects, including their alignment with national, regional and global strategies and priorities;
- the introduction and implementation of capacity building and awareness creation programmes and strategies on water resources issues;

Role of Water Unit

Water Unit will support IGAD Member States in the development and implementation of regional water-related policies and legal frameworks; support IGAD Member States in the development and implementation of bi- or multinational projects and programmes concerning their



transboundary/shared Water Resources; upon the request of Member States, assist in the development of national policies and legal frameworks, and of national water resources projects and programmes; facilitate the generation and sharing of water resources data and information; promote capacity development; support and coordinate awareness raising campaigns; promote and facilitate research and technological development; organize a Water Dialogue Forum once every two years; Prepare meetings of the Ministerial Council and of the TAC and coordinate implementation of IGAD Regional WR Policy & Protocol

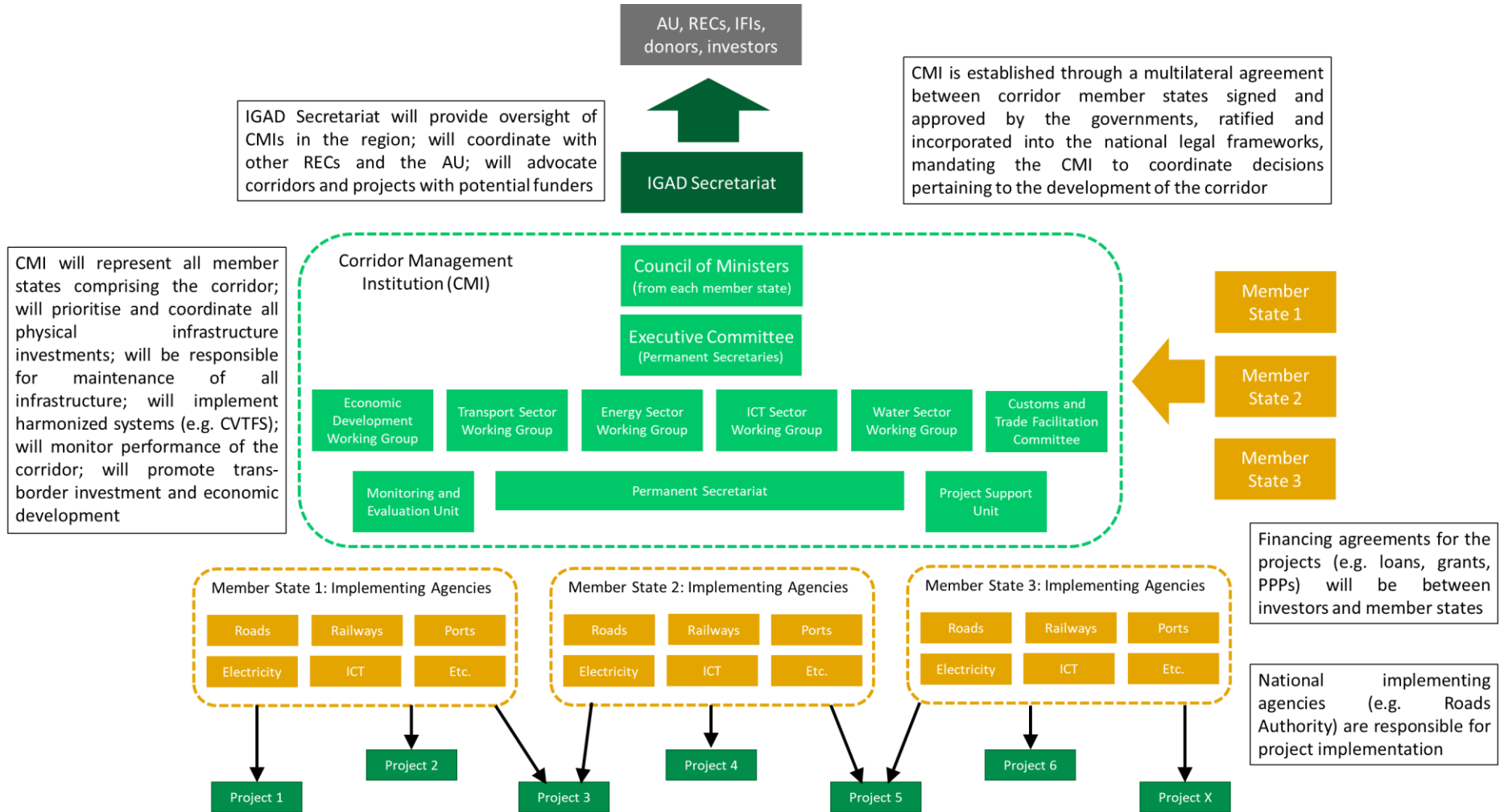
Role of Member States

While decisions regarding which projects to implement (prioritisation and sequencing, identification of new projects) should be the remit of the CMI, once established, the implementation of these projects will remain in the jurisdiction of the individual member states, who will also be responsible for concluding financing arrangements for the projects. Projects will be implemented by the national agencies, for example Roads Authorities, Ports Authorities, Electricity Transmission Companies etc., with the Project Support Unit of the CMI playing a coordination role, particularly for trans-border projects involving multiple member states.





Figure 4.3: Institutional arrangements and roles for Corridor Management Institution





Capacity Building Requirements

Capacity building of relevant agencies and improving the professional skills agency staff is critical to for the successful implementation of the IRIMP. Putting in place an integrated approach to capacity building for the priority sectors will entail the IGAD Secretariat offering the necessary leadership to member state agencies to identify the right staff to implement the projects, ensure seamless and timely flow of information between the implementing agencies, establish cost effective systems and process and defining the roles and responsibilities of the various institutional actors in the region. Successful implementation of the IRIMP will necessitate a range of qualified specialists such as engineers, economists, planners, contractors and management specialists. The line agencies must have the mentioned personnel available in right numbers and equipped with good work ethics.

The Economic Cooperation and Social Development unit of the Secretariat will support the member states line ministries and related agencies in identifying the functional and skill gaps required to implement the IRIMP including hosting technical and governance capacity building workshops to support the implementation of the plan.

Some of the key actions that the Secretariat can support which are required to capacity build the member state line agencies for successful implementation the plan include:

- Promoting integration and meaningful participation of key stakeholders in policy formulation, planning and monitoring
- Promote sustainability of key institutional actors for continuity through offering government support
- Improve and bolster communication channels for systematic and continuous flow of information to all stakeholders

Once CMI's are established, the Project Support Unit will take over the role of supporting member states in project delivery. IGAD will need to play a role in building the capacity of these units and ensuring that their staff have the necessary skills to fulfil their mandated functions.

Financing the IRIMP

The current situation, recent trends, drivers and barriers to financing physical infrastructure in the IGAD region is summarised in Chapter 1 (Section 1.5). Options for financing the individual Action Plan projects are provided in the project profiles in the previous section. More generally, the following recommendations are made for financing the IRIMP.

Leveraging the private sector

It is clear that in this region, Government resources, even substantially supplemented by development partners through grants and concessionary loans will not be sufficient to stimulate the required acceleration of infrastructure and it is becoming imperative to involve the private sector despite the fact that many constraints both on supply and effective demand exist. The onus is on government to create a business-friendly environment in which the private investor can operate with confidence, by limiting corruption and developing transparent regulatory frameworks. Government should furthermore establish dedicated units with the required expertise to identify and screen infrastructure projects that are in the public interest and fulfil the requirements of PPPs. Characteristics of projects and general circumstances that will attract private interest include:

- The project should be affordable, and only to be considered if it is within the budgetary constraints of government, both direct and contingent;





- Services provided should also be affordable to the users – false expectations may lead to financial difficulties for the project;
- The project should be commercially/financially viable. If risk/return is not acceptable to the private investor, government intervention and the use of blended finance or subsidies are required;
- The project should be ring-fenced to clearly separate it from other governmental activities;
- Sufficient data and information must be available or plans to make it available for private sector to make risk assessments of demands and costs. Government guarantees can be considered to support demand;
- In PPPs and other projects provision must be made for regular tariff increases to compensate for inflation;
- Clusters of projects reinforcing each other will be more attractive;
- Default handling and dispute resolution should be unambiguously defined;
- If debt is used the debt service coverage ratio (DSCR) must be in excess of 1.3;
- Return on equity (ROE) in domestic currency should be in the order of 10% above lending rates and in hard currency above 20-25%;
- Political Risk Insurance (PRI) should be available.

Box 4.1: Political Risk Insurance

PRI covers several, but not all, risks and can help to make projects more attractive to the private sector. Risks covered include:

- Breach of contract by governments
- Sabotage, civil war and disturbance
- Expropriation, outright nationalisation or creeping nationalisation
- Lack of currency convertibility

It does not cover, however, the following risks:

- Inadequate tariffs and limited profitability;
- Lack of reliable data;
- Absence of domestic funding;
- Foreign exchange risk;
- Regulatory and legislative risk;
- Macro-economic instability;
- Lack of capacity;
- Lack of reputable partners;
- Demand not materializing; and
- Time delay before settlement in case of arbitration

Unfortunately, due to the fragile and complex nature of the IGAD region, non-familiarity and lack of demand in domestic markets, there are few (if any) private providers of PRI for infrastructure projects. Fortunately, there are several public sector providers of PRI, some even covering credit risk, including: MIGA (part of the World Bank Group), AfDB, African Trade Insurance, GuarantCo, export credit agencies, and the InterArab Investment Guarantee Corporation, to name a few.

Private sector investors include:





Private companies operating in the infrastructure sub-sectors act as the main project sponsor taking equity in the project in order to operate the infrastructure and receive a revenue from user fees.

Commercial banks invest in infrastructure projects, mainly by way of senior debt and guarantee products.

Pension funds and other institutional investors such as mutual funds are potentially large sources of funding which are mostly untapped. As a result of strong fiduciary requirements, institutional investors are limited to risk exposure. Pension funds can for instance take a long-term view and as such have a natural interest in long-term instruments – which can make infrastructure investment attractive (also water sector). Measures such as institutional arrangements conducive to investment, as well as guarantee products will have a significant impact on these investors' appetite to participate.

Development Finance Institutions, which can be bilateral, regional or multilateral institutions, generally with a mandate to provide finance to the private sector for developmental investments. They provide risk mitigation products and loans with longer maturity, as well as other financial products. Examples include the IFC, AfDB, KfW, CDC, EBRD and EIB.

Investment Funds, are collective investment schemes for investing in infrastructure equities that can play an important role in providing mezzanine financing to the project, therefor taking more risk than traditional lenders, but less than the sponsors. Examples include: Global Infrastructure Facility; IFC InfraVentures; InfraCo - InfraCo Sub Sahara Infrastructure Fund; Africa50; African Infrastructure Investment Fund; Emerging Africa Infrastructure Fund (EAIF); AP Moller Africa Infrastructure Fund; and Pan African Infrastructure Development Fund (PAIDF).

Sovereign Wealth Funds are state-owned investment funds that manage more than \$6 trillion of assets globally. The cost and duration of many infrastructure projects provide a good match for SWFs' large amounts of capital, long-term investment horizons, and comparatively low need for liquidity. Some SWFs also have a stated development agenda. As such, the last decade has seen increased investment in infrastructure projects in emerging markets. SWFs include: Norway's Government Pension Fund Global; Abu Dhabi Investment Authority; China Investment Corporation Kuwait Investment Authority; SAMA Foreign Holdings (Saudi Arabia); and Qatar Investment Authority.

There are several innovative options for involving the private sector in infrastructure financing, summarised below:

Lending to government: Apart from own resources and internally generated revenue this is globally the main source of funding and can be from international sources or domestic resources. International resources are less attractive due to forex risks and in few countries are hedging affordable or even available. Lending can be made more attractive by:

- **Using credit enhancements and credit guarantees** from entities like PIDG, DCA, SIDA, AfDB etc. This can be partial, full, first loss, programme based or parri passu etc.;
- **Blending loans** from private financial institutions with Government resources, concessionary loans and grants from development partners to address the affordability i.e. a \$100m project may only have to service a loan of \$40m like in the water sector in Kenya. This substantially reduces the risk of default and in the case of Kenya 50% of the balance is still underwritten by DCA.
- **Linking in to export credit and Bilateral Investment Treaties (BIT's).**
- **Utilizing tax concessions provided by government:** Although this may make investments more attractive, it has the impact of removing allocation prioritisation from government.



- **Using interest rate subsidies provided by government:** Interest rate subsidies even if it is for the initial period only are viewed with some suspicion by the private sector as in a long-term project government may run into austerity issues.

Box 4.2: Blended Finance

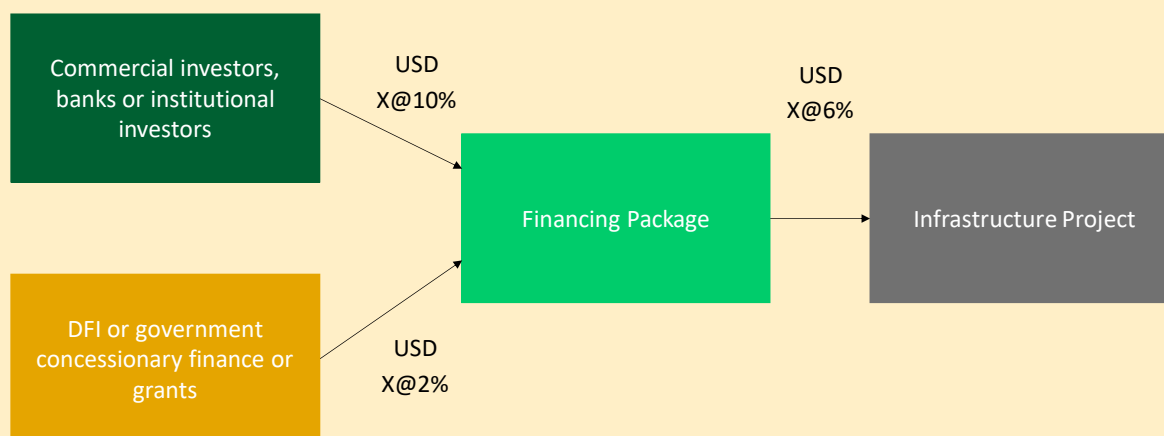
Blended finance can be defined as the “strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries”. A blended finance transaction is one that combines public and private capital in order to deliver along three pillars:

1. **Impact:** Investments in sectors that have a transformative social and economic impact in emerging and frontier markets;
2. **Leverage:** Private capital funding in an investment that scales the impact of the public funds in the transaction;
3. **Returns:** Risk-adjusted returns in line with market expectations.

Source: Redesigning Development Finance Initiative: A joint venture of The World Economic Forum and OECD

SSA is the most targeted region for transactions involving blended finance, with East Africa the most popular sub-region. Blended finance is growing in popularity with \$131 billion in capital being mobilized to date towards development in developing countries. Providers of development finance include: donor governments; development co-operation agencies; philanthropies and other concerned stakeholders. Including development funding in the equation increases affordability, diminishes risk, add the appraisal capacity of DFIs and tightens anti-corruption measures.

The figure below illustrates a blended finance structure. Which can be co-financing or parallel financing:



Taking equity in parastatals: The preconditions for taking equity in parastatals or other government agencies will be that the risk reward balance should be attractive. Governments can improve the risk reward equation by ensuring adequate tariffs if it is regulated, providing tax concessions, ensuring credit enhancements, etc. However, this is not seen as a substantial source of finance for infrastructure acceleration.

Undertaking PPPs: PPPs can be used to involve the private sector and there is full continuum of options ranging from short term delegated management to full concessions and DBFOM. However, credit consideration will still play a role and the private sector must have surety of collections or repayment whatever system of reimbursements is adopted. The private sector also needs to raise its



own finance (whether equity or debt). In order to facilitate PPPs for infrastructural development, government needs to comply with a number of criteria in order to create a conducive and business friendly environment, one of the important aspects of such an environment is the establishment of a well-defined PPP framework. As described by the PPP Reference Guide, V 2.0 (World Bank, 2014) *“establishing a clear PPP framework publicly communicates the government’s commitment to PPPs”* It furthermore defines how projects will be implemented, helping to ensure good governance of the PPP tool, that is, *“promoting efficiency, accountability, transparency, decency and fairness, helping to generate private sector interest and public acceptance on PPPs”*.²⁸

Project finance: Project finance, also known as “limited recourse” or “non-recourse” financing, is a mechanism where the investor will use debt to leverage the investment. It is a financing technique where project lenders can only be paid from the specially created SPV with no recourse to the sponsors equity holders in case of default. The project company’s obligations are therefore ring-fenced from those of the sponsors equity investors and debt is secured on the projected cash flows of the project. Financing will consist of a combination of equity and debt, where the equity is provided by the shareholders of the project company and the debt by lenders such as commercial banks. As the financing model is based on the reliability of future cash flows, lenders require a substantial equity investment in addition to normal debt facility requirements. A typical debt/equity ratio would be between 60:40 and 80:20 with exceptions having a more or less aggressive structure, depending on the project. Debt is normally less expensive than equity in terms of interest payments, therefore the more aggressive the leverage the lower the WACC. Often to limit the equity component use is made of mezzanine, junior and subordinated debt. Because of the significant risk involved the lenders will carry out an extensive due diligence on the potential viability of the project – also known as the “bankability” of the project.²⁹

Using corporate or on-balance sheet finance: One option for the private investor is to fund the project through corporate financing – which would involve using own resources and shareholders’ funds, or getting finance for the project based on the balance sheet of the private operator rather than the project itself. This mechanism is normally used when the size of the project does not warrant a project financing procedure. The benefits of corporate finance are that it is normally less expensive than project financing and it is also less complicated. The downside is that the investor ties down more funds than is the case when utilizing gearing of equity as in the case of project financing. Corporate finance used to be the main mechanism in private infrastructure finance but with increasing budgetary constraints, project finance has become an increasingly popular technique in mobilizing private capital. This is especially the case in projects with high capital requirements and low re-deployable value.

Making maximum use of export credit facilities: Export Credit Agencies are quasi-governmental institutions active in many developing countries that act as intermediaries between governments and exporters to provide export financing. This can be in the form of direct lending, financial intermediary loans and/or interest rate equalisation. Increasingly involved in infrastructure investment. In the case of large infrastructure projects suppliers are often prepared to provide long term subsidised loans to promote the products manufactured in their country.

Infrastructure bonds: Bond financing allows the borrower to access debt directly from individuals and institutions, rather than using commercial lenders as intermediaries. The issuer sells bonds to investors while a trustee acts on behalf of the investors (to prevent one investor from independently

²⁸ PPP Reference Guide, V 2.0 (World Bank, 2014)

²⁹ World Bank Group – Legal Resource Centre





declaring default) and rating agencies assign a credit rating to the bonds that acts as an indicator of price.

Lease contracts for shorter term projects: Although not very suitable for large infrastructure projects leasing may be considered where investments in projects require substantial investment in movable equipment like the rolling stock and locomotives on a rail project.

Transfer of operation of existing infrastructure assets: In order to transfer risk, the burden of maintenance costs and increase operational efficiency, the operation of existing infrastructure assets can be transferred to the private sector through concessions. Examples include conversion of existing roads on major corridors to toll roads and transferring the operation of port berths to private operators. This will increasingly become an option as demand grows and traffic increases to commercially viable levels.

Concessional finance and grants

Although it is an essential component of the IRIMP financing strategy to involve the private sector, where possible, in financing infrastructure projects, it will still be essential to make use of concessional finance and grants from donors. Concessional loans are those offered at a preferential rate of interest and/or repayment terms including grace periods, while grants do not need to be repaid. Usually, grants are made to fund part of a project, thereby reducing the total amount that needs to be borrowed, but in rare cases an entire project can be funded through a grant. As noted above, it is recommended that, wherever possible, concessional loans and / or grants are used in combination with the private sector through a blended finance model (Box 4.2). Concessional finance should only be used as the single source for projects that are unable to attract private sector investment; those that have a high economic impact but are not commercially viable.

The table below indicates the main sources of concessional finance available for IRIMP projects, as well as an approximate estimate of the potential amount available for financing projects in the region. Note this amount is for funding of all infrastructure projects, not only trans-border projects.

Table 4.2: Sources of concessional finance

Source	Available (\$m)	Transport	Energy	ICT	Water	Notes
World Bank	8,000	X	X	X	X	Through the IDA and IBRD. Ethiopia \$3,122m (No. 1); Kenya \$1,280m (No. 5); and Uganda \$640m (No. 10). Also funds project preparation.
AfDB	2,500	X	X	X	X	Has funded many recent and ongoing projects in the region across all sectors. Also funds project preparation.
China Exim Bank	15,000	X	X			Was the largest external financier of infrastructure projects in 2017 (\$19.4billion) and has financed several prominent infrastructure projects in the region recently, notably the SGRs in Kenya and Ethiopia
India Exim Bank	750		X			Stepping up its lending operations in the region, in particular with a demand for power generation and transmission projects





JICA	3,000	X				Has a particular interest in transport projects – ports and corridors. Currently financing Mombasa port
Arab Coordination Group	500	X	X			Provides support to countries with sizeable Muslim population. Members include: Abu Dhabi Fund for Development; Arab Bank for Economic Development in Africa; Arab Fund for Economic and Social Development; Arab Gulf Program for Development, Arab Monetary Fund; Kuwait Fund for Arab Economic Development; Qatar Development Fund; Saudi Fund for Development; OPEC Fund for International Development; Islamic Development Bank Group
EU-Africa Infrastructure Trust Fund	300	X	X	X	X	Supports project preparation as well as providing grants to finance components of larger projects in all sectors
Other bilateral OECD donors	1,500	X	X	X	X	Including USA, UK, Germany, South Korea etc. usually providing grants to fund smaller projects

Source: Authors' estimates based on data from the Infrastructure Consortium for Africa³⁰

Which source of finance and instrument to use and when?

Given the limited availability of grant and concessional finance, and the already high sovereign debt levels of IGAD member states, private sector sources should be used to finance infrastructure wherever possible. All feasibility studies should explore options for making a project commercially viable. Where ROIs do not justify a purely commercial model, concessional finance and grants should be used in a blended finance model to reduce risk to an acceptable level so that the project can be part-funded by private investors, rather than fully-funding the project through grant/concessional sources. Having said this, it is recognised that the fragile and developing context of the region presents a barrier to private sector involvement in many projects that would otherwise have a high economic impact. For these projects, donor funding will be the preferred (and only) option.

Regardless of the financing source, robust analysis is required to demonstrate impact (economic and/or financial) and sustained consensus is necessary to build investor confidence.

Table 4.3: Financing strategy for physical infrastructure projects

Economic Feasibility	Commercial Feasibility	Context	Financing Strategy
Positive	Positive	No barriers and privately-owned infrastructure asset e.g. fibre optic cable, oil pipeline	Private sector
Positive	Positive	Possible barriers that require government intervention and /or public asset e.g. road, port	PPP
Positive	Moderate / insufficient	The project could be made financially viable for the private sector, but there are barriers such as high risk, high cost of capital etc.	Blended finance
Positive	Negative	The project is not suitable for the private sector, but will have a positive economic impact	Concessional finance

³⁰ ICA (2018) Infrastructure Financing Trends in Africa 2017





Positive	Negative	Project will have a positive economic impact, but member state is fragile and unable to borrow	Government budget and Grants
Strategic	Negative ROI	The immediate economic impact is difficult to demonstrate, but the project is part of a member state's long-term strategy	Government budget

Source: Authors' recommendations

Monitoring the Implementation of the IRIMP

Reviewing the IRIMP

IRIMP should be independently reviewed every 5 years, including formulation of a new Action Plan, at least initially. It is common for infrastructure master plans to be reviewed at 10-year intervals (i.e. PIDA), however, given the pace of change in technology – particularly in the ICT and energy sectors – the ever-shifting priorities of member states and the nascent status of several of the priority corridors, it is recommended that IGAD focus on implementing the projects in the short-term Action Plan, as well as establishing functional CMI for all corridors, in the first 5 years before updating the IRIMP. The 5-year update will include reviewing the status of all projects and the progress made in implementing those in the short-term basket and identifying any blockages.

A new Second Action Plan will be formulated, based on prioritisation of the medium-term projects, plus any short-term projects that were not implemented, plus newly identified projects. It is envisaged that by 2024 the CMIs will be established and should play a role in formulating the Second Action Plan, potentially producing individual Action Plans for each corridor (e.g. with five priority projects).

The review will also reassess the status of the corridors to decide at what stage to develop additional corridors to the six prioritised in this plan (at the moment it is recommended to consider this post-2030). Progress against the strategic objectives outlined in Chapter 2 will be assessed and the medium and long-term objectives will be reviewed based on technological developments and shifting member state, regional and continental objectives in the intervening period.

Monitoring implementation of physical infrastructure projects: Ensuring quality delivery and safeguards are fully achieved

In addition to the 5-yearly independent review of the IRIMP, progress should be *continuously* be monitored internally. For the implementation of physical infrastructure projects, data on progress will be collected by the Monitoring and Evaluation Unit of the CMI. Each project in the short-term basket will have a Work Plan with activities, timings and responsibilities, against which progress will be recorded and reported in a dashboard accessible to all stakeholders, including the IGAD Secretariat, other RECs involved in the corridor, the CMI, and ministry staff of member states (e.g. those in working groups). Project Support Units are responsible for coordinating project implementation and managing project activities.

Until CMIs are established and operational, the above roles will be undertaken by the IGAD Secretariat, after which it moves to an oversight role.

Beyond narrow project progress reporting – plan vs actual, budget vs actual, variation tolerances – a critical requirement is to ensure project safeguards are fully complied with. The IRIMP Regional Consultative Dialogue / Forum held in Entebbe, Uganda with a wide range of CSOs, NGOs and other non-state actors strongly emphasised the importance of ensuring the Master Plan and Action plan promote and delivers high quality growth: ensuring climate change and environmental risks are managed, GESI is mainstreamed throughout the project cycle, investments aim to bring youth into the development process and the conflict risks are understood and managed.





These developmental objectives are core to the IRIMP and to improve implementation effectiveness the IRIMP includes basic checklists of climate change, GESI/Youth and Conflict and Fragility issues / risk to be factored into project assessments and monitoring, and avoidance, mitigation and management responses. The checklists are a tool to be used to monitor implementation of physical infrastructure projects alongside the conventional tracking project management information systems. Critically, it is recommended there is third party monitoring, using CSOs / NGOs and/ or PSOs, of safeguard implementation and compliance.

Monitoring achievement of strategic objectives

Monitoring of the strategic objectives of the IRIMP (Chapter 2) is the responsibility of the IGAD Secretariat. As mentioned previously, where possible strategies, policies and regulations for each sector should be harmonised not only across all IGAD member states, but also with the other RECs of the Tripartite Agreement (COMESA, EAC, SADC). The IGAD Secretariat therefore needs to ensure not just that the strategic objectives for each sector are achieved, but that these objectives remain aligned with Tripartite RECs, and ultimately with those of the AU.

