

APRIL 17, 2024

REGIONAL ENERGY UPDATE



HORN OF AFRICA INITIATIVE
20th Ministerial Meeting

In Partnership with



WORLD BANK GROUP



Foreign, Commonwealth & Development Office



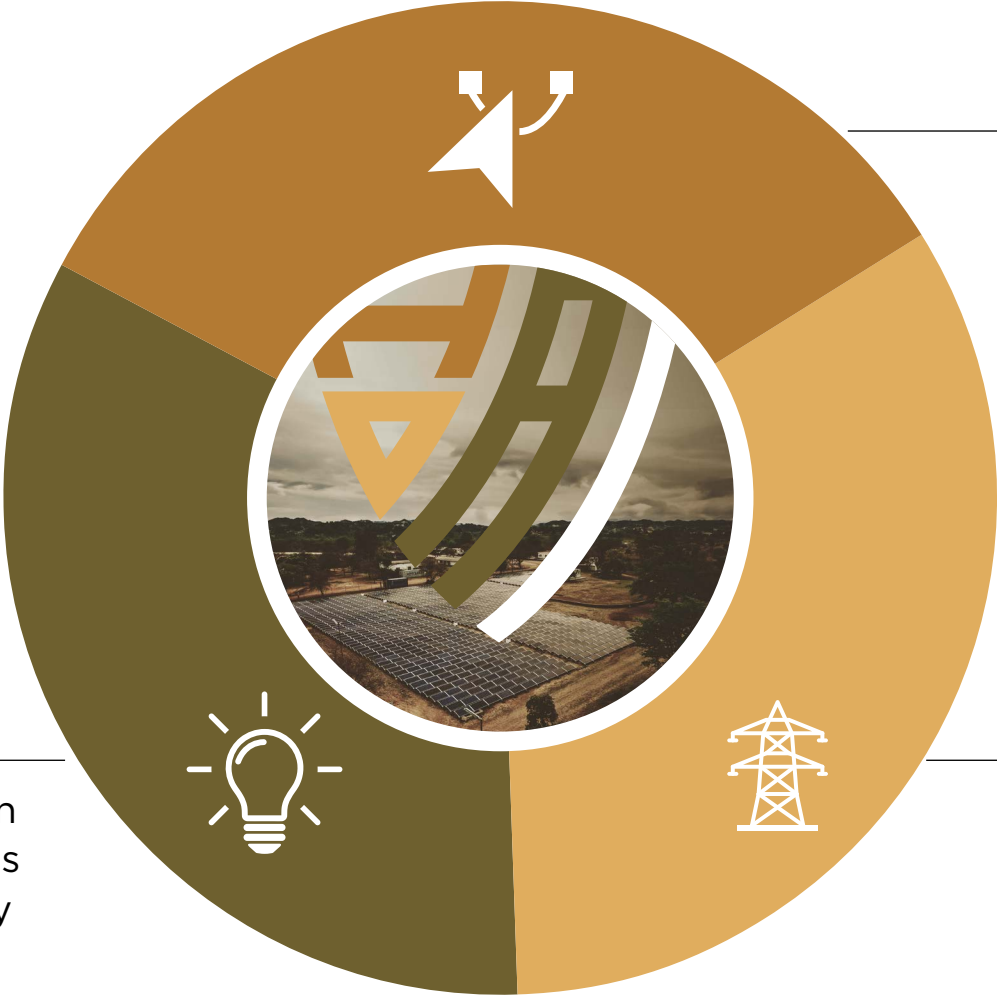
Federal Ministry for Economic Cooperation and Development
BMZ

THREE KEY FACTORS

for Reliable and Affordable Energy for All in Africa



THE FOCUS IS ON THREE COMPLIMENTARY PILLARS



THE SECTOR REFORM

Reforms aimed at improving financial sustainability and operational performance are necessary for increased access and power trade.

PROMOTE REGIONAL POWER TRADE

Regional interconnections will enable greater integration of renewable energy and help achieve RE targets.

ACCESS & ENERGY TRANSITION

Access and energy transition requires stable institutions as well as policy and regulatory reforms.

STRATEGIC POSITIONING OF THE HORN OF AFRICA – POWER SECTOR

**246M
PEOPLE**

Population of about 246 million people, approx. 70% live in rural areas with varying levels of poverty and conflict.



**50%
IN HOA**

Access to electricity is about 50% with the highest being in Kenya (75%). Access is less than 20% in the borderlands.

HoA is geographically positioned to connect the Eastern Africa region with Middle East, Southern Africa and Central Africa, potentially opening a vast market for power trade.

Financially unviable utilities facing high cost of power supply and tariffs that do not fully recover costs, resulting in difficulty to attract Private sector investments. Most of the utilities are still loss-making e.g EEP made losses of Birr 30.1billion (2022) and KPLC Ksh 3.2 billion (2023). From World Bank data most of the utilities have current ratios of below 1 affecting their liquidity.

Increased regional integration of the HoA power sector can therefore provide win-win opportunities:

- Lower cost of energy
- Optimally harness the region's low cost renewable energy resources
- Increase access and resilience of national power system
- Enable leap frogging of access to electricity lagging regions, in particular borderlands
- Fiber connectivity

HoA has diverse and vast pool of low-cost renewable energy resources.

HYDROPOWER

(Ethiopia, Sudan, S. Sudan)

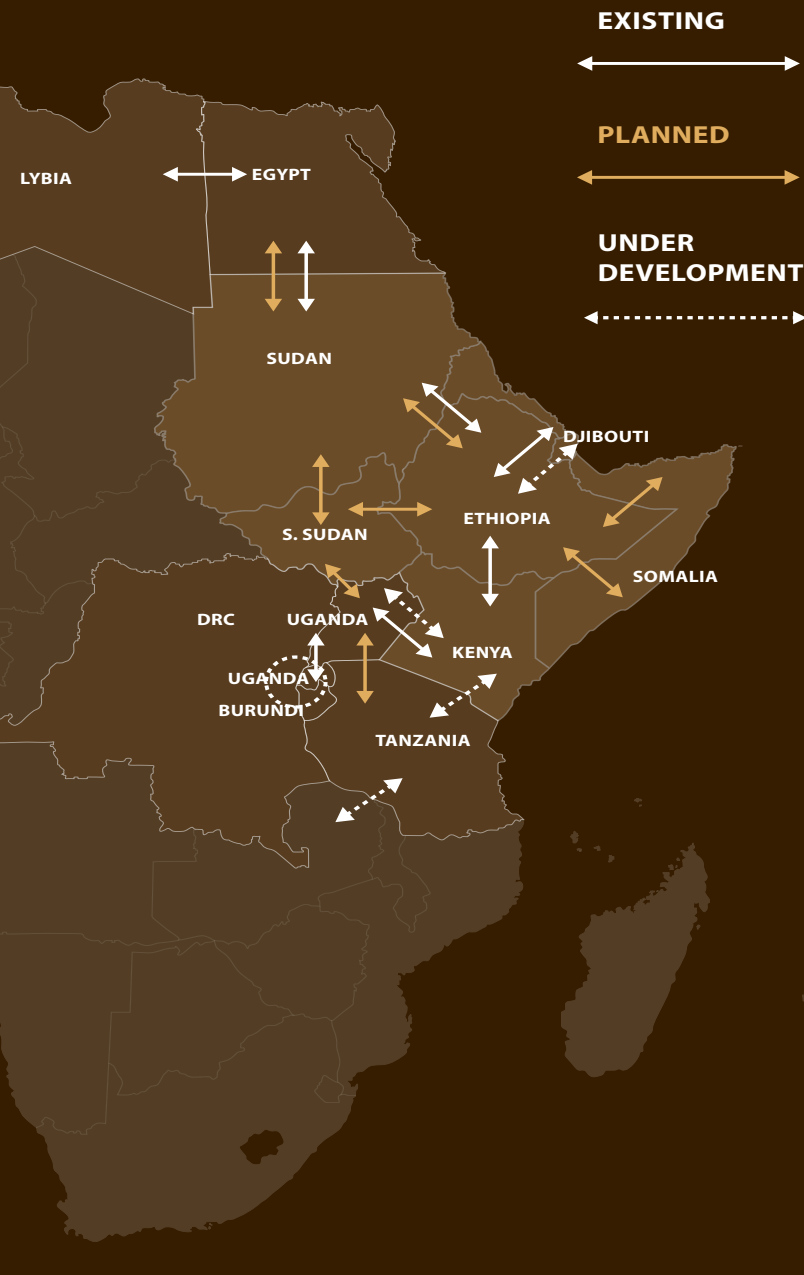
GEOTHERMAL

(Kenya, Djibouti, Ethiopia)

WIND & SOLAR

(All countries)

CROSS-BORDER TRANSMISSION INTERCONNECTIONS



REGIONAL POWER TRADE IN EAPP

- Cross-border transmission interconnections in EAPP are growing. Soon, all EAPP members will be interconnected, except Somalia
- With the completion of key transmission interconnectors, bilateral trade in EAPP is growing - currently over 3500GWh annually (approximately 1.3 percent of total consumption in the region)
- Regional power market integration through trade can bring enormous benefits to the region, by maximizing use of cheaper energy resources and integrating renewable generation - WB study of 2020 estimates this benefit as approximately USD 8 billion over the next ten years
- To maximize use of the investments in hard infrastructure, the right soft infrastructure (operational, commercial and regulatory frameworks) must be established
- Supported by the DPs (WB, AfDB, SIDA, Norway, etc), the EAPP is in the process of launching the regional day ahead market (regional DAM) which is targeted for 2025.
- The SAPP short-term competitive market revenue in January 2024 was USD 7.5 million. This figure would be much higher without supply constraints.

- Ethiopia-Kenya was commissioned in 2022. Kenya is estimated to have saved approximately \$10 million of supply costs in the first year of operation. This amount is expected to triple with the attainment of full commercial operation.
- Ethiopia-Djibouti power interconnection line 1st line in service & Ethiopia-Djibouti 2nd interconnector is under implementation (financed by AfDB & WB) with estimated completion 2026. The project is expected to benefit Djibouti with avoided energy costs of \$294m
- Ethiopia-Somalia interconnector is under preparation - expected to be presented to the WB board for approval next year.
- Kenya-Tanzania 400kV interconnector is undergoing commissioning, with negotiations of commercial agreements between Ethiopia - Kenya - Tanzania at an advanced stage.

REGIONAL POWER TRADE MARKET TIMELINES

2021

2022

2024

2030

Limited trade, using bespoke bilateral contracts

No short-term market

Increased bilateral trade and 3-4 first-mover countries in DAM will help build trust in trade and double trade volume in the next 5 years



CAPACITY BUILDING AND STAKEHOLDER COORDINATION

- ✓ Market Committee was established
- ✓ Shadow market simulations completed with AfDB TA
- ✓ Traders in utilities nominated
- ✓ First roadshow in Addis

- ✓ Capacity building for TC, traders, and regulators
- ✓ Increased stakeholder coordination



BILATERAL MARKETS

- ✓ Draft standardized bilateral contract prepared

- ✓ Training on bilateral contracts



CENTRALIZED MARKET

- ✓ Regional market design was developed
- ✓ Procurement begun for market rules for centralized market

- ✓ Develop centralized market rules
- ✓ Prepare regional transmission arrangements
- ✓ Procure trading platform
- ✓ Prepare for DAM launch in 2025

Liquid market

Wide range of products traded (duration, shape, physical and financial, ancillary services)

Covering all EAPP

New market participants (IPPs etc.)



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ENGAGEMENT AND PORTFOLIO IN HOA

ACCESS TO ELECTRICITY AND ENERGY TRANSITION



Access to electricity in HoA is low at about 50% and less than 20% in the borderlands

Meeting universal access target by 2030 needs a large scale-up in private and public sector investments in:

- Grid expansion and strengthening to increase access as well evacuate RE plants
- Last mile electricity connections, with improved geospatial planning and facilitated productive uses
- Distributed RE for off-grid for remote areas using solar PV and BESS

Regional integration for lowering supply costs and enabling greater penetration of renewable energy through sharing of resources and enhancing grid resilience

Increased focus on modernizing distribution grid operations to integrate distributed resources such as e-mobility and charging infrastructure, especially in urban areas

Country	Current Electricity access rate	Total RE In the Energy mix
KENYA	75%	90%
SOMALIA	36%	2%
ETHIOPIA	51%	98%
S. SUDAN	5.4%	0%
DJIBOUTI	55%	70%*

REFORMS AIMED AT STRENGTHENING ELECTRICITY SECTORS



Enhancing PPPs



Reducing system Losses



Institutional Strengthening



Access to Energy

REFORMS

Strengthening of governance, financial and operational performance of utilities and Retail Tariff reviews through DPOs

INSTITUTIONAL STRENGTHENING

Supporting the establishment of new institutions, development of Licensing and retail tariff regulations and Capacity building for power utility management and operations.

INVESTMENTS

Facilitation to leverage private sector capital and enhanced least cost planning processes and Sector Investment Plans

RISK MITIGATION

Support through Renewable Energy Guarantees Program

Competitive IPP procurement and Guarantees for Energy Generation

Investments in governance, financial and operational performance of utilities

Investments in utility strengthening, retail tariffs and establishment of new institutions

Grid Expansion, DRE/Off-Grid solutions

ONGOING Country-Specific Programs in HoA countries

INTERCONNECTORS AND NETWORK STRENGTHENING TO FACILITATE REGIONAL POWER TRADE






Key cross border infrastructure has come online, and bilateral cross border trade is happening between some of the countries.

Several ongoing and pipeline projects will expand the interconnected regional network ensuring all the countries are interconnected

Strengthening of national grids that otherwise can constrain regional power flows is also ongoing.

Private sector participation in transmission can enable scale-up in needed infrastructure investments.

The institutional strengthening and capacity building of EAPP GS and IRB as well as development of the operational and commercial frameworks, including interim transmission charges methodology needed for trade is ongoing.

Country	Current Electricity tariffs	Currently interconnected
 KENYA	US\$ 0.15	YES - UGANDA AND ETHIOPIA
 SOMALIA	US\$ 0.61 - US\$ 1 PER KWH	NO
 ETHIOPIA	US\$ 0.03	YES WITH DJIBOUTI, SUDAN AND KENYA
 S. SUDAN	US\$ 0.42/KWH	NO. (AfDB funded interconnector with Uganda to be approved by Sept.)
 DJIBOUTI	US\$ 0.06 - 0.07/KWH	YES, WITH ETHIOPIA



KEY MESSAGES – AT REGIONAL LEVEL



The regional power sector landscape in HoA is evolving and becoming increasingly integrated, and yet the potential is even greater.



Countries must make concerted efforts to ease national barriers to trade (infrastructure and regulatory) and strengthen utilities to become credible off-takers.



Both hard infrastructure and enabling “soft infrastructure” are essential.



Greater regional power trade would bring large benefits in the form of increased availability of lower cost power supply, and increased energy security.



Regional integration requires open dialogue, mutual trust, and collaboration.

KEY MESSAGES – AT THE COUNTRY LEVEL

ETHIOPIA



Continue the reform dialogue that has been initiated and ensure timely action on recommendations to be proposed to address challenges of the sector such as low access rate, financial sustainability issues of utilities, regulatory gaps and structural complexity.

SOMALIA



Operationalize the Electricity Act and regulations by fast tracking issuance of the initial licenses and tariff regulations.

Adopt the proposed Electricity Supply Industry structure which has been pending since December 2022.

KENYA



Rapid implementation of competitive procurement for solar and wind generation capacity through an auctions process.

DJIBOUTI



Continue regulatory reform dialogue needed to (i) allow more competitive private sector investments to reach the 100% RE target in the country by 2030 and (ii) define a cost of service and tariff structure that will support the government of Djibouti to analyze and determine the optimal electricity tariff to end-users and economic sectors while maintaining EDD's financial viability.

S. SUDAN



Continue development of local RE capacity both in Juba and other state capitals and large cities (mini-grids).

Development of interconnections with Ethiopia and Uganda will provide an opportunity for affordable electricity supply.



ANNEXES



UPDATE ON ACTION PLANS



	ACTION	KEY ACTORS	TIMELINE
1	Establish and maintain a platform for a sustained high-level dialogue on regional power trade that will inform the EAPP CoM and HoA Ministerial meetings.	All HoA countries	Ongoing
2	Strengthen EAPP organs by actively participating and contributing to technical committees for operations, markets, and planning .	All HoA countries	Ongoing
3	Nominate trading staff, establish and equip trading units to prepare for participation in the EAPP Day Ahead Market (DAM).	All HoA countries	Trading staff nominated and trained

- A regional trade workshop is being planned to take place in Kenya in September 2024 (to be confirmed).
- The equipping of trading units is still pending in most of the utilities.



UPDATE ON ACTION PLANS



	ACTION	KEY ACTORS	TIMELINE
4	Prepare country action plans to identify investments in grid strengthening to comply with EAPP regional Interconnection Code enabling reliable power trade	All HoA countries	Ongoing
5	Put in place operational procedures for Ethiopia-Kenya HVDC interconnector.	Ethiopia, Kenya	Completed
6	Establish and operationalize control areas for the EAPP power market	All HoA countries	Ongoing
7	Complete negotiations of commercial agreements for Ethiopia-Kenya	Ethiopia, Kenya	Completed
8	Support finalization and adoption of the standardized bilateral short-term power purchase agreement	All HoA countries	Completed

- Ongoing consultancy support for operational readiness will develop detailed investment plan for member utilities to comply with the EAPP Interconnection Code (IC), which is the regional grid code, and provide technical support to EAPP member countries in establishment and implementation of Control Areas.
- Ethiopia - Kenya PPA is for 25 years starting. Ethiopia will initially export 200MW increasing to 400MW after the installation of grid stability equipment (STATCOMs)

UPDATE ON ACTION PLANS



	ACTION	KEY ACTORS	TIMELINE
9	Improve and maintain financial sustainability of utilities to ensure credible off-takers and payment discipline in the regional power market.	All HoA countries	Ongoing
10	Agree on fair and efficient transmission pricing methodology for the regional power market.	All HoA countries	Ongoing
11	Share timely data with EAPP for monitoring, planning and operations of the regional system	All HoA countries	Ongoing
12	Incorporate regional trade opportunities in national master plans, using a regionally consistent approach	All HoA countries	Ongoing

- WB country programs in HoA have ongoing support for utility operational strengthening, improved cost-recovery and financial viability
- A simple interim regional transmission charges methodology will be implemented for the initial operations of the DAM
- Capacity building on integrated resource planning for EAPP planning committee and utility planners is being supported by the WB.
- Timely data sharing for regional technical studies continues to be a major hindrance



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OVERVIEW OF DEVELOPMENT PARTNER ENGAGEMENT IN HOA

OVERVIEW OF THE WORLD BANK SUPPORT FOR EAPP

US\$16M

US\$16 million IDA grant provided to EAPP General Secretariat to coordinate the design and implementation of the regional day ahead market, formation of the regional regulator (IRB), and support preparation of priority regional projects (Ethiopia-Somalia, and Uganda-Tanzania Interconnector projects). Technical assistance, advisory and capacity building is also being provided through bank-executed trust funds **(\$6MILLION+ SINCE 2017)**

US\$3.19B

Support for regional interconnections projects

\$2.4 BILLION under implementation roughly **\$790 MILLION** under preparation

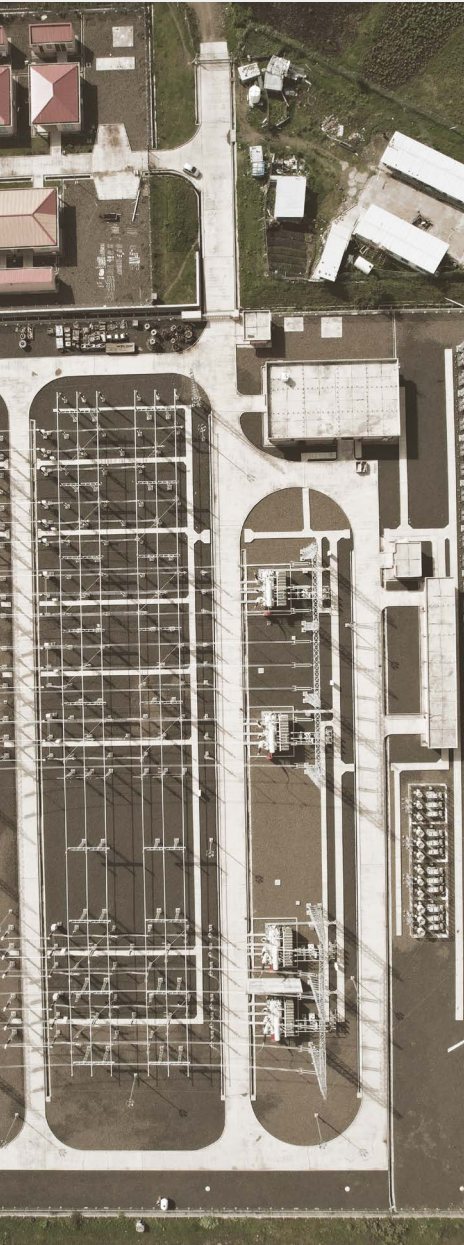


- Tanzania-Zambia - **USD 605M**
- Ethiopia-Kenya - **USD 1,262.5M** (Co-financed with AfDB and AFD)
- Djibouti-Ethiopia - **USD 66.94M** (Co-financed with AfDB)
- Rusumo Falls HPP - **USD 468.9M** (Co-financed with AfDB and EU)
- Ethiopia-Somalia (pipeline) - approximately **USD 230M**
- Uganda-Tanzania (pipeline) - approximately **USD 560M**

The World Bank is expecting to continue to scale up its support for regional integration, including through new modalities such as the multi-phase approach



OVERVIEW OF AFDB ACCOMPLISHED ACTIVITIES IN HOA



POWER INFRASTRUCTURE

- 283 km, 230 kV Ethiopia – Djibouti power interconnection in operation since 2011; **USD 101.54 million from AfDB and the Govt of Djibouti and Ethiopia**
- 1067 km, 500 kV HVDC Ethiopia – Kenya Electricity Highway in operation since 2022; **USD 1,262 million from WB, AfDB, AFD, Govt of Ethiopia and Kenya**
- 507 km, 400 kV Kenya – Tanzania power interconnection completed Q1 2024 as part of the Continental Africa Eastern Power Corridor; **USD 310 million from AfDB, JICA and Govt of Kenya and Tanzania**
- 310 MW, Kenya, Lake Turkana Wind Farm to enhance access to renewable electricity supply in the region; **Private Sector investment financed by AfDB and other Partners, including partial risk cover from the AfDB.**
- Kenya, 105 MW Menengai Geothermal Steam Field Development; completed 2019 to support private sector investment in Geothermal exploitation and enhance access; **USD 258 million from AfDB, AFD, EIB, SREP**
- South Sudan, Juba Power Distribution Systems Rehabilitation and Expansion Project commissioned in 2021; **USD 43 million from AfDB**

TECHNICAL ASSISTANCE

- EAPP Market readiness and rules for power trading including shadow market simulation completed in Feb 2024; **USD 1.0 million from AfDB,**
- IGAD To develop a Regional Infrastructure Masterplan – Transport, Energy ICT and Water; **USD 3.7 million from AfDB and IGAD**
- Djibouti, Geothermal Exploration project: **USD 56.3 million from AfDB, OPEC-OFID, WB, AFD, SEFA, GEF**



AFDB ONGOING OPERATIONS & FOCUS AREAS



INFRASTRUCTURE

- 292 km, 230 kV Ethiopia – Djibouti Second Power Interconnection Project; **USD 142 million from AfDB, WB, Govt of Ethiopia and Djibouti**
- Eritrea 30 MW DtP Solar PV/BESS Power project. **AfDB approved USD 50 million in March 2023** to address power challenges and reduce over-reliance on Diesel Power Plants. Plant will double the installed available generation capacity.
- 157 km 400 kV Eastern Ethiopia Electricity Grid Reinforcement project the initial phase for the Ethiopia – Somalia power interconnection; **USD 120 million approved in Sept. 2023 from AfDB, Korea Eximbank, Govt of Ethiopia.** The project takes Ethiopia 400 kV grid close to the Boarder with Somalia.
- Somalia, Distribution Rehabilitation and Reinforcement under preparation for Approval in 2024
- Somalia, Households Access to Renewable Energy and Advanced cooling technologies (**USD 7.6 million**)

TECHNICAL ASSISTANCE (focusing on strengthening utility performance, regulatory frameworks and developing the blocks for power trade)

- TA has focus on strengthening utility performance, energy regulatory frameworks and building blocks for energy trade
- Desert-to-Power Initiative East Africa Regional Energy; **USD 5.5 million approved by AFDB in March 2022** to assess and analyze national and regional renewable energy situation and conduct technical studies for regional solar parks in the IGAD region
- EAPP Institutional Capacity Building Program; **USD 5.4 million approved in December 2023** for the design and implementation of Supervisory Control and Data Acquisition/ Energy Management System (SCADA/EMS) and the Energy Information System (EIS), and Operationalization of the Independent Regulatory Board (IRB) in Kampala-Uganda.
- FS and design of the 300 km, 400 kV South Sudan – Uganda Power Interconnection completed and informing the investment in the physical project earmarked for approval in September 2024 by the Bank’s Board of Directors. This line is critical for South Sudan and planned interconnections with other HoA countries
- 230 kV Ethiopia – South Sudan under feasibility study financed by the AfDB; **investment in the physical project earmarked for financing in 2025**
- Somalia, Capacity Building for the Establishment of the National Electricity Authority (**USD 1.43 million**) – **NEA established in 2023**

OVERVIEW OF BMZ HOA ENGAGEMENT

- **The Federal Ministry for Economic Cooperation and Development (BMZ) is intensively engaged in achieving a global energy transition.** The BMZ supports its partner countries in their efforts to plan and develop such energy systems, improve the general framework for the use of renewable energy and increase energy efficiency. The aim is to close all the gaps in access to energy and achieve universal energy supply by 2030 together with partner countries and the international donor community.
- **Africa is a priority region for German development and energy cooperation.** Energy is a central topic in our cooperation with over 20 African countries. It includes building green industry alliances around green hydrogen in Kenya and other countries as well as supporting the African Union in developing geothermal power and mobilising private sector investment in the East African Rift Valley, including in Ethiopia and Kenya.
- With the **Africa-EU Green Energy Initiative**, Europe is offering a joint platform that can become the focal point for joint projects in the energy sector. Germany will support the Initiative with 4 billion Euro by 2030.
- In cooperation with the **African Development Bank**, Germany is making a contribution of **190 million euros to the Sustainable Energy Fund for Africa (SEFA)** and more than **20 million euros to the African Green Infrastructure Alliance (AGIA)** in order to mobilise private sector investment. In addition, through the multi-donor partnership **Energising Development**, Germany promotes access to renewable energy and clean cooking energy in around 15 African countries including Kenya and Ethiopia.
- **In partnership with Kenya**, the BMZ supports the energy sector by expanding renewable energy generation (through a long standing cooperation on the development of the Olkaria and Baringo-Silali geothermal fields), modernization of its grid infrastructure, on the value chain of fertilizer production based on green hydrogen and decentralized energy access as well as e-mobility.