





Africa-EU Energy Partnership

# LINKING KEY STAKEHOLDERS TO INCREASE RENEWABLES ON AFRICAN INFRASTRUCTURE DATABASE OF AUDA-NEPAD

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### **ABBREVIATIONS**

AC	Amilcar Cabral
ACP	Africa Caribbean and Pacific
AEEP	Africa-EU Energy partnership
AEIS	African Energy Information System
AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AFREC	African Energy Commission
AFSEC	African Standardized Electricity Council
AfSEM	African Single Electricity Market
AFUR	African Forum for Utility Regulators
AID	African Infrastructure Database
APUA	Association of Power Utilities of Africa
ATEE	Association technique énergie environnement
AU	African Union
AUC	African Union Commission
AUDA-NEPAD	African Union Development Agency-New Partnership for African Development
CAPP	Central Africa Power Pool
CREEE	Centre for Renewable Energy and Energy Efficiency
DtP	Desert to Power
EACREEE	East Africa Centre of excellence for Renewable Energy and Energy Efficiency
EAPP	East Africa Power Pool
EC	European Commission
ECA	Economic Commission for Africa
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy
EEAS	European External Action Service
EFSD	European Fund for Sustainable Development
EIP	External Investment Plan





EP	European Parliament
ERI	Efficiency Electricity Regulatory Index
EU	European Union
GEI	Green Energy Initiative
GET.Pro	Global Energy Transformation Programme
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GTAF	Global Technical Assistance Facility
IAEA	International Atomic Energy Agency
ІСТ	Information and Communication Technology
IRENA	International Renewable Energy Agency
ISM	Infrastructure Support Mechanism
ITU	International Telecommunication Union
MEPS	Minimum Energy Performance Standards
MFF	Multiannual Financial Framework
MMEIPA	Mapping and Monitoring of Energy Initiatives and Programmes in Africa
NDICI	Neighbourhood, Development and International Cooperation Instrument
PACDICE-AC	Consensual Infrastructure Deployment Action Plan of Electronic Communications
of Central Africa	
PIDA PAP	Programme for Infrastructure Development in Africa Priority Action Plan
PRC	Permanent Representatives Committee
PV	Photovoltaic
REC	Regional Economic Community
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RISE	Regulatory Indicators for Sustainable Energy
ICA	Infrastructure Consortium for Africa
IEA	International Energy Agency
SACREEE	SADC Centre for Renewable Energy and Energy Efficiency
SAPP	Southern Africa Power Pool
SDG	Sustainable Development Goal
STC	Specialized Technical Committees
TEI	Team Europe Initiatives
TTIIE	Transport, Transcontinental and Interregional Infrastructure, and Energy





Africa-EU Energy Partnership

- **UNECA** United Nations Economic Commission for Africa
- UNEP United Nations Environment Programme
- WAPP West Africa Power Pool





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### **1. INTRODUCTION: POLICY AND REGULATORY FRAMEWORKS IN AFRICA**

Some of the key policies and regulatory strategies driving energy development in Africa are contained in documents listed in the following paragraphs. In 2019 the African Development Bank on their Africa Energy Portal compiled articles on Energy Policy and Regulatory frameworks in Africa coving, among others, areas of Regulatory Indicators for Sustainable Energy (RISE) compiled by ESMAP in 2015; the ATLAS OF AFRICA ENERGY RESOURCES compiled by the African Development Bank (AfDB) and the Infrastructure Consortium for Africa (ICA), in cooperation with the United Nations Environment Programme (UNEP) in 2018 to illustrate where the resources are, where the potential for expansion occurs and what the possible impacts on the environment could be; the African Development Bank together with its partners, including the African Forum for Utility Regulators (AFUR) and the Association of Power Utilities of Africa (APUA) launched the Electricity Regulatory Index (ERI) — a comparative, country-by-country assessment of the sector's level of regulatory development; IRENA's Insights on Planning for Power System Regulators in 2018 that looked at useful regulatory practices in increasing adoption of renewable energy technologies, and encouraging more effective power system planning in national and regional context.

In 2021 the African Union Commission with the support of the European Commission formulated an Action Plan for Harmonised Regulatory Framework for the Electricity Market in Africa that will guide the African Single Electricity Market (AfSEM) launched by the African Heads of State and Government at their Summit in February 2021 in Addis Ababa. The Action Plan has been structured into Short term (2017-2021), Medium term (2022-2024) and Long term (2025-2030).

The practical designing of the Continental Power systems masterplan has now been initiated led by the African Union Development Agency (AUDA-NEPAD) in close collaboration with the African Union Commission, the African Development Bank (AfDB), the Economic Commission for Africa (ECA), the Regional Power Pools (EAPP, SAPP, WAPP, CAPP and COMELEC) and international partners including the European Commission through EU GTAF, World Bank, Power Africa, IAEA, IRENA, EU and BMZ through GET.transform and AEEP.

National, Regional and Continental Development Plans at a Glance





# Overview of AU and EU Energy Actors in Africa

## **2. AU INSTITUTIONAL ACTORS ON ENERGY PROGRAMS**

In 2021 AEEP Secretariat drafted a powerpoint presentation showing the Landscape of the AU Structures on Energy Development for an informed and coordinated partnership in energy. This shows that the African Union has several institutions mandated to carry out energy development initiatives and programmes as summarised in the following paragraphs.

African Union Commission (AUC) has the Department of Infrastructure and Energy as the secretariat of the African Union mandated to be the main driver of energy policy development through the Division of Energy. The Department gets its mandate from the AU Specialized Technical Committees (STC) for Transport, Transcontinental and Interregional Infrastructure, and Energy (TTIIE) and reports to the same. The STC comprises of the Ministers responsible for energy through the Bureau with regional representation of the five African regions i.e. Central, East, North, South & West The STC reports its programmes to the Permanent Representatives Committee (PRC) comprising of the Ambassadors of all African Member States and are represented in Addis Ababa convening regular meetings at least monthly at AUC & Ordinary sessions for decision making twice a year, before each AU summit. The PRC takes its orders from and reports to the Executive Council of Foreign Ministers to the Assembly of the African Union of heads of States and Governments for final and highest endorsement of decisions.

Besides the Department of Infrastructure and Energy, the African Union has set up the African Energy Commission (AFREC) since 2008, with the office in Algeria. The mandate of AFREC is for developing, coordinating and harmonizing the energy policies with an objective of protection, conservation, development, rational exploitation, commercialization and integration of energy resources on the African continent. Up until 2018, the operations of AFREC were very lean, focussing only on setting up the African Energy Information System with the support of International Energy Agency (IEA). Since 2019 AFREC is growing into a fully-fledged organ for implementing its full mandate.

Other Key Stakeholders and Partners in the Harmonisation of Regulatory Frameworks for Electricity Markets include African Union Development Agency (AUDA-NEPAD) based in Midrand, South Africa, the African Development Bank (AfDB) based in Abidjan, Côte d'Ivoire, the United Nations Economic





Commission for Africa (UNECA) based in Addis Ababa, Ethiopia. There are also Specialised Pan-African Energy Institutions that include the African Energy Commission based in Algiers, Algeria; the African Standardised Electricity Council (AFSEC), the African Power Utilities Association (APUA), based in Abidjan, Côte d'Ivoire, the African Forum for Utilities Regulators (AFUR), based in Pretoria, South Africa. The Regional Economic Communities (RECs) also carry out energy development initiatives and programmes through their subordinate institutions like the Regional Power Pools i.e. CAPP, EAPP, COMELEC, SAPP and WAPP, the Regional Regulatory Authorities of Association that include ERA for East Africa, ERERA for West Africa, RERA for Southern Africa and ERA for Central Africa as well as through the Centres of Excellence for Renewable Energy and Energy Efficiency that were set up in the regions through the support of UNIDO at various time scales. These are RECREEE based in Cairo working with Arab countries in Northern Africa and Middle east; ECREEE based in Praia, Cape Verde for West Africa; SACREEE based in Windhoek, Namibia for Southern Africa; EACREEE based in Kampala, Uganda for East Africa.

### **3. EU INSTRUMENTS PARTNERING IN THE ENERGY SECTOR IN AFRICA**

In 2022 AEEP Secretariat drafted a presentation of the Landscape of the EU Structures on Energy Development Cooperation that guides the Africa-EU Energy Partnership showing an overview of the European Union (EU) structures, policies and processes for decision making on (energy) development cooperation, and information on key support programmes and initiatives. The information below is summarised from the slides prepared by AEEP Secretariat. Thanks to Fiona.

#### The Main Institutions of the European Union functions at four levels as follows:

- The Executive Level i.e. the European Council with the EU's 27 national leaders who set the policy agenda. These are supported by the 27 Commissioners of the European Commission who are nominated by the European Council and approved by the European Parliament. The Commissioners propose and implement the legislation.
- 2) The Legislative level: European Parliament (EP) with 705 members, directly elected by EU citizens. The EP amends, approves or rejects legislation supported by the Council of the European Union (Council of Ministers) who are the 27 national ministers, grouped by policy area.





- 3) The Judiciary level: Court of Justice of the European Union with Two courts, with judges appointed jointly by the national government who interprets the EU law and settles disputes. These are supported by the European Court of Auditors of 27 members, appointed by the Council of Ministers. These audit the EU budget
- 4) Financial level: European Central Bank with a President and an executive board appointed by the European Council. This maintains and oversees the Euro and the overall financial system.

# The roles of the European Commission (EC), European Parliament (EP) and Member States of the European Union (EU MS) can be summarised as follows:

EC drafts and negotiates legislation; draws up and negotiates the EU budget; ensures the implementation of EU law (via MS or agencies); ensures correct allocation of the EU budget (via MS or agencies); represents the EU in international organisations; promotes the EU's common foreign policy; leads trade negotiations; and enforces the EU treaties.

The EP negotiates and approves all EU legislation; negotiates and approves the EU budget; signs off on international agreements; approves the members of the European Commission; provides oversight of the Commission and other EU Institutions; but unable to propose legislation.

The European Member States set the policy agenda for the European Commission (via the European Council); negotiate and approve all EU legislation (via the Council of Ministers and European Council); negotiate and approve the EU budget (via the Council of Ministers and European Council)

The Foundation of EU Development Policy is based on the main objectives of reducing poverty and achieving sustainable development with competencies shared by the Union and its Member States. The EU has the mandate to coordinate development policies and activities with EU Member States and acts directly as an independent donor in collaboration with the Member States as well as indirectly through Member States' measures. With an ODA of 2020 totalling EUR 66.8 billion, the EU-27 is the largest donor in the world.

The Role of the **EU Delegations** is to Manage the EU's external relations known as European External Action Service (EEAS) and reporting to the High Representative for Foreign Affairs. The EU missions work separately from those of EU Member States, but they work closely to coordinate and align activities, positions and resources and in some circumstances.





The **EU Delegation to the African Union**, based in Addis Ababa, works to enhance the EU's partnership with the AU, conducting dialogue on political issues of mutual concern as well as supporting longer-term cooperation and institution building.

**The Multiannual Financial Framework (MFF) 2021-2027)** is the EU's long-term budgetary framework where annual budgets are derived from. The MFF is proposed by the European Commission, approved by the European Parliament, and adopted by the Council. Development cooperation and external action are funded from the Neighbourhood and the World (Heading 6). In the 2021-2027 budget, EUR 110.6 billion have been allocated to EU external action, including pre-accession assistance for (potential) accession candidates (IPA instrument), humanitarian aid and foreign policy instruments (at current prices). This represents a 7.44% increase in real terms compared to the 2014-2020 MFF.

**Neighbourhood, Development and International Cooperation Instrument (NDICI) also called Global Europe** is the instrument through which all European activities with Neighbourhood countries, the Africa, Caribbean and Pacific (ACP) countries, and with other developing and emerging economies are financed and also funds cooperation with strategic partners.

NDICI brings together all the EU's nine previous instruments for external action into one financing instrument. Funds which were previously outside the remit of the EU budget (administered via the European Development Fund for support to sub-Saharan Africa, the Caribbean and Pacific (ACP countries)) have now been integrated into the EU budget. the current Volume for 2021-2027 is EUR 79.5 billion (current prices). These resources have initially been allocated (programmed) until circa 2024/25, with a flexible mid-term review scheduled to plan future spending.

NDICI resources are allocated with a focus on "geographisation" where most money is foreseen for support to countries and regions, rather than issues and institutions. However, humanitarian assistance led by DG ECHO and pre-accession assistance led by DG NEAR) continue to be funded separately.

NDICI – Global Europe has five priority Areas as follows:

 Green Deal for: - Circular economy; Biodiversity; Green and smart cities; Sustainable energy; Food systems: from farms to forks; Water and Oceans; Pollution.





- 2. Science, Technology, Innovation & Digital for: Governance (regulatory frameworks); Digital connectivity, including key enabling infrastructure such as power, broadband; Digital skills and entrepreneurship; E-services, including e-governance; Data protection
- 3. **Growth and Jobs for**: Sustainable investment and de-risking, including key enabling infrastructure; Creation of decent jobs; Education and skills; Business environment and investment climate; Regional economic integration, trade and connectivity.
- 4. **Migration for**: Root causes of irregular migration and forced displacement, including development benefits of migration; Migration management, including border management, return, readmission and sustainable reintegration, and legal pathways; Durable solutions for refugees.
- 5. Governance, Peace & Security; Human Development for: Human rights, democracy, fundamental values; Human development; Rule of law and accountability; Conflict prevention, sustaining peace and building resilience; and Fight against organised crime.

#### Key EU Programmes and Projects in Energy Development Cooperation in Africa

- 1. Team Europe Initiatives
- **Objective:** Coordinate and align activities by European Institutions, Member States and partners to increase the impact and visibility of European support to a partner (country) in a given sector.
- Activities: Different TEIs have been put forward by African and European countries and by the EU, representing areas where there is interest in and benefit from joint action. TEIs deliver concrete results for partner countries, in-line with their strategic and national priorities. Most initiatives are based on sectors (e.g. energy), and can be national, regional (i.e. more than one country) or global in scope.
  - TEIs are underpinned by the EU's political and policy priorities; they guide the programming of EU funds; financed both from the EU budget and by participating EU Member States.
- **Partners:** African governments and institutions at national, regional (multi-country) and continental level
- Duration: 2022 onwards





#### 2. Global Gateway Africa-Europe Investment Package

- **Objective:** Support Africa for a strong, inclusive, green and digital recovery and transformation, delivering €150 billion in funding for investments in infrastructure (all sectors) in Africa.
- Activities: Accelerate the green and digital transitions, accelerate sustainable growth and decent job creation, strengthen health systems, improve education and training.
  - The Investment Package will be delivered through Team Europe Initiatives; the EU, Member States and European financial institutions will work together to support concrete and transformational projects jointly identified in priority areas.
  - Activities on energy: increase the share of renewable energy and hydrogen in the energy mix; provide access to affordable, reliable and sustainable energy, and support market integration and sector reforms. Ambition by 2030: Increase the renewable energy generation capacity by at least an additional 300 GW.
- Partners: African governments and institutions; private sector and civil society
- Duration: 2022 onwards
- 3. Africa-EU Green Energy Initiative (GEI)
- Objective: Deliver on the energy component of the Global Gateway Investment Package; Support Africa's green transition in the energy sector by increasing renewable energy capacity, increasing the number of African people gaining access to affordable and reliable energy, promoting sustainable energy uses, and supporting market integration and sector reform.
- Activities: Provide an overarching framework and central goals for EU support to African partners in the field of energy, bringing in additional resources and activities in support of those goals from EU Member States in the framework of the Initiative's TEI.
  - Support regional interconnectivity and market integration (including for the Continental Master Plan, African Single Electricity Market, and investments in regional interconnections).
  - Support just energy transition partnerships and countries championing energy transition.
  - Promote new opportunities for cooperation in green hydrogen.





- **Partners:** African governments and institutions at national, regional (multi-country) and continental level
- **Duration:** 2022 onwards
- 4. The External Investment Plan (EIP) and European Fund for Sustainable Development (EFSD)
- **Objective:** Share risk to help attract greater public and private investment, helping to create jobs, growth and prosperity.
- Activities: Provide €1.55 billion in guarantees to share risk and increase lending to local entrepreneurs and projects via the EFSD.
  - Provide €3.5 billion in blending to combine grants from the EU with loans or other financing to help cover project costs via the EFSD.
  - Provide technical assistance to support project preparation and development, sector reform etc. as part of the EIP.
  - Work with governments to help improve the investment climate as part of the Plan.
- **Partners:** African, European, and international publicly funded financial institutions; governments in the EU's Eastern and Southern neighborhoods and in sub-Saharan Africa
- **Duration:** 2018 onwards

#### 5. Global Technical Assistance Facility (GTAF) for Sustainable Energy

- **Objective:** Assist partner countries and institutions in improving regulatory frameworks, enhance institutional capacities, and mobilise investments in sustainable energy
- Activities: Provide demand-driven support to national or regional authorities, including, stocktaking missions, programming support, conduct studies, develop reports, implement awareness seminars, prepare documents, workshops and training.
- Partners: AUC (DIE), AUDA NEPAD, RECs, African countries, EU Delegations,
- **Duration:** 2020-2024

#### 6. Infrastructure Support Mechanism (ISM)

- **Objective:** Help improving access to integrated regional and continental infrastructure networks in the fields of water, energy, transport and ICT
- Activities: Support institutions to develop policy and regulatory frameworks for infrastructure.



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- Build capacities for transaction advisory and resource mobilisation.
- Enhance policy dialogue and coordination between the AU and the EU for a continentwide infrastructure approach.
- Align programming strategies and support the development of a project pipeline.
- Partners: AUC (DIE, ARBE), AUDA NEPAD, AFCAC
- Duration: 2019-2022
- 7. ElectriFl
- Objective: Support energy access and climate protection by providing finance to early-stage private companies and projects, focusing on new/improved electricity connections as well as on generation capacity from sustainable energy sources in emerging markets (globally and through country financing windows)
- Activities: Provide technical assistance to early-stage energy companies and projects to help prepare for bankability.
- Provide risk capital and de-risk investments to allow private investors and development finance institutions to deploy capital.
- Partners: Private sector and project developers (globally)
- **Duration:** 2019 onwards

#### 8. Global Energy Transformation Programme (GET.pro)

- **Objective:** Deliver on global energy and climate goals through tailored support instruments, implemented via a shared European platform for action
- Activities: Enable long-term strategic dialogue and partnership between Africa and Europe on energy (through the <u>Africa-EU Energy Partnership and its Secretariat</u>).
  - Provide transformational energy policy advice to public sector partners (through <u>GET.transform</u>).
  - Mobilise private sector investment in decentralised renewable energy (through <u>GET.invest</u>)
- **Partners:** AUC, EC, AUDA NEPAD, AFREC, African national governments and institutions, private sector and project developers
- **Duration:** 2018 onwards





# 4. PROGRAMMES CONTRIBUTING TO UPDATES OF RENEWABLE ENERGY PROJECTS IN THE AFRICA INFRASTRUCTURE DATABASE (AID) OF AUDA-NEPAD

### 4.1 African Infrastructure Database (AID) at glance

The Africa Infrastructure Database (AID) is an online system where Regional Economic Community (RECs) and other institutions and regional organizations can manage and maintain their infrastructure project information. The data in AID automatically synchronizes with multiple frontend applications or portals that use this information. This ensures that all national, regional, and continental stakeholders always have access to the most up-to-date and consistent information and eliminates duplication.

The goal of AID is to have a consolidated, up-to-date, and accessible information system for all regional infrastructure projects, promoting sustainable investment for an interconnected and integrated region and continent.

#### 4.2 Status of the African Infrastructure Database before the Actual project

Before the beginning of the actual project whose main objective was to gather information on renewable energy initiatives and projects and upload them into the Africa Infrastructure Database to increase the renewable project pipeline, the database was constituted of many projects from all the four (4) Infrastructure sectors (Energy, Transport, ICT and Water). We could find Programme for Infrastructure Development in Africa Priority Action Plan 1 (PIDA PAP 1) projects as well as non PIDA Projects.

Given the considerable importance of energy to African populations and the very low number (62) of energy projects in the African infrastructure database (AID), this project aims to expand the database with energy projects. In addition, considering the increasing importance of renewable energy in African energy systems, it has been observed that very few renewable energy projects are represented in the AID. Hence the importance of increasing the AID's renewable energy project pipeline.

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# 4.3 Programmes contributing to updates of Renewable Energy Projects in the Africa Infrastructure Database (AID) of AUDA-NEPAD

#### Methodology

To increase AID's renewable energy project pipeline, we began a process of collaboration with the various centers for Renewable Energy and Energy Efficiency (CREEEs): RCREEE, ECREEE, SACREEE, EACREEE.

- With ECREEE: ECREEE nominated a focal point with whom we managed to conduct several meetings where we were able to obtain information on some Renewable projects managed by ECREEE. Some of the relevant projects have been uploaded on to the AID platform. One of the challenges was that the projects were presented in a different format than the format on AID and therefore could not have an automatic transfer of data. The main difficulty was accessing the information directly on the ECREEE website. That did not work well in our favor as we had intended to create an interface in relation to the terms of reference. The time allocated to the project assignment was too short. Nevertheless, it is recommended that this work should be continued.
- With RCREEE: the process to obtain information from their website required to have a memorandum of understanding between RCREEE and AUDA-NEPAD before accessing any information from RCREEE website. This requirement did not work to our advantage as such a process at AUDA-NEPAD requires more time than the time available for the assignment. However the process already started with appointment of a focal point and drafting the first version of the MoU. Since there is huge potential in RCREEE to obtain information on renewable energy around several of the PIDA interconnectors, it is highly recommended to pursue a much easier agreement between AUDA-NEPAD and RCREEE of sharing energy information and data.
- With SACREEE: SACREEE nominated a focal point and presented the information on their website. We found that SACREEE's site is essentially constituted of industrialization projects and not infrastructure projects as required by AID. It is however recommended that the





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dialogue between AUDA-NEPAD and SACREEE should continue on adding more renewables joint management of the information on AID.

With EACREEE: Communication with EACREEE has been very difficult due to the frequent unavailability of the focal point. The previous focal point from EACREEE has not been replaced yet. Exchanges in this sense have not been fruitful because we have not been able to obtain information from EACREEE at this moment. This should be pursued in future based on previously pledged commitments. In August 2019, EACREEE together with AFREC and AEEP organised a coordination meeting with all the Centres of Renewable Energy and Energy Efficiency in Africa with the objective to agree on the most appropriate mode of joint operation. This meeting agreed to strengthen the cooperation between the Regional Centres of RE&EE and AFREC as well as other AU institutions dealing with energy development during the current AEEP phase (2018-2021). The phase has been extended to March 2023 hence the collaboration. At that moment EACREEE introduced AEEP to WRI as one of their partners developing the energy access explorer that would be considered to link with MMEIPA and AID.

In addition to the engagements with the CREEEs, we engaged in desktop research on official sites to gather information on renewable energy projects that could be integrated into the AID.

PIDA PAP 2 energy projects have also been added to the AID for greater visibility (Figure 1&2). However, we note that the information on the projects would have been more complete if it had been filled out directly by the stakeholders involved, which is the essence of using AID, allowing the various stakeholders to inform their projects. For the future it is highly recommended to involve the national focal points of PIDA to update their information on the AID.

Furthermore, during the course of this assignment, AFREC has agreed to collaborate with AUDA-NEPAD and share energy information and data. During the period of 2019 to 2022, AEEP and AFREC had synergies in activities that would benefit AUDA-NEPAD richly. These include a digitalised African Energy Information System (AEIS) that involves about 4 or 5 qualified national focal points in each of the 55 African Member States. This provides a wide outreach and support team that holds frequent workshops. AFREC has commenced sharing information and data required for compiling







by the EU-TAF and IRENA/IAEA Modelling Experts working with AUDA-NEPAD on designing the Continental Power Systems Masterplan.

#### Figure 1: Few Renewable Energy from ECREEE

#	Project Name	Sub Sector 🔶	Location	Stage (Year)	Record State ${\diamond}$	Action
1	225 kV OMVG Interconnection Line	Power Interconnector		TBC: Data Not Available (2021)	Project Added	Edit
2	Regional Solar Power Park in Cote d'Ivoire (1st Phase by KfW)	Solar Power Plant		TBC: Data Not Available (2021)	Project Added	Edit
3	<u>Développement Durable par les Énergies Renouvelables au Sénégal (DPER-Sud Est Sénégal) (DPERSE)</u>	Solar Power Plant	Senegal	TBC: Data Not Available (2016)	Data Updated	Edit
4	225 kV Guinea - Mali Interconnection Project	Power Interconnector	Guinea, Mali	TBC: Data Not Available (2021)	Project Added	Edit
5	275 MW Soubre Hydropower Project in Côte d'Ivoire.	Hydro Power Plant	Côte d'Ivoire	S4C: Operation (2016)	Project Added	Edit
6	ZAGTOULI	Solar Power Plant	Burkina Faso	TBC: Data Not Available (2020)	Project Added	Edit
7	Cheikh Mohammed Bin Zayed de Blitta	Solar Power Plant		TBC: Data Not Available (2020)	Project Added	Edit
8	Santhiou Mekhe	Solar Power Plant		TBC: Data Not Available (2020)	Project Added	Edit
9	Parc Eolien Taiba N'Diaye	Wind Power Plant	Senegal	TBC: Data Not Available (2022)	Project Added	Edit

#### Figure 2: Few PIDA PAP 2 energy projects uploaded in AID

#	Project Name	Sub Sector 🔶	Location	Stage (Year)	Record State 🔶 Action
21	Eastern Africa Green Power transmssion Network Project 6 - Guba(Ethiopia)-Kahrtoum (Sudan)	Hydro Power Plant	Ethiopia, Sudan	S2B: Feasibility (2017)	Project Added Edit
22	Grand INGA Phase 1	Hydro Power Plant	Democratic Republic of Congo	S3B: Transaction Support & Financial Close (2020)	Project Added Edit
23	LAPSSET Crude Oil Pipeline: Lamu to South Sudan	Petroleum/Gas Pipeline	Kenya	S3A: Project Structuring (2017)	Project Added Edit
24	Inga 3 Transmission Interconnector	Hydro Power Plant	Botswana, Democratic Republic of Congo, South Africa, Zambia, Zimbabwe	S0: Enabling Environment and Needs Assessment (2020)	Project Added Edit
25	INTECONNEXION DES RESEAUX ELECTRIQUES ENTRE: INGA - CABINDA et POINTE-NOIRE	Hydro Power Plant	Angola, Democratic Republic of Congo, Republic of Congo	S3B: Transaction Support & Financial Close (2017)	Project Added Edit
26	Aménagement des sites hydroélectriques de BOOUE et de TSENGUE-LELEDI, et construction des lignes de transport associées	Hydro Power Plant	Gabon	S3B: Transaction Support & Financial Close (2017)	Data Updated Edit





#### **5. HIGHLIGHTS OF ENERGY – ICT NEXUS**

Energy is an essential resource nowadays. Its importance is felt in all areas of life, including Information and Communication Technologies (ICT). It should be noted that these two sectors: energy and ICT are complementary. One always needs the other. Thus, on the one hand, we have ICTs which prove their importance in the energy sectors such as: sustainable development, renewable energy, climate change etc. On the other hand, we note the involvement of energy systems in all areas of ICT: datacenter, fixed and mobile networks etc.

In this section, we propose to establish some of the strengths that link energy and ICTs. To do so, in the first section, we would talk about the impact of ICT on energy, more specifically the role that ICT plays in achieving SDG7. We would then follow by analyzing the implication of energy in ICT sector. We have been interested in some ICT projects of the PIDA PAP 2 program in which we have studied the importance of energy.

#### 5.1 The Role of ICT for Achieving SDG 7

#### Target 7.1: "By 2030, ensure universal access to affordable, reliable and modern energy services"

The first target of SDG 7 calls for ensuring universal access to affordable, reliable, and modern energy services by 2030. The use of ICTs can make access to energy services more affordable, more reliable, and more modern.

A substantial part of the cost of energy access comes from the infrastructure needed to deliver electricity to beneficiaries. As shown in Figure 1, urban populations by and large have access to electricity, usually provided by power grids. This is especially true in developed countries. In rural and remote areas, the costs of deploying infrastructure can be significant, even prohibitive.

Local mini-grids, micro-grids or off-grid architectures may offer a solution, especially due to the falling cost of solar panels.





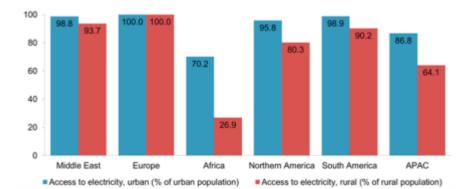


Figure 3: Share of population with access to electricity (urban and rural) in %

Source: World Bank (2017)

ICT can make a positive impact in all contexts for affordability of energy. In most developed countries, even rural areas have reliable access to electricity. Here, ICT can be used by energy providers to monitor and manage grids resulting in efficiency improvement and cost savings.

In developed countries, ICT implementation such as smart meters can help to save costs for households by improving their demand cycle. Specifically, smart meters can incentivize consumers to reduce their energy consumption by providing them with real-time clear feedback about how much energy they consume as well as the associated cost. Consumers can furthermore profit from load- and time sensitive tariffs that motivate them to shift their electricity demand to times when there is a lot of energy available on the grid.

ICT can help to achieve reliability of access to energy. Its implementation in energy grids enables monitoring, error detection or even prevention. Through cellular connectivity, which is usually much more widely available than energy grids today, even rural, and remote areas can be reached for remote maintenance. Indeed, mobile base stations can be used as anchor customers to provide access to energy for people yet unable to use electricity regularly.





# Target 7.2: "By 2030, increase substantially the share of renewable energy in the global energy mix"

In the same vein, ICT will thus be essential to achieve target 7.2. Renewable energy requires ICT solutions to be successful, a truly decentralized grid requires ICT support in one way or the other, they all share that measuring consumption in real-time is a key enabler.

In developing countries, where in many regions there is no legacy infrastructure, ICT can enable leapfrogging to renewable fully decentralized energy supply. New business models for mini-grid, micro-grid and off-grid solutions play a critical role in this.

In sum, given the role that ICT and in particular telecommunications as a major enabling factor play for achieving SDG 7 (see Figure 2) and in light of increasing convergence of energy and telecommunications applications, a step change in the collaboration of telecommunications and energy sectors appears to be necessary.



#### Figure 4: The role of ICT along the energy value chain







#### 5.2 Role of energy in ICT infrastructure

As mentioned above, we targeted two ICT projects of the PIDA PAP 2 program in which we proposed to identify the impact of energy.

#### 5.2.1 Development of Data Center Infrastructures supporting the digital economy

Data centers are physical infrastructures composed of computer equipment (computers, servers, storage units, etc.), network and telecommunication equipment (cables, racks) as well as control and security systems (air conditioning, fire) allowing the proper functioning of the whole. All these elements put together in order to store and process large amounts of information in a secure way.

#### 5.2.1.1 Project Description

The Development of Data Center Infrastructures supporting the digital economy project is one of the five programs structuring the Consensual Infrastructure Deployment Action Plan of Electronic Communications of Central Africa (PACDICE-AC).

In the context of a globalized, interconnected, and digitized world, the Heads of State and Government of ECCAS at the N'Djamena conference (2012)<sup>1</sup> proclaim their will and determination to give a decisive boost to the development of the ICT sector in order to build a true inclusive information society in Central Africa. The main development goal is achieving a society in which not only the right of every citizen to access knowledge and information is guaranteed, but also the equal chances of all citizens to access high-speed internet. More explicitly, N'Djamena's declaration, the starting point for the renewal of the ICT sector had the purpose of resolutely engage the ECCAS states in a collective program of investments, to compensate the great backwardness hitherto suffered by Central Africa by compared to other sub-regions of Africa<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> CEEAC DeclarCCEG TIC\_Ndjamena2012.pdf, page 1

<sup>&</sup>lt;sup>2</sup> RAPPORT FINAL\_PACDICE 2019.pdf, page 1





The Development of Data Center Infrastructures supporting the digital economy project specifically aims to provide each ECCAS member state with Data Center or strengthen the existing one and the ECCAS space with at least one sub-regional Data Center in order to:

- Secure cyberspace and help create confidence in an increasingly digital world.
- Regionalize the exchange of digital data within the Central Africa sub-region in order to reduce the response time and the data access time.

Telecommunications and ICT have a vital role in the development of both the society and the economy; they constitute powerful essential tools for increasing productivity, improving quality of life and well-being. Unfortunately, in this domain, ECCAS presents unflattering indicators; indeed, according to statistics of the ITU taken over by the firm Artelia Bird & Bird in a market study carried out in 2004 on the fiber optic interconnection of ECCAS countries, on a population total of the sub-region (less Rwanda) estimated at nearly 154 million inhabitants in 2013, there were exactly<sup>3</sup>:

- 50 cellphone lines per 100 inhabitants against 61.8 for the African continent
- 4% of internet access against 37.6% for the African continent.

According to the African Development Bank (AfDB), these parameters have followed a considerably upward trend, reaching in 2019:

- 73 of 100 ECCAS inhabitants have access to a mobile telephone<sup>4</sup>
- 23% of inhabitants have access to the active mobile broadband network<sup>5</sup>

Indeed, despite the progress observed, all eleven Central African countries are lagging behind those in other African regions in terms of mobile internet access. GSMA Intelligence data indicates that the mobile Internet penetration rate within ECCAS reached 23% in 2019, compared to 43% in North Africa, 29% in ECOWAS, 26% in the community of Southern Africa and 21% in East Africa. In addition, the sub-region still faces major challenges such as an ICT skills gap and weak institutional capacity

<sup>&</sup>lt;sup>3</sup> *RAPPORT FINAL\_PACDICE 2019.pdf,* page 4

<sup>&</sup>lt;sup>4</sup> United Nations (UN), *Trade in the Digital Economy*, 2019. Available at: Link

<sup>&</sup>lt;sup>5</sup> Observatoire sur les Systèmes d'Information, les Réseaux et les Inforoutes au Sénégal (OSIRIS), E-

commerce en Afrique centrale : le mobile identifié comme une

solution, 17 juillet 2021. Available at : Link





to support innovative businesses<sup>6</sup>. As a result of the above, the access charge is high, corresponding to 11.2% of the region's gross national income compared to 9.3% for sub-Saharan Africa and 3.7% for the rest of the world.

Within ECCAS, Gabon ranks first in terms of internet penetration, with a rate of 38%. Cameroon and Sao Tome and Principe share a connectivity rate of 34%, followed by Congo, with 32%. Next come Angola (31%), Rwanda (25%) and the DRC (23%). Finally, Chad (17%), Burundi (13%), CAR (11%) and Equatorial Guinea (7%) are competing for the bottom positions of the ranking<sup>7</sup>.

#### 5.2.1.2 Highlight with Energy

Data centers require enormous energy resources to operate for they must be operational 24 hours a day, 7 days a week. Estimates indicate that they consume about 1% of the world's electricity<sup>8</sup> with half of the total consumption attributed to cooling as data center resources produce large amounts of heat. Hence the need for truly stable power distribution units to always ensure continuity of services. High availability and quality of the power supply are therefore necessary conditions for the operation of data centers. A system failure would result in invaluable data and financial losses for companies.

Data center operators have every reason to invest in optimizing energy consumption, particularly because of costs, since energy is the number one expense item for a data center (49%), according to <u>l'ATEE</u>, <u>l'Association technique énergie environnement</u>.

In addition, the demand for "green electricity" from large customers is driving data centers to do both: optimize consumption and integrate renewable energy into their solutions.

<sup>&</sup>lt;sup>6</sup> Observatoire sur les Systèmes d'Information, les Réseaux et les Inforoutes au Sénégal (OSIRIS), *E*commerce en Afrique centrale : le mobile identifié comme une

solution, 17 juillet 2021. Available at : Link

<sup>&</sup>lt;sup>7</sup> Observatoire sur les Systèmes d'Information, les Réseaux et les Inforoutes au Sénégal (OSIRIS), *E-commerce* en Afrique centrale : le mobile identifié comme une solution, 17 juillet 2021. Available at: Link

<sup>&</sup>lt;sup>8</sup> Les data centers sont un gouffre énergétique. Voici comment réduire leurs émissions d'un tiers, 8 novembre 2021 Available at: <u>Link</u>





Figure 5: Overview of a data center



#### 5.2.2 Construction of Amilcar Cabral (AC) Submarine Cable System

#### 5.2.2.1 Project Description

The Amílcar Cabral (AC) Submarine Cable project is part of the ECOWAS broadband Backbone infrastructure programme, aimed at connecting the island nation of Cabo Verde to its nearest neighbours on the mainland namely Gambia, Guinea, Guinea-Bissau, Liberia and Sierra Leone. The objectives of the Amilcar Cabral submarine cable project are to:

- Contribute to the digital development of the selected countries by providing much needed international connectivity infrastructure to support digital networks, services and applications which can facilitate socio-economic development;
- Improve the level of integration of Cabo Verde with the rest of the West Africa region at the network infrastructure level so as to improve the viability and success of regional projects such as the implementation of Regional Roaming;
- Increase the international capacity available in the ECOWAS region to support the growth of internet and related applications; and
- Provide much needed and guaranteed redundancy in international connectivity for The Gambia, Guinea-Bissau, Guinea, Sierra-Leone and Liberia, where internet penetration averages 15% compared to the rest of West Africa where the average internet penetration is 40%.





#### 5.2.2.2 Highlight with Energy

Energy once again proves its importance and necessity in telecommunications and ICT services. It should be noted that reliable access to electricity is essential for the deployment of mobile broadband. Indeed, the submarine cables have as a primary mission to connect several regions; and this can only be effective if at the terminal stations, we note the presence of energy equipment capable of powering the provision of connectivity services to populations.

With the advent of the Covid-19, individuals, companies and organizations have been forced to develop online work methods; which requires the Internet connection that cannot be available without electricity, either on the side of the service provider or the end user.

# 6. INITIATIVES AND PROGRAMMES AND GRAPHICS SHOWING ACTORS IN ENERGY SUB-SECTORS

In order to support the African continent achieve a sustainable energy future, numerous initiatives have been launched, including the Mapping and Monitoring of Energy Initiatives and Programmes in Africa (MMEIPA) of the Africa-EU Energy Partnership's (AEEP). MMEIPA is an online website that collect information from multilateral, bilateral and country-specific initiatives in Africa that support governments, project developers and implementers working towards SDG7. The aim of the website is to help stakeholders coordinate and synchronize their efforts, leverage synergies, and address key gaps in the energy market and to increase the visibility of the partnerships in their contributions to the African energy transition. The website also aims to improve transparency and coordination of initiatives and programs that all share the common goal of supporting and helping Africa achieve a sustainable energy for all.

The website provides an overview of over 300 continental, regional and national energy initiatives and programmes. In 2015/2016, a mapping of Energy Initiatives and Programmes in Africa was undertaken by AEEP with the input of the Sustainable Energy for All (SE4All) Africa Hub. The <u>mapping</u> report describes more than 50 international and multilateral renewable energy, energy efficiency and access to energy initiatives and programmes in Africa. Detailed information and data on each initiative is available online <u>here</u>.





# 7. HIGHLIGHTS OF POTENTIAL SYNERGIES ON TRACKING PROGRESS IN COMMITMENTS OF PARTNERSHIPS E.G. FROM AU-EU SUMMIT 2017 TO AU-EU SUMMIT 2022

AUDA-NEPAD has the AU mandate to track and monitor initiatives and programmes that contribute to the attainment of Agenda 2063. Although there are huge flagship projects like Grand Inga that are quite visible, there are also other programs and initiatives that are making significant and steady progress. This report looked at the scenario of partnership between the AU and EU, when at the Abidjan Summit of 2017, when the two partners committed themselves to the full implementation of the Paris Agreement and Marrakech Action Plan adopted at COP22, and to this end noted the development of renewable energy to combat climate change and its impacts. The AU and EU agreed to use the following areas and projects as indicative parameters to measure progress of the energy partnership making seven milestones: 1) Investment in the Renewable Energy Sector; 2) Energy Access in Africa; 3) Decentralised Energy Structures for Local Authorities; 4) AU-EU High-Level Intercontinental Platform for Public-Private Dialogue; 5) Regulatory Frameworks for the Electricity Market; 6) Solar Energy Development Programme; and 7) Supporting the implementation of the AU Agenda 2063 Energy flagship project.

In this case AUDA-NEPAD would seek collaboration with stakeholders who are active in these areas. A few examples are summarised below:

#### 7.1 INVESTMENT IN THE RENEWABLE ENERGY SECTOR

The AU and the EU committed to implement the African Renewable Energy Initiative (AREI) notably via the European Investment Plan (EIP) and other similar tools, with the objective to generate 10 GW of new renewable energy in Africa by 2020. To this end, EU, France and Germany funded the AREI Independent Delivery Unit (IDU) with 6.5 million EUR as was pledged at the COP22 in Marrakesh in November 2016. The African Renewable Energy Initiative (AREI) reported already to have achieved the 10 GW of new and additional renewable energy generation capacity by 2019 ahead of the plan. Now AREI is mobilising the African Member States to generate at least 300 GW by 2030.

The tracking of progress for the AREI projects is monitored by the AREI-IDU. Potential areas of collaboration are in the Continental Masterplan and the PIDA-PAP2 enhanced strategy of reaching







the last mile with energy access. AUDA-NEPAD have initiated dialogue leading to COP27 on how they could work together.

#### 7.2 ENERGY ACCESS IN AFRICA

At the same summit the AU-EU Partnership committed to increase access to affordable and sustainable energy in rural and underserved areas, by accelerating and leveraging mainly off-grid energy access investments. This is evidenced in initiatives and instruments that continued to support promotion of rural electrification and clean cooking. According to the IEA's Africa Energy Outlook 2019, the number of people gaining access to electricity doubled from 9 million per year between 2000 and 2013 to 20 million people per year between 2014 and 2019, outpacing population growth where notable progress has been recorded in countries such as Ethiopia, Ghana, Kenya, Rwanda and Senegal.

Currently, AFREC is supported by the AfDB and the AEEP, to develop an improved digitalised management of the African Energy Information System (AEIS) that will track energy developments in all countries in Africa, including the SDG7 indicators and publish the "year-plus-one" annual statistics. This will make tracking easier so that policies and programmes for the future have the data needed for successful design and implementation.

AUDA-NEPAD can use energy data and statistics from AFREC for their planning of continental and regional energy programmes particularly the Continental Power Systems Masterplan. Dialogue on collaboration have already started and AFREC has agreed to share energy information.

EU has several instruments that could benefit AUDA-NEPAD in increasing investments in energy in Africa. For insistence, EU through the Electrification Financing Initiative (ElectriFI) - a EUR 215 million impact investment facility has opened various country windows in Africa, including Cote d'Ivoire (10 million EUR), Benin (5 million EUR), Zambia (40 million EUR) and Nigeria (30 million EUR). To date, the initiative has reached more than 30 million beneficiaries and contributed to the installation of 250 MW renewable energy capacity.

GET.invest – a multi-donor instrument funded by the EU, Germany, Sweden, the Netherlands, and Austria – promotes investments in decentralised renewable energy projects, with a focus on sub-Saharan Africa. Since its launch in 2018, more than 30 companies and projects have been successfully assisted in accessing financing resulting in 460,000t CO2eq. emission reduction p.a.





and 3.6 million additional end-users with access to clean energy. An example is a GET.invest client has signed a financing agreement for an 82 MW solar PV project in Guinea. Such an instrument would benefit AUDA-NEPAD to plan projects of reaching the last mile with energy access.

Energising Development (EnDev) is an energy access partnership active in 16 African countries. EnDev is currently financed by the Netherlands, Germany, Norway, United Kingdom, Switzerland, and Sweden. By March 2019, more than 21.3 million people gained access to either electricity and lighting devices or improved cooking technology with EnDev's support. Similarly, EnDev could also be a partner of AUDA-NEPAD for implementing projects to reach the last mile with energy access.

Another programme to synergise with AUDA-NEPAD's efforts to promote investments in energy would be the AfDB's New Deal on Energy for Africa aims to light up and power Africa, by providing 160 GW of new capacity, 130 million new on-grid connections, 75 million new off-grid connections and providing 150 million households with access to clean cooking solutions by the year 2025. Further related initiatives of AfDB include: The Desert to Power (DtP) Programme to light up and power the Sahel region by building electricity generation capacity of 10 GW through photovoltaic (PV) solar systems via public, private, grid and off-grid projects by 2025. The Off-Grid Energy Access Fund, aiming to scale-up access to affordable clean energy for off-grid households in sub-Saharan Africa reached final equity close with \$59 million in November 2019. The fund is co-financed by the EU and KfW.

#### 7.3 SYNERGIES ON REGULATORY FRAMEWORKS FOR THE ELECTRICITY MARKET

The AU committed to take forward the harmonisation of regulatory frameworks for the electricity market in Africa that is supported by EU GTAF. AUC and EU GTAF teams continued work on the harmonisation of regulatory frameworks for the electricity market in Africa and a Strategy and Action Plan for harmonisation of regulatory frameworks for the electricity market in Africa was developed and adopted by the AU Executive Council; A harmonised transmission tariff methodology has been adopted and power pools trained on how to apply it; Guidelines for Minimum Energy Performance Standards (MEPS) and Energy Labelling have been adopted to promote energy efficiency; Policy and technical models for mini-grid development have been adopted.

GET.transform - a multi-donor instrument funded by the EU, Germany, and Sweden, focuses on transformational energy policy advice to public sector partners. AUDA-NEPAD has started working







with GET.transform and could expand partnership on regulatory frameworks together with African Forum for Utility Regulators.

AUDA-NEPAD is now coordinating the development of a Continental Power Systems Masterplan to underpin the continental electricity market. Renewable energy will be one of the key sources of energy greening the continental transmission lines. The implementation of the CMP will have a huge impact on the African Continental Free Trade Area (AfCFTA). AUDA-NEPAD is considering mobilising huge resources for supporting investments into the green energy markets.

### **8. RECOMMENDATIONS**

- Place particular emphasis on sensitizing institutions and organizations's stakeholders on the importance and use of AID and MMEIPA. The platform managers can issue monthly or quarterly reminders to project managers to update their projects in the database.
- AUDA-NEPAD should make use of the PIDA national focal points to update the AID. Consider involving the National focal points of AFREC and the CREEEs on energy projects.
- AUDA-NEPAD should be linking with partners who are relevant for the tracking of Agenda 2063 in Energy.
- Update AID in such a way that each institution can easily update their projects. For example, there is the section reserved for Stakeholders, AUDA-NEPAD shouldn't be obligatory for all given the fact that some institutions have projects on which they worked on without AUDA-NEPAD as stakeholder.
- Also, the list of energy sub-sector needs to be updated, taking into consideration the renewable Energy subsector.
- AUDA-NEPAD should ensure that the AID database is updated consistently every 3 to 6 months. A consultant can be hired to do this.
- Similarly, the other infrastructure sectors (i.e. Water, ICT, Transport) on the AID should be updated regularly.





Africa-EU Energy Partnership

#### 9. ANNEXES

- 1) <u>AU Structures for Energy Development.pdf</u>
- 2) EU Structures on (Energy) Development Cooperation.pdf