AFREC
African Energy Commission

Framework for Cross-Border Strategic Cooperation in Skills Sharing in the African Energy Sector

African Energy Commission Headquarters 02 Rue Chenoua, B.P. 791, Hydra, Algiers, Algeria Tel: +213 (0) 23 45 91 98 Fax: +213 (0) 23 45 92 00

This report is prepared by
The African School of Regulation (ASR)
under the contract AFREC/PRO/09.24.
https://africanschoolregulation.org
Email: communications@africanschoolregulation.org

The African Energy Commission (AFREC) is a specialised energy agency of the African Union (AU), mandated to develop the African energy sector by coordinating, harmonising, protecting, conserving, developing, and promoting rational exploitation, commercialization, and integration of energy resources in Africa. Working with a network of partners and experts from all AU Member States, AFREC has the capacity and expertise to ensure all energy initiatives across the AU respond to the future development of the African energy sector, in accordance with the AU's Agenda 2063 and the pursuit of building The Africa We Want.

Comments on this report are welcome and should be addressed to:

African Energy Commission (AFREC)


02 Rue Chenoua, BP791, Hydra,16035, Algiers, Algeria


Tel: +213 23 45 9198

Fax: 213 23 45 9200


Email: afrec@africanunion.org


www.au-afrec.org

AFREC
African Energy Commission

FRAMEWORK FOR CROSS-BORDER STRATEGIC COOPERATION IN SKILLS SHARING IN THE AFRICAN ENERGY SECTOR

JUNE 2025

African Union

Acknowledgments

The authors of this report express their sincere gratitude to the numerous stakeholders who contributed their valuable insights and expertise throughout its preparation. These stakeholders include Regional Economic Communities (RECs), Pan-African Institutions, Power Pools, Regional Centres for Renewable Energy and Energy Efficiency, the Association of Regulators, Regional Regulatory Institutions, International Institutions, Ministries, National Regulatory Institutions, Utilities, Academia, and Training Institutions.

The contributions of experts from these organisations have been instrumental in shaping the direction of this project, ensuring a comprehensive and inclusive approach. Their valuable input has enriched the findings and reinforced the importance of collaborative capacity development in the African energy sector.

We extend our deepest appreciation to all experts, institutions, and collaborators who contributed to this initiative, fostering an inclusive framework for cross-border knowledge sharing and cooperation across African countries.

This report was prepared under the supervision of *Mr. Rashid Ali Abdallah*, Executive Director of AFREC, and coordinated by *Mr. Yagouba Traore,* Head of Policy, Planning, and Strategy, along with *Mr. Mehdi Khouili,* Capacity Building & Country Support Principal Officer. Additional contributions from AFREC staff were also pivotal in the successful completion of this report.

Foreword

The future of Africa's energy sector development will not be determined only by our access to natural resources and technology, but also depends on our institutional strength and our skilled human capital. As the specialised energy agency of the African Union, **the African Energy Commission (AFREC)** believes that the continental energy system transformation can only be achieved through adequate investment in people skills and institutional capacity through coordinated cross-border cooperation.

AFREC
African Energy Commission

This **Framework for Cross-Border Strategic Cooperation in Skills Sharing in the African Energy Sector** represents a landmark step in our common journey in advancing a coordinated and systematic approach toward a resilient, integrated, and knowledge-driven energy future for Africa. The framework is strategic and operational guide designed to assist African Union Member States, Regional Economic Communities, and specialized agencies in strengthening human and institutional capacities through structures mechanisms such as knowledge transfer, institutional twinning, peer learning, and strategic alignment.

While our continent is confronted with dynamic and multifaceted energy challenges, the path to sustainable solutions lies firmly within our reach. Across Africa, we are inspired by motivation of technical experts, young professionals, regulators, and energy agencies who are working tirelessly to shape a more secure, inclusive, affordable and sustainable energy system. This Framework aims to strengthen these efforts by facilitating deeper collaboration, bridging skills and capacity gaps, and ensuring that best practices, knowledge, and expertise are shared, scaled and sustained across-borders.

This Framework has been developed through extensive consultations between stakeholders at national, regional and continental levels. I extend my appreciation and gratitude to those who contributed their time, expertise, and vision to this collective output.

This document does not constitute an outcome on its own, as its real impact will be measured by the success of its implementation. It issues a clear call to all actors , governments, pan-African institutions, utilities, training institutions, and professionals — to embrace a spirit of synergy, unity and mutual support in building the "Africa We Want," where energy security serves as a key enabler. Together, we can turn it into a driver of lasting investment in skilled workforce, institutions capacity , and shared progress.

Rashid Ali Abdallah

Executive Director

African Energy Commission (AFREC)

List of Abbreviations Used

AfDB:	African Development Bank
AFD:	French Development Agency
AU:	African Union
AMU:	Arab Maghreb Union
ASR:	African School of Regulation
CAPP:	Central African Power Pool
COMESA:	Common Market for Eastern and Southern Africa
CEN-SAD:	Community of Sahel–Saharan States
EAC:	East African Community
EACREEE:	East African Centre of Excellence for Renewable Energy and Energy Efficiency
EAPP:	Eastern African Power Pool
ECOWAS:	Economic Community of West African States
ECCAS:	Economic Community of Central African States
ECREEE:	ECOWAS Centre for Renewable Energy and Energy Efficiency
EREA:	Energy Regulators Association of East Africa
ERERA:	ECOWAS Regional Electricity Regulatory Authority
GIZ :	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICT:	Information and Communication Technologies
IGAD:	Intergovernmental Authority on Development
IMF:	International Monetary Fund
JICA:	Japan International Cooperation Agency
MERL:	Monitoring, Evaluation, Research and Learning
RCREEE:	Regional Centre for Renewable Energies and Energy Efficiency
CEREEAC:	Centre for Renewable Energy and Energy Efficiency for Central Africa
RF:	The Rockefeller Foundation
SIDA:	Swedish International Development Cooperation Agency
SAPP:	Southern African Power Pool
SACREEE:	SADC Centre for Renewable Energy and Energy Efficiency
SADC:	Southern African Development Community
STC-TTIIE:	African Union's Specialised Technical Committee on Transport, Transcontinental and Interregional Infrastructure, and Energy
UCT:	University of Cape Town
UNDP:	United Nations Development Program
UNITAR:	United Nations Institute for Training and Research
USAID:	United States Agency for International Development
WAPP:	West African Power Pool
WBG:	World Bank Group

List of Figures

List of Tables

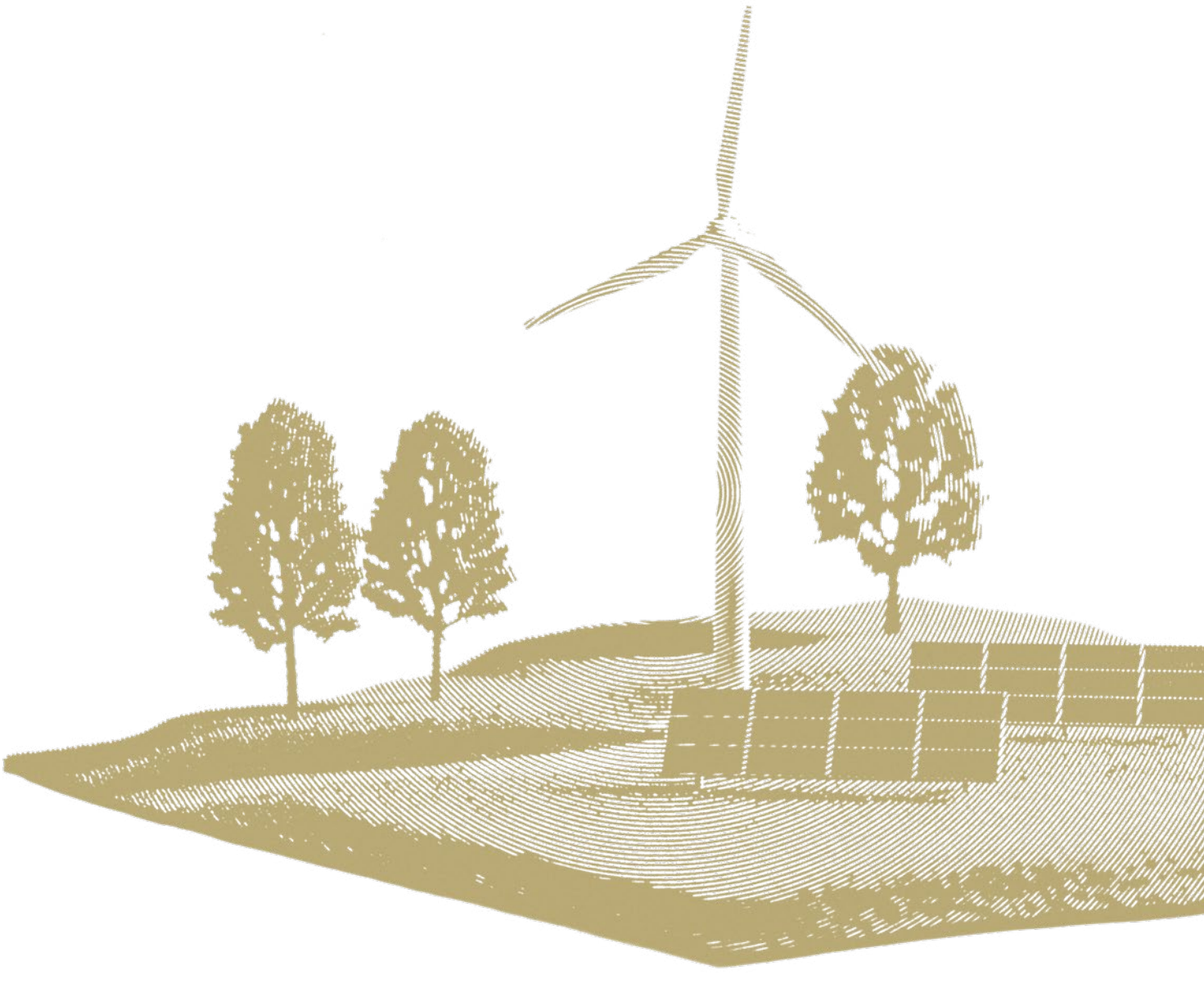
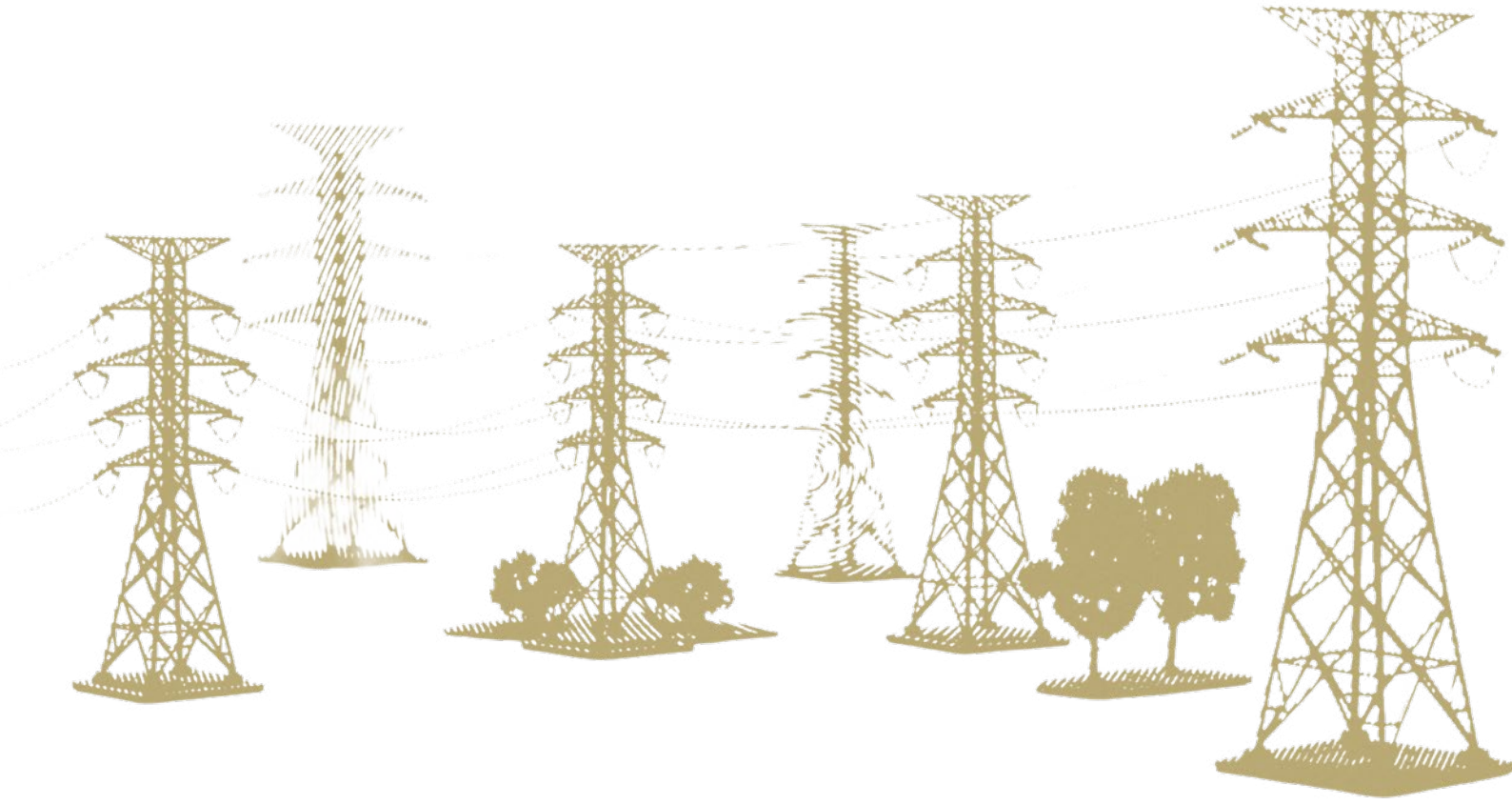


Table of Contents



Executive Summary

The African energy sector is undergoing significant transformation, yet it continues to face major challenges, particularly in institutional and individual capacity development. A primary issue is the disparity in skills and expertise across organisations, AU Member States, and regions, which hinders effective collaboration and progress. Bridging this gap requires the systematic transfer of knowledge and skills among stakeholders to support the sector's sustainable growth.

As the specialised energy agency of the African Union (AU), the African Energy Commission (AFREC) has launched a comprehensive program to strengthen stakeholder capacities and promote cross-border cooperation. This report presents the findings of a study aimed at developing a strategic framework for cross-border collaboration in knowledge and expertise exchange within Africa's energy sector. The study focuses on international institutions involved in the African energy sector, pan-African institutions, regional and national organisations, and AU Member States.

Methodology

The study employs a structured methodology that includes:

- **01.** Analysing and categorizing capacity and skills gaps in the African energy sector.
- **02.** Assessing the current state of cross-border cooperation in skills sharing and identifying key challenges.
- **03.** Conducting surveys and interviews with sector stakeholders to collect data on existing capacities, skill development needs, and willingness to engage in cooperation initiatives.
- **04.** Synthesizing collected data and incorporating expert insights to develop a matrix of current information and a framework to facilitate strategic cross-border skills-sharing cooperation.

Key Findings

Knowledge and Skills Gaps

Five key knowledge areas and 31 specific topics were identified and classified into three levels of importance.

The five areas of knowledge are:

- **i) Policy and Political Economy;**
- **ii) Energy Planning;**
- **iii) Regulation;**
- **iv) Technical and Operational Skills;**
- **v) Management Skills.**

A knowledge-skill matrix links each of the 31 topics to relevant skill requirements.

Existing Cross-Border Cooperation Initiatives

- Various cooperation initiatives were identified, involving both public and private sectors at international, regional, and national levels.
- These initiatives are mostly informal, and their analysis revealed a significant correlation between the format of cooperation and the skills required in each area.

Seven main types of cross-border cooperation were observed:

- Events (conferences, workshops, policy dialogues).
- Exchange Programs (internships, fellowships, peer review sessions, study visits, twinning programs).
- Joint Projects.
- Online Platforms with shared resources.
- Professional Networks and Collaborative Platforms.
- Publications (joint studies and analysis, reviews, reports).
- Training Programs (online and in-person).

- Key barriers to effective skills exchange include:
  - Funding constraints.
  - Lack of awareness and asymmetric information about opportunities.
  - Regulatory and policy challenges.
  - Absence of structured regional and continental frameworks.
  - Language and cultural barriers.

Proposed Framework for Cross-Border Skills Cooperation

The framework consists of four components:

- An Online Information Platform – A centralized digital hub for stakeholders to access information on skills-sharing opportunities, enabling easier collaboration.
- Formal Cooperation Agreements – Establishing legal agreements to formalise existing initiatives, ensure stakeholder commitment, and enhance financial sustainability.
- A Sustainable Funding Mechanism – Developing secure funding sources, emphasizing co-funding models and internal funding sustainability.
- Monitoring, Evaluation, Research, and Learning (MERL) Framework – Implementing a structured evaluation system to track cooperation outcomes, assess impact, and adapt strategies based on regulatory adjustments.

Governance and Coordination Mechanism

- *AFREC* will lead the coordination and governance of the framework in partnership with regional champions and key stakeholders at the regional and national levels.
- *Regional Champions* are designated experts for each of the five regions, and they include representatives from:
  - Regional Economic Communities (RECs).
  - Regional Energy Regulators.
  - Regional Renewable Energy and Energy Efficiency Centres.
  - Continental and regional organisations involved in skills exchange, such as AFUR, ASR, and EREA.
- *Key stakeholders* at the national level include:
  - Member State Focal Points.
  - Major national universities and vocational training providers.
  - Research organisations.

Action Plan (2025–2029)

The framework will be implemented progressively through the development of:

- An online platform to facilitate skills exchange opportunities.
- Support mechanisms for formal cross-border cooperation agreements.
- Pilot projects to test and refine the framework's effectiveness before full-scale deployment.

Pilot Projects for Implementation

Four pilot projects are proposed to demonstrate the feasibility and impact of cross-border skills exchange:

- Exchange of Skills between African Power Pools
  - Strengthening cooperation among the five African Power Pools to enhance institutional capacity and technical expertise.
  - Supporting regional regulators and technical experts through structured skills-sharing activities.
- Skills Exchange Programme in the African Energy Sector (SEPAES)
  - Facilitating internship programs to develop skills at an individual level.
  - Establishing staff and expert exchange programs among African organisations.
  - Promoting knowledge-sharing platforms through conferences and policy dialogues (both online and in-person).
- Capacity development and skills sharing between AU Member States
  - Strengthening the capacity of national energy experts through exchange programmes (fellowships and study visits).
  - Enhancing institutional and individual skills through targeted capacity-building and skills-sharing initiatives.
  - Promote the production and exchange of knowledge and skills through online or face-to-face exchange platforms (conferences, policy dialogues, etc.).
- Policy dialogue series for the transformation of Africa's Energy Sector

- Strengthening of individual skills of African energy experts through policy dialogues on specific topics and areas in line with the needs and the context.
- Enhance the knowledge-skills sharing between policymakers and other energy experts, including the private sector.

Conclusion

This report presents a comprehensive framework for fostering cross-border skills-sharing cooperation within Africa's energy sector. The primary objectives are to enhance institutional capacities, address existing skills gaps, and improve collaboration among key stakeholders. By executing this strategy, AFREC and its partners can facilitate knowledge-driven, collaborative, and sustainable growth in the African energy sector.

1-INTRODUCTION

This section provides an overview of the urgent need for skills development in Africa's energy sector, outlining the key challenges, policy recommendations, and the rationale for a cross-border cooperation framework. It introduces AFREC's role in addressing capacity gaps and sets the stage for a proposed strategy to foster skills-sharing and collaboration across the continent

1.1 Background

The need for skills to support energy development in Africa is critical; however, the sector faces a significant skills gap due to a shortage of qualified professionals capable of meeting its evolving demands (Brennan and Limmer, 2015; International Renewable Energy Agency (IRENA),. This challenge is exacerbated by various factors, including insufficient technical and financial resources, as well as ineffective institutional, political, and regulatory frameworks to sustain skills development (Eberhard, A. et al. 2016; African Development Bank (AfDB) 2019). Additionally, socio-political barriers further hinder efforts to address this gap, collectively creating substantial obstacles to the development of essential competencies in the industry (Bishoge, Kombe, and Mvile 2020; World Bank 2022). Addressing these challenges requires coordinated efforts from governments, industry stakeholders, and educational institutions to enhance training programs and strengthen capacity-building initiatives (UNESCO 2020).

To address the skills gap in the African energy sector, the literature recommends:

- Strengthening regulatory frameworks for skills development and developing the capacity to attract energy service providers is essential for addressing skills gaps and ensuring sustainable growth in the energy sector (Bishoge, Kombe, and Mvile 2020).
- Improving the responsiveness of skill supply through suitable policies, adequate funding, and relevant qualifications (Brennan and Limmer 2015).
- Enhancing the development of technical skills by incorporating them into educational and training curricula (Blyden 2005).

In the African energy sector, cultivating and sharing technical skills is crucial for fostering regional energy pooling initiatives. These collaborations improve efficiency and empower communities to manage energy resources effectively (Blyden 2005). Research highlights the importance of cooperation among community members, experts, and policymakers in strengthening stakeholder capacity and driving sustainable progress in the region (Ambole et al. 2019; Nadison, Olekanma, and Mgedezi 2023).

Industry-academia partnerships play vital roles in fostering innovation and addressing skills shortages across African countries. Integrating energy development programs into university curricula equips students with the skills required for the evolving sector. Moreover, collaborations with regional organisations, such as power pools, facilitate the exchange of expertise and resources, creating a dynamic ecosystem for sustainable energy development (Ambole et al. 2019; Blyden 2005).

Skills-sharing and capacity development in the African energy sector are essential for addressing existing challenges. Implementing targeted strategies will create an environment that fosters knowledge exchange, ultimately driving sustainable growth and innovation on the continent. In this regard, the African Energy Commission (AFREC) plays a pivotal role. As a specialised agency of the African Union (AU), AFREC is tasked with coordinating and developing energy policies, promoting sustainable energy solutions, and enhancing technical expertise across the continent. AFREC's efforts in capacity building and skill sharing are essential for addressing Africa's energy challenges. By enhancing technical expertise, fostering regional cooperation, and supporting regulatory improvements, AFREC contributes to the development of a skilled workforce that can drive sustainable energy growth in Africa.

In response to identified challenges, the African Energy Commission (AFREC) has developed a Comprehensive Capacity Building Programme tailored for the African Energy Sector. This programme highlights the various capacity gaps across different levels and presents a more precise classification of capacity deficiencies, aligning them with broader project goals. The programme recommended for strengthening Cooperation for Cross-Border Learning by fostering an environment that encourages expert exchanges, collaboration, and overall growth among participating countries; facilitating expert exchanges between African nations is crucial. The current report proposes a framework for strategic cross-border cooperation focused on skill sharing within the African energy sector.

1.2 Objectives of the Proposed Framework

The cross-border framework proposed in this report sought to provide a comprehensive understanding of the level and quality of knowledge sharing among African countries, as well as regional and international organisations within the energy sector. It seeks to foster the spirit of collaboration, exchanges, and knowledge sharing amongst African states, regional and international organisations. This is with a view of developing a framework and guidelines that promote and facilitate cross-border cooperation in the exchange of experience and skills within the African energy sector.

1.3 Target Audience

The framework for cross-border strategic cooperation in skills-sharing within the African energy sector is designed for a broad range of stakeholders, including:

- Regional Economic Communities (RECs).
- Pan-African Institutions.
- Power Pools (PP).
- Regional Centres for Renewable Energy and Energy Efficiency.
- Associations of Regulators.
- Regional Regulatory Institutions.
- International Institutions.
- Ministries.
- National Regulatory Institutions.
- Utilities.
- Academia.
- Training Institutions.
- Policymakers from AU Member States.
- Energy Planners, Experts, and Technicians from AU Member States.
- Philanthropic and Non-Profit Organisations.
- Think Tanks.
- Non-Governmental Organisations (NGOs).
- Other Relevant Stakeholders.

2. METHODOLOGY

This section outlines the structured methodology used to develop the framework for cross-border skills sharing in Africa's energy sector. It combined literature review, analysis of existing initiatives, and stakeholder engagement through surveys and focus groups. Key concepts were defined to guide the process, and insights from 365 stakeholders helped ensure the framework is practical, inclusive, and aligned with real sector needs.

Introduction

A structured framework for skills development and sharing in Africa's energy sector has been developed using a systematic, multi-stakeholder approach. This methodology incorporated applied research that involved collecting and analysing data, engaging stakeholders, analysing policies and best practices, and implementing strategies focusing on continuous evaluation and improvement. This approach ensured that the framework effectively addresses the skills gap and fosters growth in the energy sector.

2.1 Definition of Key Concepts

Framework for Strategic Cooperation in Skills Sharing: A structured system designed to facilitate collaborative efforts and exchange knowledge, expertise, and competencies among individuals or organisations in the African energy sector. It outlines the mechanisms and guidelines for initiating cross-border skills-sharing cooperation.

Matrix or mapping capacity-building topics: A visual representation that delimits the correspondence between two axes or domains, each comprising sub-components. In this report, the term 'matrix' refers to a static repository of information that served as the foundation for developing an online platform designed to facilitate skill sharing throughout Africa.

Platform (online): A software-based online infrastructure that facilitates interactions and transactions between users. This report defines the platform as an open-access hub that provides users with valuable information on capacity-building initiatives, training opportunities, and skills-sharing programs relevant to the African energy sector. Upon implementation, this platform is set to function as a marketplace, thereby facilitating direct interactions among diverse stakeholders within the African energy sector.

Theory of Change (ToC): A comprehensive framework that outlines how and why a desired change is expected to occur within a specific context. It details the causal pathways between an initiative's activities and its intended outcomes, emphasizing the underlying assumptions and preconditions necessary for success. In this report, the terms of reference of the strategic cooperation framework on skills sharing define the channels, the actors involved, the institutional arrangements, the activities, and the expected results through which the framework aims to achieve its objectives or effects, particularly the improvement of skills sharing in the energy sector in Africa.

2.2 Overview of the Methodology

The methodology used to develop the framework for skills sharing in the African energy sector relies on both literature and primary qualitative data collection and analysis. A qualitative research approach was employed to explore and describe the current state of cross-border skills-sharing initiatives on the continent and identify and analyse organisations' capacity and interests in cross-border skills development. Given the complexity and multifaceted nature of the topic, this approach was best suited to providing a deeper understanding of the perspectives, experiences, and contextual factors influencing such initiatives. The best practices and insights from case studies of existing cross-border skills sharing derived through in-depth analysis of documents, along with primary data gathered through online questionnaires and physical engagements with the key stakeholders on the continent through a workshop and focus group discussions, contributed to a comprehensive understanding of the topic and informed future practice.

The development of the framework for cross-border strategic cooperation in skills sharing was structured around five comprehensive steps or activities. Figure 1 provides a holistic view of the methodology used in the framework development

Figure 1 – Flowchart of the methodology used

These are described in the sections below.

2.3 Literature Review and Identification of Capacity Needs

The literature review commenced with an analysis of the report from the African Energy Commission (AFREC, 2024), identifying key gaps in the African energy sector. These gaps were categorized into different typologies, which helped define five primary areas of knowledge and skills for capacity development and sharing. Each knowledge area represents a distinct domain of expertise characterized by specific methodologies, concepts, and applications.

Additionally, an extensive desk review of research papers/reports from scientific reviews and journals, as well as from organisations like ACBF, AfDB, AFREC, AFUR, APUA, IRENA, and the World Bank, concerning skills development in Africa's energy sector was conducted to corroborate findings and identify relevant issues crucial to the development of the proposed framework.

2.4 Exploration and Analysis of Existing Cross-border Cooperation Initiatives for Skills Sharing

This phase involved a comprehensive exploration of current cross-border skills-sharing initiatives identified by examining activities and programmes developed by national, regional, and continental organisations within the energy sector. Through desk research, we identified successful programmes and strategies that have already been implemented and examined their effectiveness to glean insights and lessons learned.

The analysis of these initiatives aimed to:

- Identification of cross-border cooperation initiatives in skills sharing from a review of organisations' websites and news.
- Classify cross-border cooperation activities (e.g., conferences, workshops, policy dialogues, in-person and online courses).
- Identify best practices to inform the development of a structured framework (e.g., the establishment of repositories for open-source planning models, complete with documentation and training support).
- Recognise challenges associated with skills-sharing initiatives.

2.5 Mapping Capacity-Building Topics for drafting an online Platform

Based on an analysis of existing initiatives in cross-border cooperation for skills sharing and a comprehensive review of the AFREC report on the capacity-building needs in the African energy sector, a matrix was developed to map knowledge areas to topics and service providers. This matrix acted as a visual guide for identifying critical focus areas within the energy sector across the continent, highlighting where intervention is most needed. This static repository of information served as the foundation for an evolving open-access *platform* designed to enhance skills-sharing across Africa.

The matrix has been used to draft a template for a future online platform that, once implemented, will act as a central hub, providing users with information on capacity-building initiatives, training opportunities, and skills-sharing programs relevant to the African energy sector. The proposed structured matrix in the Excel workbook—and eventually, the web-based, open-access online platform—will facilitate easy access to information on organisations that possess or seek expertise in specific areas and topics, thereby fostering collaboration and knowledge exchange across the sector.

2.6 Stakeholder Engagement

Stakeholder engagement played a pivotal role in ensuring the effective development of the framework. It aims to gather insights and pinpoint specific needs associated with each mapped topic and area, ensuring that the project's approach would be inclusive and grounded in real-world challenges. It facilitated a comprehensive understanding of the interests, needs, and challenges faced by various organisations within the African energy sector.

Stakeholder engagement was facilitated through the data collection and consultation processes, utilising two methods or tools: an online structured questionnaire and workshops and focus groups. From these engagements, a comprehensive understanding of ongoing and recent activities in cross-border cooperation and capacity building in the African energy sector was gained. Additionally, the willingness of the contacted organisations to further participate in this type of cooperation, either as beneficiaries or providers, was explored.

Contacted Organisations

A broad range of stakeholders from the African energy sector was identified based on their involvement and interest in the African energy sector and ensuring regional inclusiveness by including all eight AU-recognised RECs. In total, 365 organisations from 12 categories were contacted, including:

Type of stakeholders engaged

Figure 2 shows the breakdown of questionnaire respondents by organisation type, based on the total number of organisations contacted. Many utilities were contacted, almost twice as many as ministries. However, only a small number of them responded, representing only 10% of the final number of respondents. In contrast, government departments accounted for 35% of respondents. This figure can be interpreted as their involvement in the project and their expectations of the results.

Regulatory authorities, universities, and research centres also showed interest in the project, with 18% completing the questionnaire.

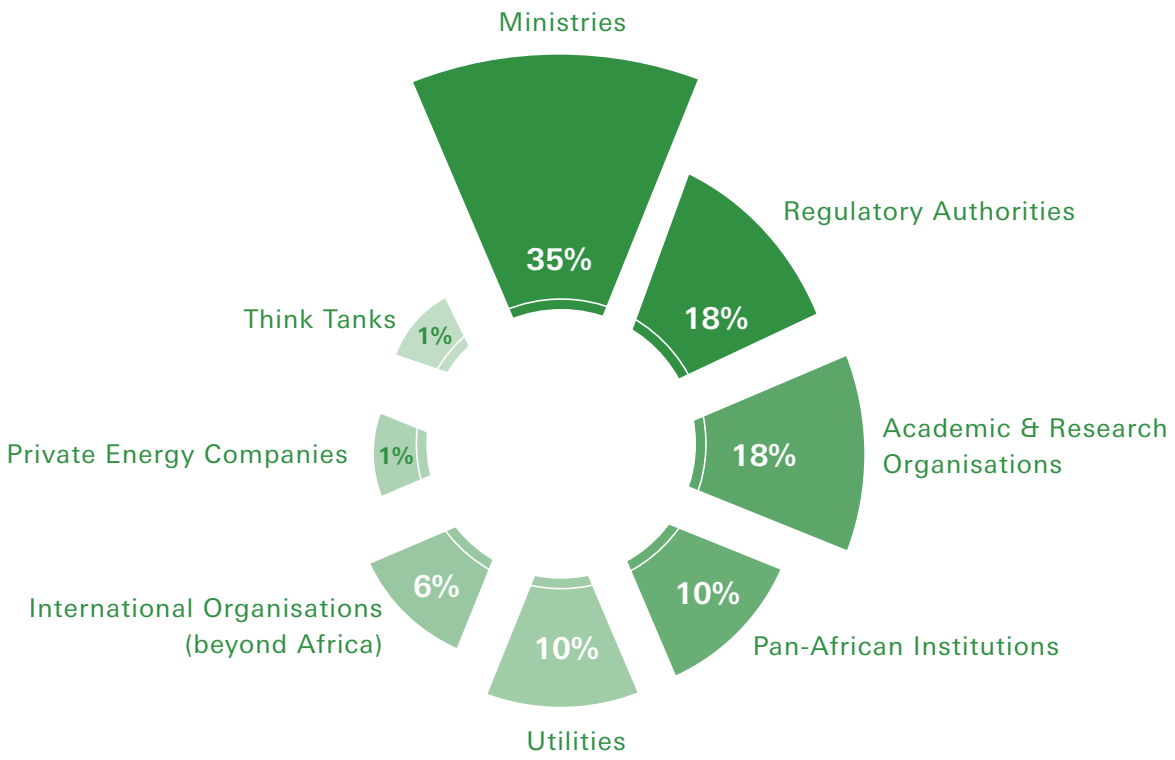
It should also be noted that 6% of respondents were international organisations located outside Africa but with activities related to skills development on the continent.

Figure 2 Type of stakeholders engaged in the survey365 NGO.pdf

The Questionnaire and its Administration

A **structured online questionnaire** was developed and disseminated among the identified organisations to collect relevant data on existing and future **cross-border skills-sharing** activities in the African energy sector. The questionnaire is presented in Annex 3.

The initial data collection period was **2–20 December 2024**, later extended to **17 January 2025** to ensure broader participation and robust findings.



The Stakeholders' Engagement Process

There were four steps in the stakeholders' engagement process to ensure that stakeholders' interests and perspectives were considered in developing the framework for cross-border strategic cooperation in skills sharing. The different steps are:

I. Presentation of preliminary findings to AFREC and key African member states: The preliminary findings have been formally presented to AFREC and a group of energy experts from key African member states, including the Ministry in Charge of Energy, Regional Economic Communities (RECs), the Regional Centre for Renewable Energy, African Union institutions, and significant international organisations. This presentation took place during a consultative workshop held in Abidjan, Côte d'Ivoire, from December 11 to 14, 2024.

II. Seeking feedback and clarifications from identified stakeholders: The preliminary findings have been shared with energy experts to gather feedback and insights regarding skills sharing. These initial two steps of the process were crucial for engaging with the energy experts from key African member states and collecting their perspectives and interests.

III. Discussion on pilot projects and forms of cooperation within focus groups: The identification and description of pilot projects contributed to planning the successful implementation of the framework for cross-border strategic cooperation in skills sharing within the African energy sector. Through focus groups, energy experts from key African member states shared insights and interest in participating in some pilot projects.

IV. Seeking insights on best practices from key organisations: Some key organisations, such as regional regulators, universities, and international organisations, have been engaged in providing insights on best practices, which helps describe the scope of the initiative, the challenges, and the funding strategy. This step enables the identification of insights and lessons learned for an effective implementation of the framework.

V. Enhancing the framework by feedback from energy experts: The presentation and discussion regarding the draft final report, along with the proposed framework for cross-border strategic cooperation in skills sharing within the African energy sector, facilitate a thorough review and enhancement of the proposed framework by energy experts from key African member states. This final step is essential to ensure both the framework's effectiveness and inclusiveness, awell as to secure the commitment of African energy experts to its implementation.

Data analysis and management

Data collected during the stakeholder engagement, precisely the information obtained from the survey and the data gathered from various focus groups, including the comprehensive list of existing cross-border skills-sharing initiatives, have been consolidated into Excel spreadsheets. The qualitative and quantitative data underwent analysis using MS Excel to generate graphical representations of the results. `

2.7 Framework Development

An extensive desk study was conducted, encompassing a literature review and analysis of existing cross-border collaborations in skills sharing within the African energy sector. This effort facilitated the development of an initial framework and informed its proposed structure. The incorporation of global best practices and lessons from effective partnerships, including the challenges faced and findings from the literature review, played a key role in shaping the framework's components, structure, governance, and implementation aspects. Furthermore, active stakeholder engagement was crucial in pinpointing a possible pilot project to kick off the framework's implementation.

Finally, all the gathered information was synthesised to develop a comprehensive framework for cross-border strategic cooperation. This framework is designed to facilitate skills sharing and collaborative efforts in the African energy sector, laying the groundwork for future partnerships and initiatives aimed at strengthening capacity across the continent.

The initial findings regarding the development of the framework are elaborated upon in the subsequent Chapter

3. KEY FINDINGS, ANALYSIS OF EXISTING INITIATIVES, AND BEST PRACTICES

This section presents the key findings that informed the development of the framework, drawing from literature analysis, stakeholder feedback, and a comprehensive review of existing cross-border skills-sharing initiatives in Africa's energy sector. It maps relevant knowledge areas and priority topics, identifies current cooperation formats, and highlights both the challenges and opportunities of ongoing initiatives. Insights gathered from stakeholder consultations and data collection reveal preferred collaboration formats and stakeholders' willingness to share skills across topics and areas. The section also integrates international best practices to strengthen the framework's design and concludes with an evidence-based foundation for its development.

3.1 Introduction

This section presents the key findings from the literature review, the results of mapping, and the knowledge areas and topics of interest. It also presents the results of the analysis of the existing cross-border collaboration and data collected from stakeholders on their areas and topics of interest to build collaboration initiatives. Pie charts, heat maps, and bar graphs have been used to present the findings. The section discusses topical issues on capacity building and effective and ineffective cross-border collaboration.

3.2 Literature findings to support the development of the framework

The literature review served two principal objectives. First, it aimed to understand the context and parameters associated with developing a framework for skills sharing while also analysing best practices and identifying the essential conditions for its successful implementation. Second, it intended to delineate and categorise the areas and topics to be addressed in formulating skills-sharing activities.

Regarding the primary objective, the literature and examples examined demonstrate a widespread consensus that effective knowledge transfer—whether through formal and structured programs, informal networks, online platforms, or joint ventures—enhances innovation, cultivates human capital, and expedites the dissemination of best practices across the sector. The key findings underscore that the mechanisms for skills and knowledge sharing manifest in various forms:

- Capacity-building programs and training workshops[1] . There are several prevalent mechanisms for transferring skills between organisations and across countries. Collaborative initiatives typically include training sessions, peer learning workshops, and staff exchanges designed to foster local expertise. For instance, global partnerships often allocate resources towards training and knowledge exchange programs to ensure that all partners possess the essential skills required for emerging energy technologies.
- Another crucial mechanism involves creating knowledge networks and platforms. Industry reports highlight how utility companies are using formal networks to share operational expertise. The World Bank's Utility Knowledge Exchange Platform (UKEP) exemplifies an initiative that promotes peer-to-peer partnerships among power utilities globally. These platforms[2] provide a framework for institutionalising knowledge exchange, allowing organisations to learn from each other's successes and failures in real time.
- Public-private partnerships and international alliances significantly contribute to the facilitation of skill sharing. Collaborative industry projects, twinning arrangements among utilities or agencies, and strategic alliances—such as the Clean Energy Ministerial or Mission Innovation—enable the cross-pollination of expertise. Many of these collaborations function as platforms for knowledge exchange, even when their primary objective is to align policy or investment strategies. By offering avenues for dialogue and knowledge sharing, international events and networks play a crucial role in aligning strategies and disseminating expertise across countries in the Global South.

Another significant finding highlights that, beyond bilateral exchanges, cross-border collaboration and regional network initiatives demonstrate how structured cooperation can facilitate knowledge transfer on a broader scale. In Europe, for instance, the European Union has acknowledged the necessity for enhanced cross-border knowledge sharing to fulfil its renewable energy targets. The recent Clean Energy Package of the EU aims to redesign knowledge transfer policy cooperatively, effectively addressing the gap in tacit knowledge sharing and promoting stronger regional cooperation for cost-effective renewable development *(Grigorescu et al. 2022).*

In the Global South, cross-border energy projects often function as conduits for skill transfer as well as for physical infrastructure. The African regional power pools serve as prime examples, with the West African Power Pool *(WAPP)* uniting 14 countries, not only interconnecting electricity grids but also consolidating util-

1 In Africa, the International Renewable Energy Agency's Africa Clean Energy Corridor initiative demonstrates this approach: it convenes regional training workshops and national capacity-building programs to help countries develop the expertise to plan, operate, and regulate power systems with high shares of renewables.

2 In addition to UKEP, IRENA's Collaborative Frameworks provide multi-stakeholder forums for countries to engage in peer-to-peer dialogue and coordinate on specific topics (e.g. green hydrogen, critical materials), explicitly aiming to facilitate knowledge exchange in support of the energy transition.

ities and regulators to exchange operational expertise and planning capabilities. Additionally, the Southern African Power Pool, the Central American Electrical Interconnection System *(SIEPAC),* and emerging power trade initiatives in South Asia effectively combine infrastructure agreements with institutionalised knowledge-sharing forums to ensure that all parties can operate and benefit from the shared systems.

Indeed, South–South and triangular cooperation arrangements provide alternative models for cross-border skill sharing, which involve developing countries collaborating directly, often with the support of a multilateral agency. In a recent project[3] facilitated by the United Nations Development Program, this approach is exemplified by a trilateral partnership among Ethiopia, China, and Sri Lanka, which has formed to exchange knowledge on renewable energy solutions. Such direct exchanges enable countries to acquire practical skills, such as installing and maintaining biogas digesters or solar farms, from counterparts who have implemented similar solutions, rather than relying solely on external consultants. The South–South model frequently emphasises mutual learning and the adaptation of knowledge to local contexts, which can prove to be more effective than generic advice.

Literature regarding knowledge transfer within the energy sector also elucidates the barriers and facilitators associated with effective skill sharing. A significant challenge arises from the transfer of tacit knowledge, which encompasses expertise that is not readily codified. Even in the presence of international projects, valuable tacit knowledge may remain confined within silos (*Grigorescu et al. 2022)*. For example, a study on the solar industry in Ghana indicated limitations in the mobility of skilled workers among firms, thereby restricting the dissemination of hands-on experience throughout the country *(Kuada and Mensah 2020)*. Without intentional strategies, expertise is likely to remain confined within organisational boundaries.

Other significant obstacles to effective skills sharing include the funding and financial sustainability of the initiative, as well as the absence of a structured system for evaluating the results and impact of the initiative. Specific skills-sharing projects have been hindered or unable to reach completion due to insufficient funding or the lack of a viable funding model. Most skills-sharing initiatives rely on one or a limited number of international donors and tend to cease operations once the funding from these donors concludes. Recognising and incorporating the contributions of participants (both beneficiaries and providers) towards the funding of skills-sharing events may enhance the financial sustainability of the initiative and foster a greater commitment from participants. *(Ziderman 2003; 2018; Gambin and Hogarth 2016; Oviawe 2018; 2020).*

Some authors *(Psacharopoulos 1997; Gambin and Hogarth 2016)* emphasise the significance of establishing a system for monitoring the results and impact of skills sharing to facilitate the adaptation of planning and strategies. Numerous training initiatives, skills-sharing workshops, and networking events often fail to incorporate monitoring activities that evaluate outcomes or ensure the effectiveness of these undertakings. This oversight is particularly prevalent in informal initiatives that are organised without regard for sustainability or anticipated impact. Incorporating a systematic approach to measuring results and impact is essential for assessing the effectiveness of skills development and sharing initiatives, and fostering an internal learning process. (*Psacharopoulos 1997; Brunhaver et al. 2017).*

Optimal strategies for overcoming these barriers involve establishing formal processes to facilitate knowledge capture and exchange, including mentorship programs, joint task forces, or rotational assignments among partner organisations. Fostering a culture of knowledge sharing alongside an environment characterized by openness and trust is essential; partners should feel reassured when sharing insights, including failures, without fearing competitive disadvantage (Edwards 2008; Amin, A., Bargach, S., Donegan, J., Martin, C., Smith, R., & Burgoyne, M. 2001). Furthermore, clear governance of collaboration—entailing the definition of roles, expectations, and communication channels—ensures that knowledge sharing does not fall through the cracks. Notably, various reports highlight that inclusive collaboration, which encompasses a blend of seasoned and less experienced participants, yields reciprocal benefits: less-experienced organi-

3 *In this project, specialists from all three countries took part in collaborative workshops and site visits, providing practical knowledge exchange.*

sations can rapidly enhance their capabilities. At the same time, more advanced entities gain fresh perspectives and access to expanded markets. Furthermore, several authors (Grigorescu et al. 2022; Nadison, Olekanma, and Mgedezi 2023; Ayla Majid 2025) advocate for including knowledge transfer mechanisms within energy projects and agreements by government entities and industry leaders. International donors and development organisations are progressively implementing this by mandating knowledge sharing in project designs, a trend that should be perpetuated.

Regarding the second objective of the literature review, which focuses on analysing skills gaps, the examined literature has highlighted the widespread existence of skill gaps across various countries, regions, and domains. Indeed, the AFREC's comprehensive survey and report on capacity-building needs in the African energy sector identified key knowledge areas and pressing energy issues that must be addressed (AFREC 2024). Notably, the AFREC report provided a comprehensive understanding of both existing capacities and skill deficiencies at the regional level, complemented by recommendations for capacity-building programs designed to address these shortcomings. This report has laid the groundwork for a systematic framework to map knowledge domains and subjects relevant to

capacity building and the sharing of skills.

The key insights from this literature review can be encapsulated in five main points:

1. Collaboration among organisations and across borders is crucial for addressing complex challenges that cannot be solved by any one entity.
2. Successful knowledge-sharing programs combine formal training and capacity building with peer interactions and collaborative learning, often underpinned by international frameworks.
3. Regional collaboration, exemplified by power pools, interconnectors, and multinational research partnerships, facilitates the continuous exchange of expertise, leading to measurable improvements in energy access, reliability, and sustainability.
4. Key barriers and enablers include creating a "knowledge-sharing culture" through formal partnerships, sustainable funding approaches, and systematic outcome measurement, all of which are vital for effective skills and knowledge transfer.
5. A notable skills deficit is present in various energy-related fields in African regions, which can be addressed through enhanced knowledge and expertise sharing skills.

3.3 Mapping of Knowledge Areas and Topics

The findings from AFREC's regional study on capacity-building initiatives provide valuable insights into existing skill gaps and highlight priority areas for targeted interventions. A detailed examination of this information underscores the need for structuring capacity-building efforts into the following five key knowledge areas:

- Policy and Political Economy.
- Energy Planning.
- Regulation.
- Technical and Operational Skills.
- Management Skills.

A detailed description of these areas of knowledge is provided in *Annex 1* of this report.

In addition to identifying broad knowledge areas, AFREC's study pinpointed specific topics of interest. These topics were further supplemented through a comprehensive literature review and subsequently categorised into three tiers:

- *Tier 1 – Highly relevant topics requiring immediate attention.*
- *Tier 2 – Topics of intermediate relevance, warranting medium-term focus.*
- *Tier 3 – Topics of lesser relevance but still valuable for capacity development.*

A comprehensive list of these topics is included in ***Annex 2*** *of this report.*

As part of the above categorisation, a comprehensive knowledge area-to-topic-to-service-provider matrix has been developed in an Excel workbook. This innovative matrix effectively maps each of the five distinct knowledge areas to specific topics across three tiers, based on their relevance and impact, thereby creating a structured and prioritised framework for skills development and sharing within the African energy

sector. Furthermore, it encompasses a diverse array of institutions providing those capacity-building programs and skills-sharing opportunities. This is further elaborated by details regarding the formats of those capacity-building initiatives through which knowledge and skills are shared. This tool will serve as an invaluable repository of available skills development and sharing programs tailored to the African energy sector, and it will be provided alongside this report as a separate resource. A snapshot of a page of the matrix is depicted in Table 1 below.

In the matrix presented, the area of knowledge pertinent to each topic is denoted through a colour-coded system, as demonstrated in Table 1. The complete matrix serves as a user-friendly tool developed within an Excel spreadsheet, intended for the use of AFREC and associated stakeholders. Each cell of the matrix, found on the 'Matrix with consolidated list' sheet, is linked to a specific sheet within the Excel spreadsheet, which provides comprehensive details on existing cross-border cooperation for a given combination of area and topic. This includes information on the organisations involved, those interested in fostering cross-border cooperation, including host and provider organisations, the proposed forms of cooperation, the targeted country or region, and other relevant details. For instance, the cell corresponding to the intersection of the topic 'Renewables: Integration, financing' and the 'Policy and political economy' column is associated with a distinct Excel sheet that delineates the aforementioned information specific to the topic.

A significant aspect of the matrix is its role in chronicling both past and current capacity-building initiatives offered to stakeholders in the African energy sector by a wide range of institutions. However, it is essential to note that the matrix does not include information about upcoming initiatives or details regarding the potential phase-out of current programs. Moreover, it is not designed as an interactive online tool where beneficiaries can actively search for capacity-building information or submit their specific needs for service providers to address. In essence, it is a static resource rather than a dynamic one. Nevertheless, the matrix contains critical information that can serve as a foundational basis for developing a more dynamic tool, the *platform*, which can address these shortcomings while offering additional, enhanced features.

The envisioned platform will be a web-hosted, user-friendly, periodically updated, open-access tool that builds upon the wealth of information contained in the matrix. Once implemented, this platform will operate as a marketplace, facilitating direct interaction among various stakeholders in the African energy sector. Service providers will have the opportunity to showcase their capacity-building and skills-sharing offerings, monitor potential beneficiaries, and tailor their services to meet specific needs. In turn, beneficiaries will utilise the platform to access valuable information and resources, actively engage with service providers, and collaborate with other beneficiaries to explore joint projects and initiatives in their respective areas of expertise.

To ensure that the platform remains relevant and effective, regular updates of the information it contains will be essential. Additionally, technical requirements and functionalities necessary for the platform's optimal performance will be detailed in the subsequent sections of this report, providing a suggested roadmap for its development and implementation.

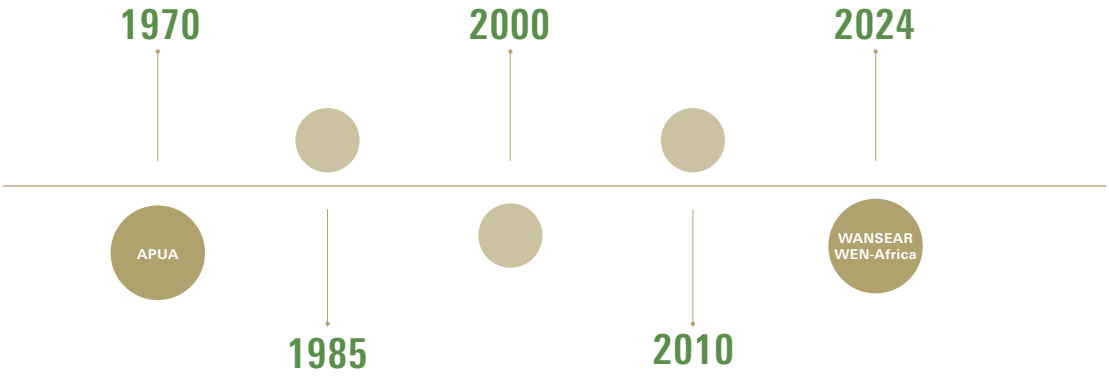
Table 1 A Snapshot of the matrix

Knowledge Topics	Policy & political economy	Planning	Regulation	Technical & operational capacity	Management abilities
Tier 1 (Most Relevant)					
Cross-border issues, regional markets, and continental dimension					
Electricity distribution (on-grid & off-grid)					
Electricity transmission					
Electrification: electricity access					
Energy costs & tariffs					
Energy efficiency & management					
Financial sources & instruments					
Markets design					
Project implementation: engineering, procurement, construction					
Regulation for new technologies: PV, DERs, batteries, EVs, off-grid supply					
Renewables: integration, financing, contract, regulation					
Sustainable energy and climate change					
Tier 2 (Intermediate Relevance)					
Clean cooking					
Climate resilience and adaptation					
Gas sector, LNG					
Gender mainstreaming in the energy sector					
Generation technologies: hydro, geothermal, wind, solar, oil and gas, nuclear, hydrogen, bioenergy					
Hydrogen supply chain regulation					
Performance: reliability, quality of service, measurement, losses					
Policy making, governance & public administration					
Standards: appliances, quality of service, safety, health					
Technological innovation, research					
APUA WENSEAR WEN AFRICA					
Audits, inspections					
Community relations					
Data management					
Desalination					
Economic growth and energy demand					
Electro-mobility					
Urbanisation and energy services					
Water-Food-Energy nexus					

3.4 Results from Analysis of Existing Cross-Border Collaboration and Skills-Sharing Initiatives

Various organisations across Africa are implementing cross-border collaboration and skills-sharing initiatives across the continent. These collaboration initiatives, covering diverse areas and topics, take different formats such as training programs, conferences, twinning programs, peer review sessions, and study visits. This section discusses existing cross-border skills-sharing initiatives, their engagement formats, and the challenges they face.

Based on extensive desk research and data analysis, cross-border collaboration and skills-sharing initiatives have been identified throughout the continent. These initiatives take various forms, including training programs, conferences, twinning programs, peer review sessions, and study visits.



3.4.1 Description of Existing Cross-Border Initiatives

Seventy-six cross-border skills exchange initiatives in Africa's energy sector have been identified. The oldest initiative, APUA[4], was launched in 1970, while the most recent initiative, the WANSEAR[5] and the WEN-Africa[6], were started in 2024.

- Most initiatives have been established informally between entities for an unspecified period.
- They encompass various sub-sectors, including renewable energy, oil and gas, and nuclear energy.
  - These collaborative initiatives correspond with the five knowledge areas. As illustrated in Figure 1 below, they comprised structured skills-sharing activities that are targeted towards: 28% on management skills, 27% on planning,
  - 26% on political economy,
  - 15% on regulatory issues,
  - 5% on technical and operational skills.

4 *The Association of Power Utilities of Africa is a continental, non-profit organisation that brings together power utility in Africa, as well as African and foreign organisations whose activities contribute to the development of the African electricity sector.*

5 *The West Africa Network of Sustainable Energy Academicians and Researchers (WANSEAR) aims to unite experts from academic and research institutions across the ECOWAS region to foster collaboration, innovation, and knowledge-sharing in the field of sustainable energy. This network will serve as a platform for addressing regional energy challenges, supporting policy development, and advancing the transition to clean and reliable energy systems in line with ECOWAS and global sustainable energy goals.*

6 *The Women in Energy Network Africa (WEN-Africa) is increasing the overall female professional's participation in the energy sector with special focus on technical and leadership roles in the Science, Technology, Engineering and Mathematics (STEM) fields. The objective of the WEN-Africa launch workshop was to highlight the need for solidarity in closing the gender gap in the African energy sector and provide a unique opportunity for interdisciplinary advocacy, knowledge sharing, policy dialogue, and capacity development among energy sector stakeholders across the region.*

Collaboration in skills development and sharing within these areas is **crucial** for organisations to gain insights into managing energy projects, executing initiatives, and defining effective policies. However, **technical and operational skills** are shared less frequently (5%). This may be because these skills can often be acquired through structured education and training.

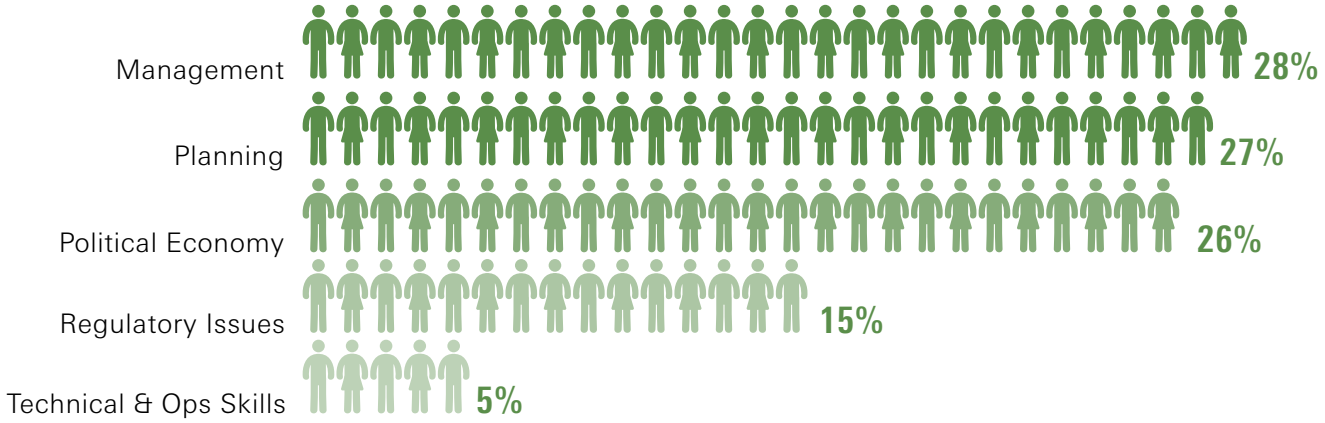


Figure 3 Share of each knowledge area in the existing cross-border initiatives

3.4.2 Formats of Development and Skills Sharing

The analysis of existing cross-border initiatives regarding cooperation formats and skills sharing shows that most collaborations typically involve organising events such as conferences, workshops, and policy dialogues, which account for 29% of the initiatives. Establishing professional networks follows closely behind at 20%. These formats appear to be easier to set up and implement compared to others.

The next two preferred cooperation formats are publications, including reviews, reports, and joint studies, at 5%, and online platforms that provide shared resources, at 6%. These latter formats require more extensive preparation and access to resources and knowledge, making them more challenging for organisations to arrange.

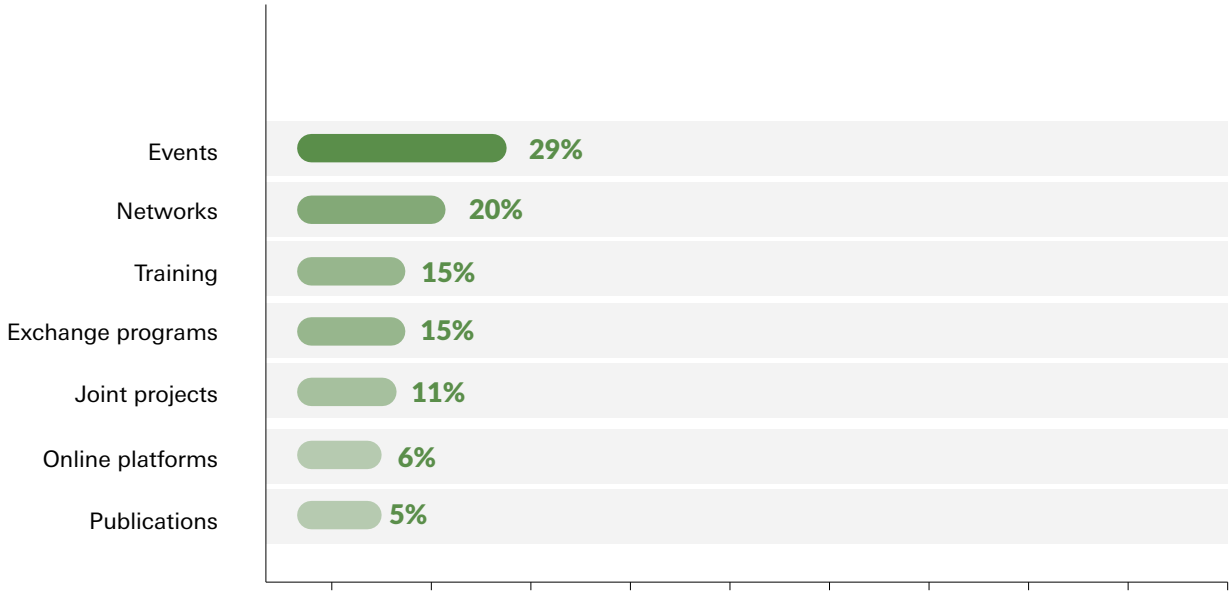


Figure 4 Share of the format of cooperation in the existing cross-border initiatives

The cross-tabulation of existing cross-border skills exchange formats by knowledge area is presented in Figure 5 below. Areas that require more technical skills, such as technical and operational capacity and regulatory matters, tend to favour professional networks/platforms, joint projects, publications, and exchange programs like study visits, peer review sessions, and fellowships. These preferred formats are more suitable for in-depth exchanges of technical and specific skills and knowledge.

Conversely, organising events for skills sharing, such as conferences, workshops, and policy dialogues, is more effective for sharing management skills rather than technical skills.

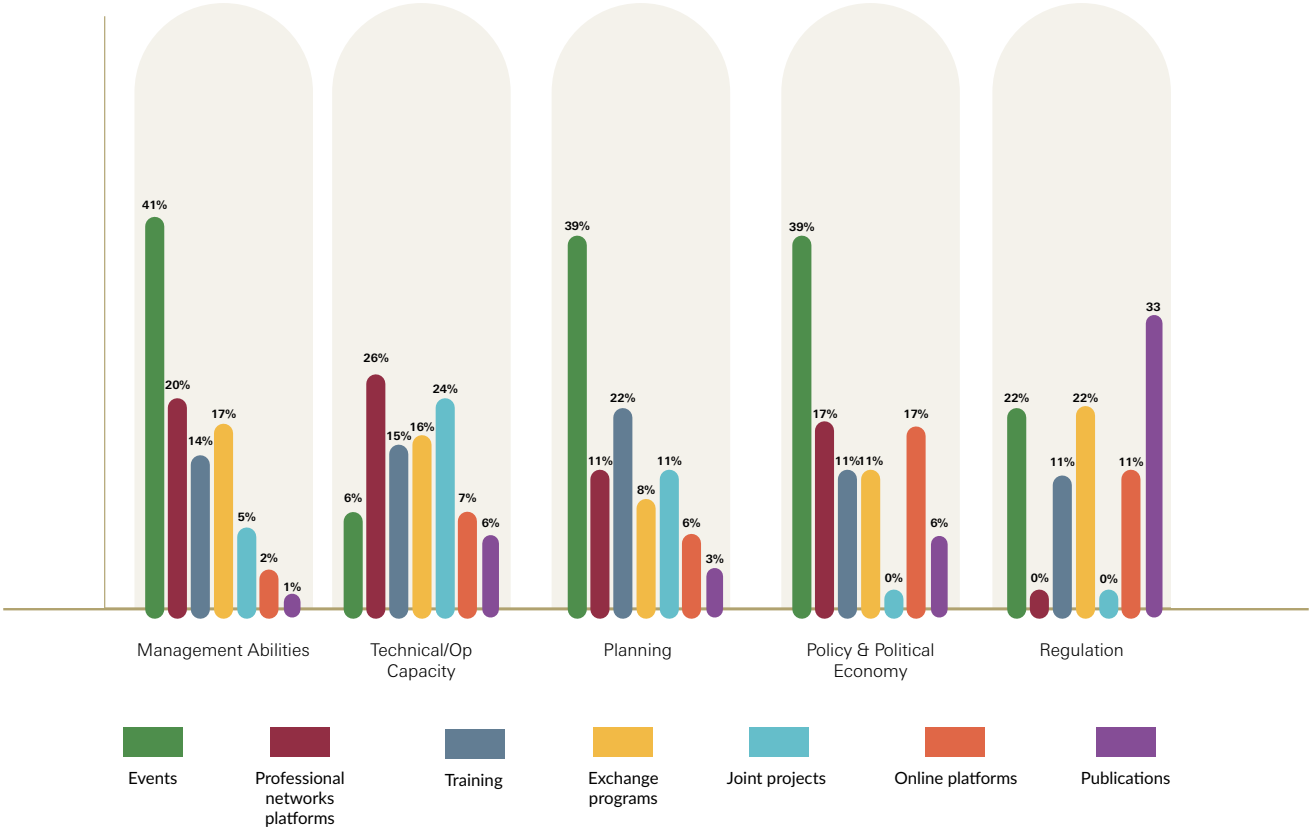


Figure 5 Cross-tabulation of formats by knowledge area

3.4.3 Cooperation Formats in Cross-Border Skills Sharing

Cooperation among AU Member States or organisations can take various forms. This is evident in the analysis of current initiatives aimed at sharing knowledge and skills, as discussed above. The analysis showed a correlation between the format of cooperation and the level of technical complexity or specificity involved in the subject matter.

For areas that require specialised technical skills, such as regulation or operational capacity, preferred cooperation formats include the establishment of professional networks, common platforms, joint projects, publication of studies, research reports, case analyses, and the organisation of program exchanges. These exchanges may involve activities such as study visits, peer review sessions, fellowships, mentorship and internship programs.

In contrast, for less technical fields like policy development, political economy, planning, and management, the favoured formats include events, professional networks, and online platforms. However, training initiatives can be beneficial across all types of areas.

Stakeholders can cooperate in the following formats:

i. Events

Brief description

The most common and simplest format of skills development and sharing activity is the organisation of international events, such as conferences, workshops, and policy dialogues. Several organisations can participate in these events, which can be one-day or several-day events focused on skills development and sharing. In-person events are more open to open discussion, in-depth analysis, and exchange of information and data. Online or hybrid events are the simplest to organise and less expensive than in-person events.

Post-event follow-up activities, such as surveys, are recommended to assess changes and impacts on participants' knowledge and skills.

Case studies (examples from the existing collaboration initiative)

Numerous organisations are coordinating events to develop and exchange skills across borders within Africa. Some of these entities concentrate on specific regions of the continent, such as the West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL), the Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL), ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), the Arab Electricity Regulatory Forum (AERF), the Oil, Gas East Africa Network and Nile Basin Initiative (NBI). Conversely, many organisations adopt a continental perspective, including the African Forum for Utility Regulators (AFUR), the Lusophone Renewable Energy Association (ALER), the Association of Power Utilities of Africa (APUA/ASEA), the Association Africaine pour l ' l'Electrification Rurale (CLUB-ER), and the Africa-EU Energy Partnership (AEEP), among others. The events organised by these entities typically consist of workshops, conferences, and policy dialogues, which are held in person for varying durations, often spanning one or several days. These events comprehensively address all five designated areas.

Results and challenges

The workshops, conferences, and policy dialogues conducted are designed to enhance the sharing of knowledge and skills while also developing the capacities of the participating organisations. The effectiveness of the results primarily manifests in the short term, contingent upon the duration of the event and the participating organisations. Two examples of results are presented here regarding the quality of the event organised and the number of events organised by an organisation in one year.

The Arab-African Energy Regulators Conference 2024[7] took place on November 25–26, 2024, at the General Secretariat of the Arab League in Cairo, Egypt. This event united representatives from electricity regulatory agencies across 20 African nations and 15 Arab countries, with over sixty attendees in total. The conference aimed to enhance regulatory frameworks for public utilities by harmonising policies, promoting collaboration, and promoting knowledge sharing and best practices among Arab and African energy regulatory bodies. Another instance revolves around the number of events hosted by a specific organisation. As for the second example, WASCAL organised five events in 2024[8] (webinars, in-person, and hybrid) related to addressing climate change challenges, promoting sustainable land use, and advancing renewable energy solutions across West Africa. https://wascal.org

The ECREEE annually organises its flagship event, the ECOWAS Sustainable Energy Forum (ESEF), which serves as a premier platform for dialogue, networking, and the promotion of investment in sustainable energy throughout the ECOWAS region. The ninth edition, held in November 2024 in Côte d'Ivoire, focused on the theme, "Towards

7 https://anre.ma/en/actualites/anre-participates-in-the-energy-regulators-conference-at-the-league-of-arab-states-in-cairo/?utm_source=chatgpt.com

8 *Climate Impacts and Resilience Webinar, February 2024*

Symposium on Climate Change and Land Use Management in Africa, September 2024

ECOWAS Sustainable Energy Forum 2024, October 2024

Stocktaking Conference on Climate Services for Risk Reduction in West Africa (CS4RRA), November 2024

WASCAL – Women in Chemical (WINC) Collaborative Science Conference, November 2024

a Just Energy Transition in West Africa," attracting over 500 stakeholders, including ministers, chief executive officers, heads of institutions, international partners, financial institutions, leaders from the private sector, and representatives from civil society organisations. The forum concluded with the presentation of a comprehensive roadmap outlining specific steps to achieve a just energy transition in West Africa. https://www.ecreee.org/esef-ecowas-sustainable-energy-forum?utm_source=chatgpt.com

Organising such events presents two significant challenges. The first challenge is related to the funding necessary for event organisation. Most organisations primarily rely on financial support from donors, including Development Finance Institutions (DFIs) and bilateral cooperation agencies, while a select few, such as AFUR and APUA, also generate revenue through membership fees. The second challenge involves the difficulties in ensuring effective monitoring of the results and impacts of the events, as well as their long-term influence on the enhancement of attendees' skills.

ii. Exchange projects

Brief description

Cross-border exchange projects are collaborative initiatives that bring together people, organisations, or governments from different countries or regions to share knowledge, foster understanding, and achieve mutual goals. These projects effectively address global challenges, promote cultural exchange, and drive innovation. Examples of cross-border exchange projects or programmes include study visits, internships, fellowships, twinning programmes, and peer review sessions between two or more continental, regional, or national organisations with different levels of knowledge or skills. These initiatives facilitate the transfer of knowledge and expertise from established to less experienced organisations. These exchanges take place through:

- The staff exchange short visits, ranging from a few days to several weeks. This is particularly beneficial for staff at junior or mid-level management.
- Twinning programs are organised between two or more countries, regions, or organisations collaborating for mutual goals. These consist of exchanging information and data, including staff for short visits, as well as mutual assistance and support on specific projects or assignments, ensuring the smooth training and coaching of less experienced staff. The programme typically fosters knowledge sharing, cultural exchange, capacity building, and the development of long-term partnerships. The twining programme is built between partners with shared objectives, common interests, or complementary strengths. It is relevant to junior or middle-level staff.
- The internship and fellowship programmes offer practical experience, skill-building, and mentorship in specific areas or topics to staff at earlier or medium/advanced stages of their careers. These programmes can be planned for between one week and several months. Although fellowships are typically more specialised than internships, both offer structured learning opportunities to acquire in-depth expertise in specific fields and foster leadership and innovation. **West Africa Centres of Excellence for Energy Network (WACEENET), African Research Universities Alliance (ARUA) Centre of Excellence (CoE) in Energy, for instance,** provided internship and fellowship programmes for students and staff.
- The organisation of peer review sessions between representatives from Member States and regional and national organisations allows for the structured exchange of work, ideas, and projects with their peers for constructive feedback, thereby improving the quality of work, fostering collaboration, and ensuring accountability and mutual learning. The peer review process focuses on top management and senior staff. Exchange projects or programmes include an impact assessment study at the end of the programme. This study contributes to assessing the programme's impact on all participating organisations, both those that have previously attended and those that have not.

Case studies (examples from the current collaboration initiative)

Several organisations are involved in exchange programmes, including the ECOWAS Regulatory Twinning Programme, African Women in Energy and Power (AWEaP), Engendering Utilities, the West Africa Centres of Excellence for Energy Network (WACEENET), and the Global Women's Network for the Energy Transition (GWNET).

For instance, the ECOWAS Regulatory Twinning Programme seeks to enhance cross-border skills and knowledge exchange between seasoned and less experienced regulators in ECOWAS member states. The programme proposes two-week study visits focused on the electricity sector regulators. https://erera.arrec.org

Another example is the Women in Renewable Energy in Africa (W-REA) Mentoring Program. Launched by the International Finance Corporation (IFC) in partnership with the Global Women's Network for the Energy Transition (GWNET), this mentoring program aims to advance the role of women in the energy sector. It facilitates knowledge exchange and capacity building by pairing experienced professionals with mentees, thereby promoting gender diversity and empowering women in renewable energy across sub-Saharan Africa. The program's second cohort was launched in 2023. Participants are paired with experienced mentors who guide various aspects, including public speaking, client interactions, higher education pursuits, and business growth. The program also includes knowledge transfer webinars covering topics such as personal development, energy finance, and sector-specific outlooks. https://www.globalwomennet.org/about-gwnet/women-in-renewable-energy-in-africa/

An additional example is the West Africa Centres of Excellence for Energy Network (WACEENET), which encompasses Staff and Student Exchange Programs among the five participating organisations. This network actively promotes capacity building through its exchange initiatives. In November 2023, ACE-FUELS participated in a program at the University of Energy and Natural Resources in Sunyani, Ghana, thereby enhancing collaborative research and learning efforts.

Results and challenges

The activities and results of exchange projects have the advantages of:

- developing strong and long-term partnerships based on common interests,
- contributing to mutual learning: knowledge, skills, and best practices are exchanged between both sides, promoting growth and improvement.
- organisation involvement and evident impact: Staff from both organisations are involved to ensure a meaningful impact.

In the year 2023, the ECOWAS twinning program established two formal twinning agreements. These agreements were made between the national regulatory authorities of Niger (ARSE-Niger) and Senegal (CRSE), as well as between the national regulator of Benin (ARSE-Benin) and Senegal (CRSE). The program conducted two rounds of study visits, during which three staff members from ARSE-Niger and ARSE-Benin attended CRSE.

While there is a lack of specific quantitative data regarding the outcomes of the W-REA Mentoring Program, this initiative forms a component of broader efforts to empower women within the renewable energy sector across Africa. Such efforts include the Solar Sister program, which has successfully reached over 1.5 million individuals by enabling women entrepreneurs to distribute solar-powered products in rural areas.

However, it should be noted that exchange projects are not without their challenges, including:

- Legal and regulatory differences between the regions, with various countries having different policies and laws.
- Cultural and language differences can create communication and work style gaps.
- Funding constraints: Exchange projects are more expensive than events, and securing sustainable funding and equitable resource distribution can be difficult.

iii. Joint Projects

Brief description

Cross-border joint projects are collaborative endeavours in which two or more individuals, organisations, or countries work together to achieve a common goal. These projects may take the form of a study, research, experiment, or any other initiative that leverages each partner's strengths, resources, and expertise to generate shared outcomes that benefit all involved parties.

Case studies (examples from the current collaboration initiative)

Numerous organisations are engaged in collaborative initiatives, including RegulaE.Fr, the International Renewable Energy Agency (IRENA), the African Research Universities Alliance (ARUA) - Centre of Excellence (CoE) in Energy, Smart Energy Solutions for Africa (SESA), the West Africa Centres of Excellence for Energy Network (WACEENET), among others.

Two instances exemplify this framework of cross-border collaboration.

The first example is the West Africa Centres of Excellence for Energy Network (WACEENET), which serves as a collaborative platform that unites faculty, researchers, and students from numerous West African centres of excellence in the energy sector. This network promotes knowledge exchange, research collaboration, and capacity building within the region's energy industry.

The partners of WACEENET actively participate in joint research projects, wherein researchers collaboratively engage in project initiation, seek funding opportunities, interact with stakeholders for data collection, and conduct research, including the dissemination of research findings.

The second example pertains to the Distributed Generation (DG) Tariff Project in Africa, which constitutes a collaborative initiative aimed at assisting utilities and regulators in formulating effective tariff structures for distributed generation, with a particular emphasis on solar photovoltaic (PV) systems. This project is executed by Sustainable Energy Africa (SEA) in collaboration with GET.transform, the African Forum for Utility Regulators (AFUR), and the Association of Power Utilities of Africa (APUA). A key component of the initiative involves the development of a DG Tariff Tool. This joint project engaged several African utilities in the creation of a spreadsheet-based tool designed to aid utilities in establishing tariffs for distributed generation. It proposes DG tariffs grounded in avoided costs and evaluates the revenue implications for utilities, considering the business case for customers. The tool is adaptable for specific countries and prioritises solar PV distributed generation systems. https://dg-africa.net/the-project/

Results and challenges

Joint projects have the advantages of fostering and enhancing collaboration between two or more organisations and contributing to engaging institutional capacities as well as individual skills. The joint project benefits the partners, and its impact could be focused on some areas or topics or on the sector where it can help several organisations.

For example, the Distributed Generation (DG) Tariff Project in Africa has resulted in several key outcomes: (1) the creation of a DG Tariff Tool that all African utilities can customize to enhance the tariff setting for distributed generation, (2) the development of the capacities of participating utilities through a five-day blended learning course in August 2024, (3) the provision of technical assistance via the Policy Catalyst DG Window, and (4) the facilitation of Knowledge Sharing workshops aimed at promoting the adoption of distributed generation across the African continent. Notably, a recent workshop trained over sixty participants from utilities and regulatory bodies hailing from countries such as Eswatini, Mozambique, Uganda, Namibia, Lesotho, and Madagascar. This training was centred on analysing the financial impact of distributed generation on utility revenues and the formulation of draft DG tariffs, utilising international best practices for implementation.

The development of joint projects is currently confronted with several significant challenges, notably:

- The presence of legal and regulatory disparities among the regions, as various countries maintain distinct policies and laws that must be accounted for during project planning and that may potentially influence project implementation.
- Funding limitations: Joint projects incur greater expenses compared to events and exchange projects, particularly as joint projects include activities related to Organising events and exchanges between the participating organisations. In addition, securing sustainable funding and ensuring a fair distribution of costs/resources between partners can be a major challenge.
- The participation of the participating organisations is contingent upon the perceived benefits they can obtain from the project and its overall impact. The development of these projects necessitates thorough discussions and negotiations among the interested partners, culminating in the execution of an agreement that delineates the allocation of responsibilities and costs/resources. This process can occasionally be intricate and result in a protracted timeline.

iv. Online platforms

Brief description

Online platforms are defined in this report as digital tools or websites that facilitate interactions, transactions, collaborations, or the exchange of information and insights between users on specific areas and topics. These users may represent AU Member States or regional or national organisations. Platforms can be learning platforms dedicated to providing online education and training opportunities or content-sharing platforms that allow users to upload, share, and consume various content.

Case studies (examples from the current collaboration initiative)

Several online platforms devoted to knowledge and skills sharing in energy within Africa exist, such as the Renewable Energy and Energy Efficiency Partnership (REEEP), the Energy Regula-

tion Centre of Excellence (ERCE), the Africa-EU Energy Partnership (AEEP), or the GEF Global E-Mobility Programme, etc.

For example, the Regulatory Energy Transition Accelerator (RETA) project, inaugurated by the International Energy Agency, aims to strengthen the capacities of energy regulators in their contributions to the decarbonization of energy systems in an effective, timely, and equitable manner. This objective is accomplished through the facilitation of exchanges and the dissemination of best practices across diverse domains. The online platform offers valuable insights and opportunities for sharing knowledge and skills through the publication of recorded webinars, conferences, reports, and working papers. The African nations participating in this initiative include Cameroon, the Democratic Republic of Congo, Egypt, Kenya, Mauritius, Morocco, Rwanda, and Sierra Leone. https://retatheaccelerator.org/

A second illustration is the GEF Global E-Mobility Programme. This initiative comprises an online platform that offers resources to cultivate knowledge and facilitate networks related to policies regarding electric light-duty vehicles, charging infrastructure, and grid integration. A critical focus of this programme involves the annual collection of electric vehicle (EV) policy data. The African nations participating in this endeavour include Burundi and Côte d'Ivoire. Ethiopia, Ghana, Mozambique, Seychelles, Sierra Leone, Tanzania, Togo, Tunisia, Rwanda, Uganda, Kenya, Cape Verde, Madagascar, and Mauritius. https://www.iea.org/about/international-collaborations/gef-global-e-mobility-programme

An illustrative example of this is the Renewable Energy and Energy Efficiency Partnership (REEEP). Through a comprehensive amalgamation of financial instruments, capacity building, facilitation of stakeholder collaboration, and technical assistance, REEEP's programs address financing and knowledge deficiencies, thereby empowering private sector entities to operate effectively in emerging markets. It proposes a detailed online platform for its stakeholders' programs. https://reeep.org/

Results and challenges

Online platforms serve as one of the most efficient methods for disseminating skills among diverse individuals and organisations by providing a repository of documents and links to online tools, as well as a platform for discussion through webinars, talks, and other means.

Their principal advantage resides in their ability to facilitate easy access to information and knowledge while also providing opportunities to reach a broad audience by offering content in multiple languages. Additionally, these platforms represent the most straightforward means of engaging the public in knowledge-sharing activities. This characteristic enables them to achieve significant results and impact, thanks to the substantial number of users utilising these platforms.

For example, the Global Environment Facility (GEF) Global E-Mobility Programme is a dedicated regional platform established in Africa to facilitate the transition towards electric mobility. This platform functions as a central hub for knowledge sharing, policy development, and coordination among the participating nations. As of December 2024, the investments funded by the GEF have realised the following outcomes:

Greenhouse Gas Emissions Reduction: A cumulative decrease of approximately 1,885.5 million metric tons of CO_2 equivalent (unep.org).

Beneficiary Impact: The programme has positively affected around 15.9 million individuals, with women constituting 8.1 million of the beneficiaries.

The REEP Platform disseminates information and knowledge regarding diverse programs designed to address financing and knowledge deficits, thereby facilitating the growth of frontier clean energy markets. REEEP has played a pivotal role in promoting renewable energy and enhancing energy efficiency throughout Africa via various impactful programs and initiatives, one of which is the Beyond the Grid Fund for Africa (BGFA) initiative.

Launched in 2019, the BGFA seeks to stimulate and accelerate the development of new business models that encourage the private sector to provide affordable and clean energy access on a large scale to individuals residing in rural and peri-urban regions. This program focuses on six sub-Saharan African countries — Burkina Faso, the Democratic Republic of the Congo, Liberia, Mozambique, Uganda, and Zambia — with the objective of establishing 1.7 million energy connections that will benefit over 8.6 million individuals by 2028.

The challenges include monitoring the platform's actual impact on users, particularly regarding how the knowledge and skills acquired have been beneficial and contributed to enhancing users' skills. Additionally, assessing the impact on the development of organisational institutional capacity poses a challenge.

v. Publications

Brief description

Publication signifies the collaborative endeavour of continental, regional, and national organisations to produce and distribute written, visual, or digital content for a designated audience. The primary objective of publication is to facilitate the dissemination of information, knowledge, or creative work among organisations across countries. Examples of publications include books, research papers and reports, print and online newspapers, journals and magazines, and online blogs.

Case studies (examples from the current collaboration initiative)

Publication is the predominant format for disseminating knowledge and skills in technical, specialised, or scientific topics/areas. Initiatives and organisations such as the IRENA Coalition for Action, the Regulatory Energy Transition Accelerator (RETA), and the West Africa Network of Sustainable Energy Academicians and Researchers (WANSEAR) ensured the regular publication of reports, case studies, scientific papers, and working papers on various topics related to energy.

For instance, the Regulatory Energy Transition Accelerator (RETA) is a global initiative to support energy regulators in accelerating the clean energy transition. Several African regulators are members of the initiative, and some of its activities are specifically focused on Africa. It focuses on developing regulatory frameworks that facilitate the adoption of renewable energy, enhance energy efficiency, and promote grid modernisation. The RETA published four types of publications:

- **Investigate research publications concerning optimal practices in energy policy.**
- **Examine case studies illustrating successful regulatory reforms across various regions.**
- **Review annual reports demonstrating advancements in energy transition initiatives.**
- **Provide guidelines and frameworks to help policymakers develop effective energy regulations.**
- RETA The Accelerator - RETA - The Accelerator

Results and challenges

The results of this format of skills sharing are more tangible and depend on the initiative's or organisation's number of publications.

The Renewable Energy and Energy Efficiency Partnership (REEEP) publishes case studies and project reports on various topics related to climate change and clean energy, aiming to share knowledge and skills among organisations, partners, and other stakeholders. For instance, REEEP has published (i) the Clean Energy Revolving Fund Handbook in 2019, (ii) the Best Practices Guide – Climate Change, Clean Energy and Urban Water in Africa 2019, and (iii) the Affordable Loans for Clean Energy in Agriculture – The Clean Energy Revolving Fund in 2018. REEEP has also published some dissemination papers focused on electric cooking, solar irrigation, and E-mobility. Home | REEEP

The RETA has produced several key publications to support energy regulators in facilitating the global shift towards clean energy. Notable publications in 2024 include:

- Virtual Power Plants: An Introductory Guide for Energy Regulators: This guide provides energy regulators with essential insights into Virtual Power Plants (VPPs), examining their potential to improve grid flexibility and reliability by integrating various distributed energy resources.
- Elevating the Priority of Decarbonization in Energy Regulators' Decision Making: The Regulatory Assistance Project (RAP) report investigates the justification for expediting the clean energy transition.
- Conducting case studies, research, analysis, and publishing their findings presents unique challenges that organisations and initiatives must navigate to ensure rigorous and impactful contributions to their fields and smooth knowledge and skills sharing. Key challenges include:
- Accessibility and Open Access (OA) of the information and data, but also a challenge in terms of accessibility of the report and publication for many people.
- Technological Advancements: The digital transformation offers opportunities for wider dissemination but also presents challenges in data privacy, security, and the ethical use of artificial intelligence in the publication process.
- Financial Constraints: In the execution of the research and analysis, encompassing data collection within the field.
- Ensuring Rigor and Credibility: Case studies often face criticism regarding their scientific rigor. To address this, researchers should employ strategies like triangulation—using mul-

tiple data sources or methods—to enhance credibility and provide a comprehensive understanding of the case.

vi. Professional networks

Brief description

Professional networks are defined as platforms, communities, or systems designed for specific professionals (engineers, lawyers, academics, etc.) or focus groups (women, entrepreneurs, etc.) to connect individuals and organisations across countries for career development, knowledge and skills sharing, collaboration on common interests, and mentorship, etc. These networks are vital for establishing meaningful professional relationships, accessing opportunities, and staying informed about industry trends and topics.

Case studies (examples from the current collaboration initiative)

Numerous professional networks exist within the African Energy Sector, each with distinct scopes or target audiences. Certain networks and initiatives specifically aim to engage designated audiences:

i. Concerning gender, several organisations and initiatives have been established, including Women in African Power, the African Women Business Energy Network (AWBEN), African Women in Energy and Power (AWEaP), Women for Sustainable Energy and Climate (W4SECA), Women in Energy Network Africa (WEN-Africa), Women in Renewable Energy in Africa (W-REA), Women in Energy Network (WIEN), the African Women Energy Entrepreneurs Framework (AWEEF), African Women in Energy and Power (AWEaP), the Women in Clean Energy and Women in African Power (WiAP). These entities comprise organisations and countries that are dedicated to formulating policies, strategies, regulations, and programs that promote gender mainstreaming.

ii. Regarding Youth initiatives, such as the African Youth Energy Network (AYEN) and the Africa Energy Fellowship for Young Energy Leaders. The members comprise individuals and organisations dedicated to promoting youth participation in advancing the African energy sector.

iii. Regarding language, several organisations and initiatives have been established, such as the ALER (Lusophone Renewable Energy Association) for Lusophone countries and the Association Africaine pour l'Electrification Rurale [9](CLUB-ER), RegulaE.Fr, Institut de la Francophonie pour le développement durable[10] (IFDD) for francophone countries.

Various networks concentrate on technological advancements, including the Energy Storage Partnership (ESP), the Global Environment Facility (GEF) Global E-Mobility Programme, the Global Battery Alliance (GBA), the ECOWAS Certification for Sustainable Energy Skills (ECSES), the Pan African Electrochemistry Network, the Green Africa Innovation Network (GAIN), the South Africa Energy Storage Association (SAESA), the Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN), the Forum of Nuclear Regulatory Bodies in Africa (FNRBA), among others.

Several networks dedicated to policy reform and funding strategies include the Accelerated Partnerships for Renewable Energy in Africa (APRA), the Private Financing Advisory Network (PFAN), Petroleum Africa, the African Petroleum Producers Organisation (APPO), and the African Energy Chamber.

Additionally, there are networks and initiatives focused on academia, such as the African Research Universities Alliance (ARUA) Centre of Excellence (CoE) in Energy, AFRID Networks & Universities, the Association of African Universities (AAU), and others.

Results and challenges

Professional networks can attain numerous significant outcomes through collaborative initiatives among members, including training sessions, events, publications, and joint projects.

For instance, CLUB-ER accomplishes three objectives to advance rural electrification throughout Africa:

i. Publication of the White Paper on Sustainable Off-Grid Energy Access: In October 2024, CLUB-ER collaborated with the French Environment and Energy Management Agency (ADEME) and the Renewable Energy Syndicate (SER) to release a comprehensive white paper titled "Livre blanc sur l'accès à l'énergie durable hors réseau[11]" This document addresses the challenges and strategies for expanding off-grid sustainable energy solutions

9 *African Association for Rural Electrification*
10 *French-speaking institute for sustainable development*
11 *White paper on access to sustainable off-grid energy*

in rural African communities.

ii. Development of the Mini-Grid Map in Africa: In October 2024, CLUB-ER introduced a Geographic Information System (GIS)- based tool designed to identify localities electrified by mini-grid systems across Africa. This interactive map serves as a valuable resource for stakeholders involved in planning and implementing rural electrification projects.

iii. Capacity-Building Initiatives: Throughout 2024, CLUB-ER organised various workshops and training sessions to enhance the capabilities of member agencies.

Establishing effective professional networks is essential for organisations seeking to promote collaboration, innovation, and growth. Nevertheless, various challenges may hinder this development:

- Time constraints: A busy Schedule can limit participation in networking activities, hindering relationship-building.
- Technological Barriers: Inadequate access to or understanding of networking platforms can prevent effective engagement.
- Cultural and Social Barriers: Diverse cultural backgrounds may lead to misunderstandings and reluctance to share knowledge.
- Privacy and Security Concerns: Fears about data privacy can deter participation in networking initiatives.
- Behavioural Factors: Individual personalities and behaviours can influence the effectiveness of networking efforts.
- Financial constraints: The lack of sustainable funding may impact the network's functionality and effectiveness.

iv. Training

Brief description

Training is defined as the process of developing and enhancing skills, knowledge, and competencies to perform specific tasks or roles effectively. It can be delivered in a variety of formats, including in-person workshops, online courses, and formal certification programmes. Training can be delivered in various lengths, ranging from brief one-day sessions to comprehensive week-long courses. Training can encompass all areas of knowledge and topics outlined in Section 3.3.

Ultimately, the choice of the most appropriate format for establishing a development and capacity-building cooperation from among the seven described above can be determined by the parties involved in the cooperation according to their needs, requirements, and funding possibilities.

Case studies (examples from the current collaboration initiative)

Training is the privileged format for skills development and sharing. Almost all the initiatives and organisations have integrated training activities into their activities.

Here are a few examples of organisations organising training in energy-related subjects:

- The Energy Regulation Centre of Excellence (ERCE) and **ECOWAS Regional Electricity Regulatory Authority (ERERA)** have developed training programmes for national regulators in East and West Africa, respectively.
- The West Africa Centres of Excellence on Energy Network (WACEENET) aims to strengthen research and education capacities in the energy sector across West Africa. The network comprises five key member centres from West Africa.
- The African Network of Centres of Excellence in Electricity (ANCEE) enhances the technical and managerial capacities of Africa's power sector through various training initiatives. ANCEE
- Oyo Centre of Excellence for Renewable Energy and Energy Efficiency: Located in the Republic of Congo, the Oyo Centre is designed to serve as a hub for innovative solutions and market promotion of renewable energy and energy efficiency technologies. The Oyo Centre aims to contribute significantly to the sustainable energy sector and the achievement of Sustainable Development Goals (SDGs) in the Central African region.
- Centre of Excellence for Integrated Mineral and Energy Resource Analysis (CIMERA): serves as a central hub for research and human resource development in mineral and energy resource analysis. It focuses on enhancing sustainable development and promoting the green revolution through re-education and community engagement. https://cimera.co.za
- African Centre of Excellence in Energy for Sustainable Development (ACE-ESD) at the University of Rwanda: While geographically located in East Africa, ACE-ESD's initiatives impact the broader Eastern and Southern

Africa region. Established under the World Bank's Eastern and Southern Africa Higher Education Centres of Excellence Project (ACE II), the centre addresses challenges related to low rural energy access and poor adoption of energy technologies, aiming to improve inter-state energy trading and sustainable development. https://aceesd.ur.ac.rw/

Results and challenges

Training participants acquire profound comprehension of the subjects addressed during the program, enhance their technical and managerial competencies, and augment their capacity to implement best practices within their respective organisations. This development has significantly contributed to the increased efficiency and effectiveness of policies, regulations, and operations in the energy sector across the continent.

For instance, ERERA has significantly contributed to the capacity building of stakeholders within the electricity sector through its training programs. These initiatives have facilitated the harmonisation of regulatory practices, promoted collaboration, and improved data transparency, thus playing a vital role in developing a robust and efficient regional electricity market in West Africa. In terms of accomplishments, ERERA organised two online training sessions in 2023 that focused on the fundamentals of energy regulation, attracting over 60 participants. Additionally, a training course specifically designed to address the design of power purchase agreements for renewable energy was conducted in person in Dakar, with participation exceeding 40 individuals. Furthermore, a training course on Transmission Pricing was held in Abuja. In 2024, ERERA conducted a Training of Trainers (ToT) course that focused on the legal and regulatory aspects of solar photovoltaic (PV) and battery energy storage system (BESS) projects for 15 participants from the ECOWAS region.

Regarding ANCEE, a notable achievement in 2024 is the JICA-ECG Training Program. In partnership with the Japan International Cooperation Agency (JICA) and the Electricity Company of Ghana (ECG), ANCEE engaged in the second phase of a training initiative conducted from October 7 to November 22, 2024. This program was designed to enhance electricity transmission and distribution networks, advance renewable energy initiatives, and improve energy efficiency, thereby benefiting participants from nine African countries.

There are three main challenges in organising an institutional training program:

- Measuring Training Effectiveness: Assessing the impact of training on performance is often challenging. Implementing robust evaluation methods is crucial for determining the program's success and identifying areas for improvement.
- Resource Limitations: Budgetary constraints can affect the quality and scope of training programs. Exploring cost-effective solutions, such as e-learning platforms, can help maximize resources.
- Resistance to Change: Employees may resist new training initiatives due to comfort with existing processes. Communicating the benefits of the training and involving employees in its development can reduce resistance.

3.4.4 Challenges and opportunities of skills sharing initiatives

The organisation of skills-sharing programs and activities in the African energy sector faces several challenges, which can be grouped as follows:

i. Funding issues

- Resources for training and skills development are limited. Organisers often face high costs that exceed their budgets, making it challenging to cover without external funding. Additionally, participation fees as well as travel-related costs (flight, accommodation, visa, etc.) for certain capacity-building activities may be unaffordable for some beneficiaries, thereby limiting the effectiveness of cross-border skills-sharing programs.
- There is limited integration of human resources and skills development in energy projects and program activities. Training is often overlooked in project planning due to a lack of financial planning or insufficient recognition of its importance.
- When addressing skills development and sharing in energy projects or organisational programs, sustainability is a key issue. Funding may be allocated initially or for a short duration, but it can be redirected to tasks seen as more critical by decision-makers. As the benefits of skills development often emerge over the medium and long term, there can be a tendency to prioritise immediate impacts instead.

ii. Regulatory and policy barriers

- There is a clear lack of effective policies supporting cross-border skills mobility in the

energy sector, including specific visas for students and skilled workers, as well as short-stay work permits.

- Recognising professional qualifications across countries is vital for cross-border skills sharing. Harmonising these qualifications is crucial for enhancing skills exchange within the continent.
- Political and social instability in some countries can jeopardize cross-border exchanges and hinder skills development in the African energy sector. These activities are usually organised in stable nations, as their success relies on security assurances.

iii. Regional/continental framework

- There is an inadequate framework for cross-border skills development in the African energy sector. In response, the African Energy Commission (AFREC) has developed a Capacity Building Programme for 2024 to enhance skills and capabilities across the continent's energy sector, addressing this significant challenge.
- There are several skills development initiatives across the continent, but coordination among regions is lacking.

iv. Language and culture challenge

- African countries are culturally rich and linguistically diverse; however, this diversity can hinder cooperation and knowledge-sharing due to language barriers. Most cross-border skills-sharing initiatives occur among countries that speak the same language. Organising multilingual activities often requires costly interpretation and translation services, which can discourage Organisers. However, advancements in AI-based automatic translation technologies may soon reduce these barriers.

v. Information asymmetries hinder skills development and sharing opportunities, leading to two major problems:

- Access to information is vital for stakeholders in the African energy sector. Clear details about opportunities, including participants, locations, timings, and costs of events, as well as guidance on how to get involved, are essential.
- Making information accessible is essential for promoting skills development. It should be reachable by a wide range of stakeholders, with sharing open to all.

3.5 Results from data collection analysis and stakeholder consultation

The purpose of the data collection was to gather details on the organisation's experience in skills-sharing cooperation, including its areas and topics where the organisation has experience and its willingness to share it, as well as areas and topics where the organisation wants to learn from other organisations. This section discusses the data collected from the survey, namely the type of stakeholder engaged, the format of cooperation privileged, and areas and topics of interest for cooperation in skills sharing.

3.5.1 Format of Cross-Border Skills Sharing preferred by respondents

All respondents expressed an interest in participating in a cross-border cooperation project on skills exchange. Of these, 63% are already involved in such initiatives and would like to extend their cooperation or explore other topics.

Regarding the preferred format for cross-border cooperation, all respondents chose several formats for its implementation. The use of multiple exchange channels or formats improves the efficiency and completeness of the exchange. For example, 72% of respondents would like to see skills shared through the publication of reports, studies, and analyses, in addition to other forms of sharing. This format appears to be more impactful and pertinent, as it provides greater benefits in technical and specific contexts of skills-sharing. 68% would also like to see skills shared through online platforms with shared resources and exchange projects such as study visits, twinning arrangements, scholarships, etc. The organisation of events such as conferences, policy dialogues, and the creation of professional networks is supported by 66% of respondents, as is the creation of professional platforms. The two least favoured forms of cooperation are training (56%) and joint projects (52%).

Table 2 Preferred skills-sharing formats

Publication:	72%
Online platforms with shared resources:	68%
Exchange projects:	68%
Events:	66%
Professional network and other platforms:	62%
Training:	56%
Joint projects:	52%

3.5.2 Respondents' willingness to share skills per topic with other stakeholders

All organisations expressed their willingness to share and/or acquire skills in all the areas identified with other stakeholders within the African energy sector. In general, the organisations seem to be more interested in learning and acquiring new knowledge and skills through cross-border cooperation than in sharing their skills with other organisations. The three main areas in which they would like to share their experience are: issues related to managing cross-border issues, regional markets and the continental dimension (18% of respondents), access to electricity in the context of energy transition and climate change (17% of respondents) and Generation technologies: hydro, wind, solar, oil (15% of respondents). These three topics highlight the main issues and trends where the organisations surveyed feel they have made significant progress and gained experience and skills that they are willing to share.

Conversely, the topics for which organisations express a need to acquire skills through knowledge and experience-sharing activities are nuclear power (46%), electromobility (45%), and gas, LNG, and green hydrogen (44% each).

- Annex 4 provides full details of organisations' willingness to share or acquire skills in each topic.

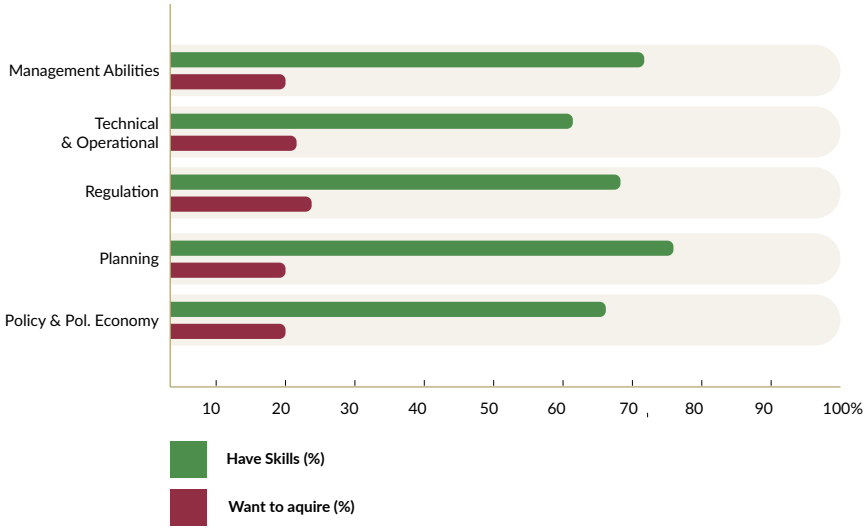


Figure 6 – Organisations' willingness to share skills

3.5.3 Respondents' willingness to share skills per Area with other stakeholders

Figure 6 below shows that organisations have experience and skills to share in all five areas. Specifically, 75% of them have this experience in planning and 72% in management skills. The number of organisations with skills in regulation, policy, and political economy is 69% and 66%, respectively. Finally, only 61% of organisations have technical and operational skills. Furthermore, where they lack skills, organisations have unanimously expressed a desire to acquire them from other organisations with more experience in each relevant area. This applies to 24% of organisations in the regulatory area, 23% in the technical and operational area, and 20% in the other three areas.

3.6 International Best Practices in Skills Sharing

The best international practices in skills transfer in the energy sector highlight the importance of knowledge management and workforce development. Examining the strategies of other countries can provide valuable insights for the development of national electrification, energy transition, and energy efficiency plans, see for example. (Kaputu, 2011). In the USA, the alignment of education and training programs with technological innovations and labour market needs is beneficial for workforce development in the energy sector (Gonzalez, et al., 2015). The cement industry is a prime example of international best practices, offering specific technical measures to reduce operating costs and improve carbon footprints. Detailed information on these practices, including investment and operating costs, case studies, and references, can be invaluable for managers and technical staff in the sector. As demonstrated by the case studies, references, and training materials for managers and engineers in the industry, the benefits of this approach are clear. These include reduced operating costs and an improved carbon footprint (Bernard, et al., 2017).

In Africa, some good practices in cross-border cooperation in skills sharing have produced insightful and relevant results and impacts that could inspire African regions, AU member states, or organisations. The following exhibits illustrate some of these practices:

EXHIBIT 1:
THE AFRICA CLEAN ENERGY CORRIDOR (ACEC)

Overview*:* The Africa Clean Energy Corridor (ACEC) is a regional initiative led by the International Renewable Energy Agency (IRENA) to accelerate the development of utility-scale renewable energy potential and facilitate cross-border electricity trade. The Clean Energy Corridors were first established within the East African Power Pool (EAPP) and the Southern African Power Pool (SAPP) and later extended to the West African Power Pool (WAPP).

The implementation of the Africa Clean Energy Corridor (ACEC) is guided by the Ministerial Communiqué endorsing the ACEC Action Agenda in January 2014, while the ECOWAS Heads of State Summit endorsed the West Africa Clean Energy Corridor (WACEC) in June 2017.

Among the other objectives of the initiative (i.e., identifying areas with high renewable energy potential to prioritize development, integrating renewable energy into national and regional electricity development plans, and establishing policies and regulations to attract investment in renewable energy), two others relate to capacity building and public awareness. The initiative serves as a platform to enhance the skills and knowledge of renewable energy stakeholders, while also raising awareness and disseminating information to the public on the benefits and opportunities of renewable energy.

Financing and support: Originally led by IRENA, the initiative has received support from several international organisations and financial institutions. These include the African Development Bank (AfDB), the World Bank, the Islamic Development Bank (IsDB), and the Asian Infrastructure Investment Bank (AIIB), all of which have pledged significant funding to support Africa's electrification initiatives that align with ACEC's goals.

In addition to these, the ACEC involves a wide range of regional stakeholders (EAPP, SAPP), national governments (countries within the EAPP and SAPP), and private investors and developers involved in renewable energy projects.

Impact and achievements: The ACEC has made significant progress in promoting renewable energy development in Africa. By focusing on large-scale renewable energy projects and facilitating cross-border electricity trade, the initiative has contributed to increased energy access, improved energy security, and reduced carbon emissions in the region. The initiative has also played a critical role in harmonising policies and regulations across member countries, creating a more conducive environment for renewable energy investment.

Building on the success of ACEC, similar initiatives have been developed in other regions of Africa. The West Africa Clean Energy Corridor, the Pan-Arab Clean Energy Initiative (PACE), and the Central Africa Roadmap are such initiatives. Furthermore, in 2017, the African Union recommended the integration of clean energy corridors into national renewable energy and climate change agendas.

Challenges

Despite its successes, securing adequate financing for large-scale renewable energy projects, developing the necessary transmission infrastructure to support cross-border electricity trade, and aligning policies and regulations across multiple countries to facilitate the seamless integration and operation of renewable energy projects remain challenges for the initiative.

Summary

The Africa Clean Energy Corridor represents a significant effort to harness the continent's vast renewable energy resources, promote sustainable development, and facilitate regional integration through cross-border electricity trade. By identifying and zoning resource areas, assisting countries and integrating renewable energy into their planning, establishing enabling frameworks, promoting capacity building, including skills sharing and public awareness of renewable energy, the initiative aims to support efforts to meet the continent's rapidly growing electricity demand.

More details on this initiative can be found on this link: Africa Clean Energy Corridor

EXHIBIT 2:
THE AFRICAN PETROLEUM PRODUCERS' ORGANISATION (APPO)

Overview

The African Petroleum Producers' Organisation (APPO) is a Pan African initiative (formerly known as the African Petroleum Producers' Association, APPA) that was established on 27 January 1987 in Lagos, Federal Republic of Nigeria. The initiative has been formalised as an organisation to serve as a platform for cooperation and harmonisation of efforts, collaboration, sharing of knowledge and expertise among African oil-producing countries. APPO's mission is to promote cooperation in the field of hydrocarbons among its Member Countries and other global institutions to foster fruitful collaboration and partnerships while utilising petroleum as a catalyst for energy security, sustainable development, and economic diversification in Africa. The organisation is comprised of eighteen Member States, representing all the African regions.

Financing and support

The initiative is self-financing thanks to financial contributions from Member States. Activities related to the exchange of expertise, such as conferences, policy dialogue, and publications, as well as the organisation's running costs, are all fully covered by the budget. This makes it a financially viable option and a preferred means of funding capacity building and knowledge sharing activities.

Impact and achievements

The APPO has made significant progress in assisting Member States in preparing, planning, developing, and implementing policies, regulations, and projects on the oil and petroleum sector.

Notable achievements include the growth in membership since its establishment in 1987, and the organisation of cooperative activities in various sectors of the hydrocarbon industry, including commercial, scientific, technical, technological, legal, and fiscal aspects, as well as in the field of human resources. Furthermore, the APPO has organised meetings and established committees and activities to develop regional markets.

A key achievement has been the facilitation of high-level policy dialogues, which have contributed to the support of new members and the assistance of member states with specific interests.

Challenges

Despite its successful activities and financial stability, the APPO is facing challenges in developing strong individual skills and capacity building in some specific projects that require deep technical capabilities and skills. The oil and petroleum sector is of strategic importance to countries, and certain elements of the value chain, such as industrial secrets and national security, restrict technology transfer and skills sharing in these areas. It is important to note that all technical aspects cannot be incorporated into skill-sharing activities.

Summary

The African Petroleum Producers' Organisation (APPO) is a prime example of an initiative that fosters cross-border strategic collaboration in the energy sector, particularly in the domains of oil and petroleum. Operating at the level of Member States, it enjoys secure funding, yet national security concerns limit its capacity to organise skills sharing activities on specific technical subjects. However, the initiative, which is built on a formal basis through an agreement, could be extended to new Member States that have discovered oil deposits or duplicates in other sub-sectors, such as crude oil, battery energy storage systems (BESS), geothermal or wind energy, etc.

More details on this initiative can be found at this link: APPO - African Petroleum Producers' Organisation

EXHIBIT 3:
THE RESEARCH UNIVERSITIES ALLIANCE (ARUA)

Overview

The Research Universities Alliance (ARUA) Centre of Excellence (CoE) in Energy is a collaborative initiative focused on promoting local research excellence and identifying solutions to the development challenges faced by Africa. It is set to become a pan-African network for promoting research and academic excellence throughout the region by developing strong and viable research universities.

ARUA aims to enhance research and graduate training in member universities through several channels, including the setting up of CoEs to be hosted by member universities. The alliance is a network of 23 African universities that work together on research and capacity building, as well as knowledge and skills sharing, such as conferences, workshops, joint training and joint research projects.

Financing and support

The ARUA CoEs have three sources of funding: i) grants mobilised from various sources, ii) contributions from the host universities (23) and iii) research grants from various grant awarding institutions worldwide. The budget covers Operations and Management, as well as Research and Training. However, the budget and operationalisation of many activities is dependent on fundraising and grants received for activities and research.

Impact and achievements

The ARUA CoEs have made significant progress in establishing concrete cooperation between the participating universities. This is evident in the organisation of joint activities that facilitate the exchange of experience, knowledge and skills through workshops and collaborative research projects on energy-related issues, the establishment of training programmes that result in qualifications, and the promotion of scientific collaboration between staff members. The partner universities, with the support of donors, have a PhD programme that includes academic visits to the partner universities. The alliance regularly disseminates analysis and research findings with a view to transferring and sharing knowledge and skills. All activities are governed by a formal agreement between the universities, which addresses various aspects, including the management of property rights to technological innovations.

Challenges

Despite the success of its activities, ARUA's main challenge is its financial stability. The budget for collaborative activities is dependent on successful fundraising. While ARUA's reputation and experience make it a credible and reliable partner for donors, relying on external funding for most of the budget could lead to financial instability, especially if there is not enough donor diversification. The contribution from host universities, which is essential for the operationalisation of the Alliance, might have to be increased to fund certain key collaborative projects.

Summary

The Research Universities Alliance (ARUA) Centre of Excellence (CoE) in Energy is a continental initiative that aims to enhance collaboration between universities across Africa in undertaking joint projects that contribute to skills development and sharing. However, as these collaborative activities are fully funded by grants, this has an impact on the financial sustainability of the Alliance. However, the initiative itself is a good example of how to build and facilitate cooperation between national organisations (universities) in Africa in areas and topics related to energy. The initiative could be extended to all universities with capacity-building programmes in energy that are willing to share knowledge and skills, and it could be enriched with an enhanced student and staff exchange programme.

More details on this initiative can be found at this link: Energy - ARUA

3.7 Framework Development

The matrix developed in the previous phase, "mapping capacity-building topics to draft a template for an online platform," serves as the foundation for the proposed future online platform. The platform serves as a one-stop shop for information on capacity building and skills exchange opportunities in the African energy sector. It constitutes the core of the proposed **framework for cross-border strategic cooperation in skills sharing.** This framework is designed to facilitate the sharing of skills and collaborative efforts in the African energy sector, laying the groundwork for future partnerships and initiatives that strengthen capacity across the continent. The literature review concludes with five key insights that contribute significantly to developing and enhancing skills sharing. Among them, elements have been identified and compose the components of the framework, namely:

- **Legal Component** – Establishing formal agreements to facilitate structured skills-sharing initiatives.
- **Financial Mechanisms** – Identifying sustainable funding sources to support capacity-building activities.
- **Monitoring, Evaluation, Research, and Learning (MERL)** – Ensuring continuous improvement and adaptation of the framework.

These components will be further detailed in Chapter 4 of this report.

4. THE FRAMEWORK

This section presents the proposed framework for cross-border skills sharing in Africa's energy sector, aimed at closing institutional and individual capacity gaps. Built around four components—an online platform, formal agreements, sustainable funding, and a MERL system—it defines thematic, spatial, and temporal dimensions to guide structured cooperation among diverse stakeholders. Led by AFREC with regional and national partners, the framework integrates clear governance, legal considerations, and varied funding sources to ensure effective, sustainable, and inclusive knowledge exchange that strengthens Africa's energy sector.

4.1 Introduction

The proposed framework establishes a structured approach for AU Member States and organisations to facilitate cross-border skills sharing in the energy sector. It aims to streamline the exchange of individual expertise and institutional capacities across multiple knowledge domains by providing a centralized platform or database of information on available resources, organisations, and opportunities for capacity-building. This includes entities that offer training and knowledge-sharing initiatives and those seeking to develop their skills and expertise.

This framework enhances the effectiveness and efficiency of skills-sharing initiatives by defining key processes and components. It underscores the importance of structured and methodical collaboration, ensuring that stakeholders maximize the benefits derived from cross-border cooperation.

While the framework integrates established best practices and engages key actors in the sector, it adds value by presenting these elements in a systematic and formalised manner. Its primary objective is to make relevant information readily accessible to stakeholders through a structured approach that fosters seamless collaboration. The actions and key actors within this framework were selected based on their strategic importance, ease of implementation, and contribution to sustainable energy development.

The cooperation framework focuses exclusively on skills sharing across the five knowledge areas among international, regional, and national organisations, including governmental, private, and non-governmental entities. Given the critical demand for skills in these areas, the framework highlights the importance of collaboration among diverse entities with varying levels of expertise and capacity.

To support skills sharing, the framework will focus on:

- Identifying and centralizing available skills and expertise within the African energy sector.
- Encouraging stakeholders' participation in structured cooperation mechanisms.
- Formalizing collaborative efforts through training programs, knowledge-sharing conferences, seminars, and staff exchange initiatives.

By implementing this framework, AU Member States and key energy stakeholders will benefit from an improved, structured system that enhances cross-border knowledge transfer, fosters regional integration, and strengthens the overall capacity of Africa's energy sector.

4.2 Scope of the Framework

The strategic framework for this project is designed around three key dimensions, ensuring a holistic approach to knowledge-sharing in the African energy sector:

i. Thematic Dimension:

- The project explores a broad spectrum of knowledge domains within the African energy sector, grouped into five knowledge areas.

ii. Spatial Dimension:

- It encompasses the energy sectors of all African Union (AU) Member States, ensuring a regional perspective that addresses common challenges and fosters cross-border collaboration.

iii. Temporal Dimension:

- The framework is structured around an initial implementation period of five years (2025–2029), allowing sufficient time to establish measurable goals, assess progress, and make necessary adjustments to enhance impact.

4.3 The Components of the Framework

The Framework for Cross-Border Strategic Cooperation in Skills Sharing in the African Energy Sector presents four components or elements that facilitate and enhance formal cooperation between stakeholders in the African energy sector. The framework contains four components or steps:

i. An online platform offering open access to information on skills development and sharing opportunities.

ii. A formal agreement: The framework recommends establishing cooperation through a formal agreement between parties as soon as possible. However, the existing informal collaborations are encouraged and invited to be formalised, if feasible, and integrated into the framework.

iii. A sustainable funding mechanism: The framework recommends identifying and utilising innovative funding models to ensure the sustainability of the cross-border skills-sharing collaboration.

iv. A Monitoring, Evaluation, Research, and Learning (MERL) mechanism: The framework recommends using appropriate MERL to track and evaluate the effectiveness of cooperation activities.

The different components are shown in Figure 7.

4.3.1 Platform

As described in Section 3.3, the platform will be a web-hosted, user-friendly, open-access tool. It will serve as a dynamic online repository for organisations and individuals engaged in cross-border skills sharing within the African energy sector. The platform will provide structured information on skill-sharing activities, target beneficiaries, geographic focus, and partnership opportunities. It will be developed based on the information compiled in the matrix created during the preparation of this report.

Designed as an independent yet accessible tool on the AFREC website, the platform ensures ease of navigation through filters and keyword-based searches, allowing users to retrieve information relevant to their capacity development needs. The platform must be regularly updated either by a team of experts at AFREC or by a small committee of people from different organisations, supported by AI tools to ensure that it is up to date.

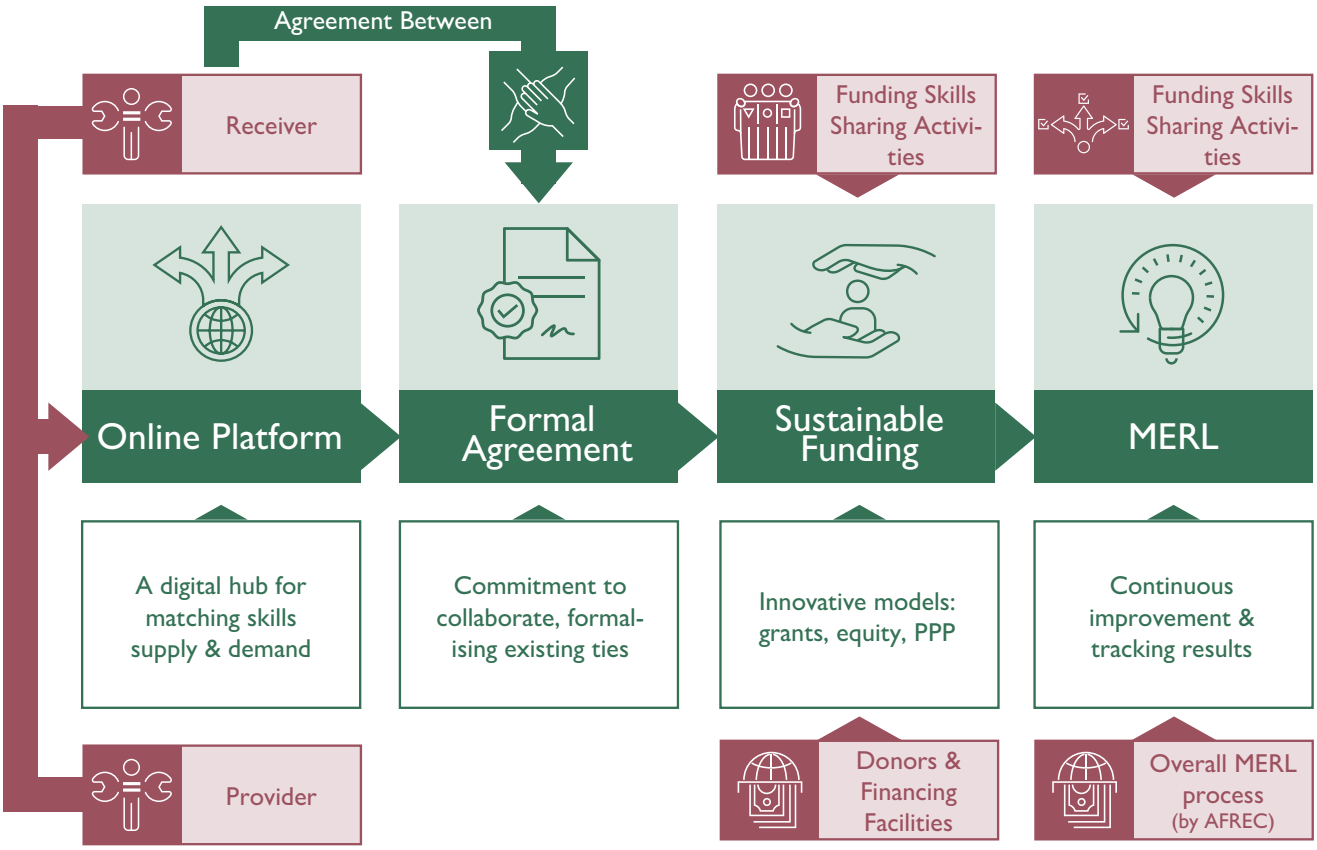


Figure 7 – The design of the framework

It will feature advanced search capabilities, real-time indexing, and intuitive navigation. While access to the platform will be open, role-based access control will have to be enforced, with different levels of permissions (e.g., Admin, Moderator, User).

Additionally, technical requirements and functionalities necessary for the platform's optimal performance should include the following:

- *Search & Filtering*: Users can search using Boolean operators (AND, OR, NOT) and refine results by date, topic, knowledge area, engagement format, and location (geospatial search).
- *User-Friendly Interface*: Includes autocomplete, spell check, and AI-powered recommendations based on a database of keywords.
- *Personalisation*: Users can save or bookmark search results for future reference.
- *Scalability*: The platform will support multiple concurrent users to ensure high availability and performance.
- *Matching organisations that offer and organisations that benefit from the exchanges.*
- Monitoring of the people hosted in other organisations to provide and/or benefit from the exchange.
- Financial management supporting the exchanges.

4.3.2 Formal Agreements

While strategic cross-border cooperation does not necessarily require a formal agreement between participating parties, having one can enhance coordination and provide a structured framework for the initiatives. A formalised approach can help strengthen stakeholder commitment and contribute to the financial sustainability and long-term viability of these efforts. By establishing a clear framework, cooperation can be more organised, transparent, and effective, fostering trust among all participants. This formalised agreement between Member States and organisations could be facilitated or done under the umbrella of a continental agreement or convention.

Once potential partners are identified through the platform, a sequence of strategic interactions, including meetings and collaborative discussions, can further clarify the cooperation's scope. Where appropriate, a formal agreement may be considered to outline the joint development of activities, share skills, and establish collaborative commitments. While not mandatory, such agreements can serve as a reference point to guide the partnership, encourage participation, and align expectations. They can also outline key milestones and objectives to support effective collaboration and accountability. Ultimately, whether formalised or not, the goal is to create a cooperative environment that promotes progress and shared success.

While the framework encourages the establishment of cooperation agreements among stakeholders to foster cross-border collaboration, it is also important to support existing informal partnerships, which predominantly operate informally, as they play a vital role in achieving the framework's goal of enhancing skill sharing across borders. Whenever feasible, these informal arrangements could be formalised to ensure the successful implementation of activities and the fulfilment of cooperation objectives.

4.3.3 Sustainable Funding Mechanism

Many cross-border cooperation initiatives face financial challenges, often due to their reliance on external donors. While external funding can be beneficial, ensuring financial stability through a mix of funding sources can help sustain these initiatives in the long term. This framework suggests that stakeholders explore strategic funding approaches suited to their specific needs, including internal funding mechanisms where feasible. Public funding often serves as the primary source for cross-border cooperation, as energy ministries and national public agencies can allocate budget funds for these collaborative efforts. However, due to the limitations of public funding, alternative sources like self-funding, private contributions, and external donors are essential to maintaining the financial sustainability of cross-border cooperation activities.To facilitate donor engagement, stakeholders may consider establishing a Memorandum of Understanding, along with a structured Activity Plan that outlines objectives and funding requirements. This can enhance transparency and encourage financial support from relevant institutions, including DFIs or philanthropic organisations, where their involvement aligns with the initiative's goals. However, the role of such external contributors should be to financially support cooperation efforts without adding complexity to the partnerships. By prioritising reliable and well-structured funding strategies, stakeholders can create a more resilient financial foundation, ensuring that cross-border cooperation efforts remain sustainable and adaptable over time.

As part of building a strategic funding approach, organisations should explore various avenues, such as grants, donations, partnerships, and revenue-generating activities, to create a balanced and resilient funding portfolio that is less risky than relying on a single funding source. An organisation could explore and consider the following sources:

- Multilateral Development Bank (MDB) Support: can provide guarantees and co-financing arrangements, enhancing cross-border cooperation project/program financial sustainability. These banks often facilitate cross-border project financing by mitigating risks and attracting private investment. The following MDBs have funding initiatives focused on skills development and sharing in Africa: The World Bank, the African Development Bank (AfDB), the European Bank for Reconstruction and Development (EBRD), and the Islamic Development Bank (IsDB).
- Philanthropic organisations: Several philanthropic organisations actively promote skills development and knowledge sharing across Africa. Notable among them are the Tony Elumelu Foundation (TEF), Rockefeller

Foundation, African Women's Development Fund (AWDF), and WorldSkills Africa. Additionally, other philanthropists can be approached to fund projects to develop and transfer energy knowledge and skills, namely the Bill and Melinda Foundation, Shell Foundation ,IKEA Foundation, Canopus Foundation , Heising-Simons Foundation , and others.

- Blended Finance Models: by integrating public, philanthropic, and private financial resources, blended finance mechanisms effectively reduce investment risks, thereby encouraging the influx of private capital into projects that may otherwise be regarded as excessively risky or unprofitable, such as a skills-sharing initiative. Notable Initiatives and Examples: CrossBoundary Energy Access Facility, the Africa Renewable Energy Fund (AREF), the Equitable Building Electrification Fund, and South Africa's Blended Finance Risk-Sharing Platform, among others.
- International Grant Programs: by providing financial support, technical assistance, and capacity building, these programs aim to enhance energy access, promote renewable energy adoption, and foster sustainable development across the continent. Notable initiatives include:the African Development Bank's Sustainable Energy Fund for Africa (SEFA), Africa Energy Sector Technical Assistance Program (AESTAP), Energy and Environment Partnership Trust Fund (EEP Africa), Powering Renewable Energy Opportunities (PREO), Grants for Women Entrepreneurs in Energy Sector (WEE), Africa Renewable Energy Initiative (AREI), United States African Development Foundation (USADF), Africa50.
- Specialised Financing Facilities: They have been established in Africa's energy sector to address infrastructure deficiencies and promote sustainable development. A portion of the requested funding could be allocated to meet the demand for a skills-sharing component. Notable initiatives include: the World Bank's Liveable Planet Fund mobilises grant financing for projects with cross-border benefits, Facility for Energy Inclusion (FEI), Regional Transmission Infrastructure Financing Facility (RTIFF) , African Guarantee Fund (AGF), Climate Finance Facility (CFF), among others.

Implementing these strategic funding approaches can enhance the feasibility and success of cross-border projects by effectively managing risks and aligning stakeholder interests.

4.3.4 Appropriate Monitoring, Evaluation, Research and Learning (MERL)

The fourth component of the framework is Monitoring, Evaluation, Research, and Learning (MERL), which is designed to continuously assess the framework's effectiveness in facilitating cross-border engagements among stakeholders. The anticipated outcome is to enhance collaboration in skills-sharing across the African energy sector. The MERL process depends on stakeholders' participating in cross-border cooperation to provide information and data (excluding confidential matters, if any) to AFREC. AFREC, either directly or through a MERL committee, will handle all tasks related to monitoring information-sharing activities, evaluating these actions concerning stakeholders' objectives, and pursuing ongoing improvement and learning.

To achieve this result, the MERL process incorporates these elements:

Monitoring process: This involves defining indicators and gathering data to track inputs, outputs, and immediate results, ensuring the framework is implemented as intended. Below are examples of indicators and details on the process:

- **Quantitative Indicators:**
  - Number of professionals trained.
  - Number of professionals participating in an exchange program.
  - Number of professionals participating in skill-sharing events.
  - Percentage of participants applying new skills within six months post-training/ exchange.
  - Number of cross-border cooperations initiated.
  - Number of formal agreements on cross-border skills-sharing cooperation that have been signed.
- **Qualitative Indicators:**
  - Participant satisfaction levels.
  - Perceived improvement in job performance.
  - Case studies of successful cross-border skills-sharing cooperations.
- **Data Collection Methods: Data collection can occur through various methods, including training sessions, exchange activities, event assessments, surveys, interviews, or focus group discussions, depending on the specific context.**

Surveys, particularly those utilising questionnaires, are the most common method. The questionnaire should be administered at the conclusion to evaluate satisfaction, acquired skills, and the changes that the events, exchanges, or training have imparted on participants.

- **The questionnaire or any other form of data gathering will be done directly by partners in cooperation.**
- **Frequency of data collection:**
  - Each cooperation partner will do the training, exchange, or event assessment.
  - AFREC should request, quarterly, that all cooperation partners submit a summary of events, exchanges, or training organised.
  - AFREC should request that all stakeholders update the platform quarterly.
  - AFREC conducts half-yearly progress reviews on the cooperation activities and the framework.
  - AFREC, in collaboration with key stakeholders and regional champions, conducts an annual comprehensive evaluation of the framework.
- **Responsibilities:**
  - Assign focal points in participating countries (AFREC focal points on capacity building) and in organisations involved in cooperation.
  - Establish a MERL coordination team in AFREC.

Evaluation: It involves assessing the framework's effectiveness, efficiency, relevance, sustainability, and impact. The evaluation could be

- Conduct half-yearly evaluations to assess progress and make necessary adjustments to the framework.
- Conduct yearly evaluations to measure overall success and impact, including assessments of cooperation activities.

Research: It gathers evidence using qualitative and/or quantitative methods to answer specific questions about the framework's implementation or outcomes that help refine or adapt it. Research activities may include baseline studies, needs assessments, pre- and post-assessments, focus groups, or exploratory studies.

Learning: It utilizes the data and evidence gathered from the framework implementation in the previous steps to learn lessons and inform future decisions regarding the framework implementation. For this purpose, AFREC could organize an annual reflection workshop with key stakeholders and regional champions to review the comprehensive annual evaluation of the framework and cooperation activities and formulate recommendations based on international best practices and lessons learned.

A key measure of success is the platform's usability and relevance—whether organisations actively engage with it and find it valuable. MERL should also ensure that the platform remains up-to-date and comprehensive in its content.

Beyond the platform, periodic surveys should be conducted following bilateral or multilateral activities to evaluate their impact. Organisations may receive post-engagement surveys or voluntarily submit their assessments. These surveys can provide key insights into funding mechanisms, the presence (or absence) of formal agreements, and the overall effectiveness of collaborations.

The insights gathered will help identify areas for improvement, capture lessons learned and inspire further cooperation. To support this process, the platform could feature a dedicated section with survey templates and agreement templates, streamlining the evaluation process and making participation easier for all stakeholders.

4.4 The framework's Theory of Change (ToC)

The proposed framework aims to provide African energy sector stakeholders with opportunities and a framework for structuring cross-border skills cooperation among stakeholders. The cooperation framework is defined around a theory of change that describes the voices and means by which the proposed framework aims to achieve impact, change in the energy sector. The vision sought by the framework is to bridge the skills gap by promoting cooperation between African energy sector stakeholders, which involves organising skills development and sharing activities. The framework is grounded in the primary issue it seeks to address. The problem can be formulated as follows: There is a gap in institutional capacities and individ-

EXHIBIT 4:
PEER REVIEW AND LEARNING NETWORK (PRLN) IN ENERGY REGULATION

Overview

The Peer Review and Learning Network (PRNL) is a collaborative initiative organised by the Power Futures Lab at the University of Cape Town (UCT) in partnership with GET.transform. The PRNL is a three-year capacity-building programme aimed at strengthening energy regulation across Africa. The initiative fosters a collaborative environment where participants can deepen their understanding of regulatory practices through experiential learning and peer review.

The key objectives of the PRNL are to strengthen the leadership and management skills of African electricity regulators and to improve overall investment and development outcomes through improved performance of the continent's electricity infrastructure industry. The participating countries for Phase 1 of the network are Ghana, Uganda, Kenya, Namibia, Tanzania, and South Africa.

Financing and support

The PRLN has benefited from financial and technical support from GET.transform since its inception. GET.transform is a European multi-donor platform providing technical assistance in support of international energy and climate goals.

Impact and achievements

PRLN Phase 1 held several meetings of the CEOs of the participating energy regulators over a period of three years. The 6th PRLN meeting was held in Tanzania in September 2024.

During each meeting, the PRLN team of regulator CEOs conducted a comprehensive peer review of the host country's energy sector, focusing on the regulatory framework, and held discussions with key stakeholders in the sector. Upon completion, the PRLN team provided the host regulator with recommendations for further action. The implementation of Phase 1 made significant progress in establishing concrete cooperation between the participating regulators, and the meetings contributed to providing an in-depth peer review and recommendations for improving energy sector regulation. The peer network will continue to grow and may include Egypt, Nigeria, Cameroon, Zambia, Eswatini, Mozambique, Malawi, and Zimbabwe in the next phase of the PRLN starting in 2025.

Challenges

The main challenge of the PRLN is the preparation and organisation of the various meetings, including the availability of the CEOs of the six participating countries. Each meeting requires adequate planning for all participants, as well as the specific preparation of many documents and presentations on the country's situation. The question of the confidentiality of certain documents or information proposed for discussion may arise, which is one of the reasons why the meetings are conducted under the Chatham House Rule.

Summary

The PRLN is a sub-regional programme covering three of Africa's five regions. It aims to promote the exchange of knowledge and skills between the regulators of the participating countries through peer reviews. These sessions enable the host authority to analyse the national context from the perspective of foreign experts, benchmark with best practices and examples from peers, and assess the situation. The programme has a positive impact on the participating countries, which can use the recommendations and best practices to improve their situation. Apart from its impact on the energy sector of African countries and Africa in general, the strength of the programme lies in its financial sustainability through the partnership with GET.transform. However, the main challenge is the practical organisation of the meetings and their extension to other interested countries. This extension to all African regulators will have a greater impact and improve cooperation in knowledge and skills sharing.

More details on this initiative can be found at this link: The Peer Review and Learning Network (PRLN) » GET.transform

EXHIBIT 5:
CAPACITY BUILDING AND SKILLS SHARING ON DISTRIBUTED GENERATION (DG) TARIFFS AND REVENUES

Overview

This continental initiative is the result of a partnership between GET.transform, a multi-donor platform, and a private company, Sustainable Energy Africa (SEA), to provide technical assistance to both regulators and utilities in selected sub-Saharan African countries to integrate distributed generation (DG) into their electricity grids.

The main objective of this joint initiative is to provide technical assistance and guidance to utilities in developing DG policies and permitting processes, while assisting regulators in formulating robust DG regulatory frameworks. Most of Africa's utilities and regulators from different African regions are involved in the initiative. This is also done in partnership with the African Forum for Utility Regulators (AFUR) and the Association of Power Utilities of Africa (APUA).

Financing and support

GET.transform provides the financial and technical support for the initiative.

Impact and achievements

The initiative achieved two main outcomes in 2024. The first was the development of the most comprehensive database possible on utility tariff structures, including provisions related to DGs. The second result was the training for utilities, regulators, and the private sector on the impact of DGs on tariffs and revenues, held in August 2024. The discussion and exchange sessions provided an opportunity for participants from several African countries and regions to strengthen and share capacities and skills on utility tariffs and revenues and appropriate regulatory frameworks. The expected impact, which can be measured in the medium and long term, is the influence of this collaborative initiative through greater integration of DGs into the electricity networks of the participating countries.

Challenges

The main challenge of this initiative is to sustain the opportunities for exchange between the parties involved in setting the DG tariff and conducting the revenue impact study. The training and exchange between the participants lasted only one week, and the impact of the initiative deserves to be extended by involving more participants, but also over a longer period for more beneficial learning.

Summary

The initiative led by SEI and GET.transform on the impact of DGs on tariffs and revenues is ambitious as it aims at strengthening capacities and facilitating the exchange of knowledge and skills, on the one hand, between utilities in the integration of distributed generation (DG) into national electricity grids, in particular by defining tariff and revenue aspects, and on the other hand, between national regulators to develop regulatory frameworks favourable to DGs. The ultimate impact of the initiative will cover all Member States and will allow DGs to have a good interest in national grids, thus contributing to improving access to energy. The initiative is financially supported but faces the challenge of extending its duration. It can be extended to other issues of importance to the African energy sector.

More details on this initiative can be found by contacting the company with this email: dgsupport@sustainable.org.za

ual skills between countries and regions in the African energy sector.

The framework assumes that the availability of a digital meeting point providing comprehensive information on the supply and demand of skills in the energy sector will facilitate the establishment of connections between an institution, a country, or a region with skills and another institution, country, or region that needs these skills. Through this link, the framework fosters the establishment of collaborative initiatives among stakeholders to enhance human capacity within this sector in Africa. Based on this principle, the framework enables the development of the platform as a digital meeting point, as well as a set of proposals for harmonised actions that facilitate the organisation of cooperation activities for the development and sharing of skills among stakeholders, whether public or private, including sub-regional organisations.

The framework proposed the subsequent three key tools and elements:

- An online Platform: Establishing a modern information platform about organisations within the African energy sector and opportunities for skills development and sharing. The online platform serves as a digital meeting point designed to facilitate connections between organisations, countries, or regions that are willing to share skills and those that are eager to acquire them. The first output of the online platform is the augmentation of knowledge and skills development, as well as the sharing of opportunities within the African energy sector.
- Formal Agreement: A formal agreement among relevant parties interested in collaborating can enable the smooth implementation of cross-border skills-sharing initiatives. Nevertheless, there is a strong recommendation to formalise the current informal cross-border cooperation as much as feasible. By suggesting the formalisation of this cooperation, the second output of the framework aims to create a strengthened legal environment for establishing and executing cross-border collaboration.
- Sustainable Funding Mechanism: The introduction of a suitable and innovative funding mechanism can significantly enhance the sustainability and effectiveness of cross-border skills-sharing initiatives. By proposing the development of such a mechanism, the third output of the framework aims to foster an enhanced funding environment conducive to establishing and implementing cross-border cooperation.

The corporation's target groups are academia, development finance institutions, utilities and associations of utilities, NGOs, think tanks, policymakers, private organisations and enterprises, professionals in the energy sector, RECs, power pools, national regulators, regional regulators, and associations of regulators. Each initiating party may designate a focal point within this framework to guarantee its smooth implementation.

Upon implementation, the framework aspires to facilitate the attainment of two primary outputs concerning skills-sharing in the African energy sector: i) the enhancement of skills-sharing among institutions, countries, and regions in the energy sector and ii) the development of individual capacities. Through its outputs, the framework aims to contribute to achieving a more significant outcome or impact on the African energy sector, specifically seeking to enhance both individual and institutional capabilities essential for transforming Africa's energy landscape.

The framework's ToC is summarised below.

4.5 Architecture and Governance of the Framework

The architecture of the framework, which clearly defines its governance structure, is presented in the figure below.

AFREC will play a central role in governing and coordinating the strategic framework for skills development and sharing in Africa's energy sector. It supervises the regular updating of the online platform, which serves as a repository for organisations seeking to share (providers) or acquire (beneficiaries) skills. AFREC ensures platform maintenance through annual update notifications and oversees the framework's implementation by fostering cross-border cooperation. Regional champions coordinate efforts at the regional level, facilitating cooperation and addressing specific needs, while key stakeholders promote and manage collaboration at the national level. Both groups help sustain the platform and framework governance. AFREC also leads the Monitoring, Evaluation, Research, and Learning (MERL) process to enhance outcomes and

Skills-Sharing Framework Journey

Impact: Enhanced individual and institutional skills necessary for transforming Africa's energy landscape.

VISION

Enhanced skills-sharing cross-border cooperation among institutions, countries, and regions in the energy sector.

&

Strengthened individual capacities.

Key Outputs:

Formal Agreement:

Enhanced legal environment to build and implement cross-border cooperation.

Online Platform:

Augmented knowledge of skills development and sharing opportunities within the African energy sector.

Sustainable Funding Mechanism:

Enhanced legal environment to build and implement cross-border cooperation.

Key Interventions:

Develop a digital meeting point providing comprehensive information on the supply and demand of skills in the energy sector.

Formal agreement between interested stakeholders to build cross-border cooperation in skills-sharing.

Main Issues:

There is a gap in institutional capacities and individual skills between countries and regions in the African energy sector.

Target Groups:

- RECs
- DFI
- Power pools
- Policymakers (Ministries)
- Regulators and associations of regulators
- Utilities and associations of utilities
- NGOs and think tanks
- Academia
- Professionals in the energy sector

Implementation Arrangements: Types of partners

- AUC
- AFREC
- Regional champions
- MS focal points
- Regional organisations or entities
- Major national universities, professional training providers, and research organisations
- Bilateral and multilateral donors

Institutional arrangements

- Online platform link with AFREC website
- Expert committee on framework

ensure impact. A high-level panel, chaired by AFREC and including regional champions, key stakeholders, and pan-African organisations, meets annually to review MERL results and refine regulatory measures, ultimately strengthening institutional and individual capacities in Africa's energy sector.

4.6 Implementation of the Framework

A continent-wide agreement among AU Member States can support the framework's implementation and governance. To this end, the framework may be introduced and deliberated upon in the African Union's Specialised Technical Committee on Transport, Transcontinental and Interregional Infrastructure, and Energy (STC-TTIIE), to secure a declaration and/or agreement that solidifies the commitments of AU Member States to the framework.

4.6.1 The Role of Key Stakeholders and Regional Champions

The successful implementation of the framework for skills development and sharing requires a strong commitment from all stakeholders involved in cross-border cooperation in skills-sharing. They should participate actively in the definition, planning, and implementation of each skills-sharing activity, ensuring that their interests are considered. The involvement of the parties ensures the effective implementation of the cooperation and the achievement of common goals. So, some stakeholders designated as key stakeholders have a critical role in the successful implementation of cooperation at the national level as follows:

- AU Member States' Focal Points: Member States have designated national focal points for capacity building. These individuals oversee any discussions or activities related to capacity building with external entities. They are engaged in the development of skills-sharing activities that involve Member States. Focal points should be appointed by the relevant energy ministries, particularly those with expertise in capacity-building or human resources. Focal points currently appointed by the Ministries that participated in the stakeholder engagement process for the preparation of this report may be considered suitable candidates to undertake this assignment.
- Major national universities, professional training providers, and research organisations from Member States providing training (university degrees and vocational training), skills development, and sharing programs in the field of energy. Given that these entities make significant contributions to capacity development at the national level, they will be engaged in implementing the frameworks and serve as strategic stakeholders in providing skills development and sharing opportunities to establish cooperation. These entities could be engaged in two ways: i) Each national focal points for capacity building identify and engages with some[12] major universities to participate in the governance and implementation of the framework. The universities should be well recognised, selected based on the experience and capacity-building programs the university proposes. For instance, the University of Pretoria in South Africa, the Egypt-Japan University of Science and Technology (E-JUST) in Egypt, Strathmore University in Kenya, the Nelson Mandela African Institution of Science and Technology in Tanzania, and the Mohammed VI Polytechnic University (UM6P) in Morocco, among others. ii) Regional champions, as described below, identify and nominate universities with energy programs that have achieved continental or regional recognition and have a significant impact on skills development and sharing. For instance, Pan African University Institute for Water and Energy Sciences (PAUWES) – Algeria, International Institute for Water and Environmental Engineering (2iE) in Burkina Faso, Regional Centers of Excellence in Energy, Electricity or energy regulation, Université Senghor d'Alexandrie – Egypt.
- IV. In addition to those key stakeholders, regional organisations or entities play a critical role in the development and successful implementation of skills development and sharing within organisations at the national level. Within this framework, they can act as regional champions for skills development and sharing, depending on their areas of competency. As regional champions, they are pivotal to the organisation and implementation of skills development and sharing activities at

12 *In order to ensure efficient governance and facilitate the smooth implementation of the framework, it is advisable for each national focal point to nominate up to three universities.*

the regional level. Their strategic regional positions and reputation enable them to engage with regional

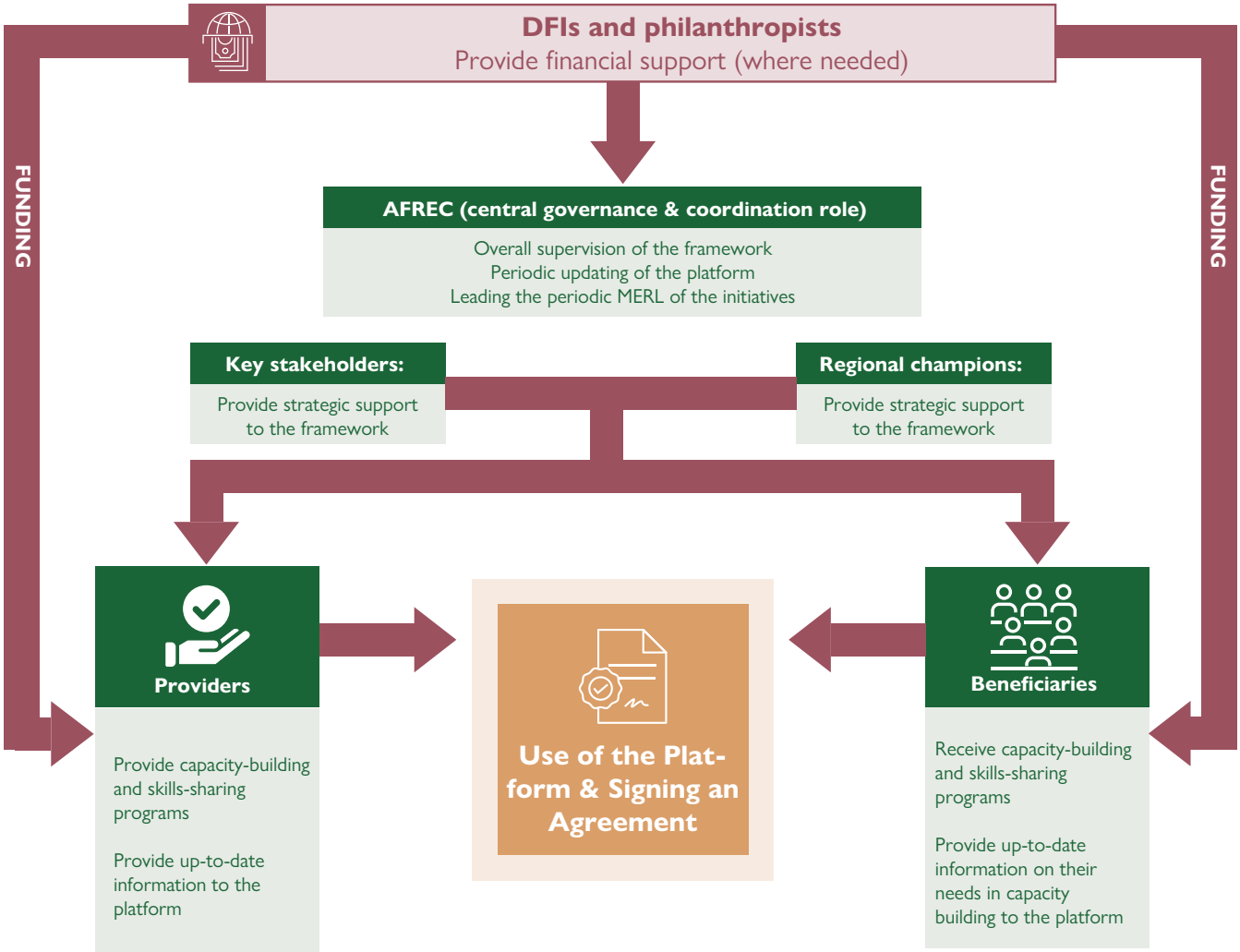


Figure 8 – The architecture and governance of the framework

and national organisations in cooperation programmes, identify organisations to participate in these programs, assist in establishing and signing cooperation agreements, implement cooperation activities within this framework, and contribute to the accompanying information platform.

For each region, at least one regional champion is designated, with possible adjustments as needed. At the initial stage of implementing the framework, the following regional champions will be designated for each of the five regions:

- The Energy Director or other relevant Officers from each Regional Economic Community (REC), namely AMU, COMESA, CEN-SAD, EAC, ECCAS, ECOWAS, IGAD, and SADC, serve as the regional champions on topics related to energy policies, regional energy data, investments, and energy infrastructure.
- The Regional Power Pool is the regional champion on topics related to electricity and regional/continental markets.
- The Regional Centre of Renewable Energy and Energy Efficiency, namely CEREEAC, EACREEE, ECREEE, RCREEE and SACREEE, are regional champions in topics related to clean energy, energy transition, and energy efficiency.
- Continental or regional entities with skills development and sharing programmes, such as the AFUR, the ASR, EREA, Regional Associations of Regulators or Utilities, Regional Universities (Pan African University, International Institute for Water and Environmental Engineering-2iE), etc. Each person is invited to contribute to utilising their network and reputation to engage organisations at national and

regional levels in cooperative programs.

4.6.2 The Formalisation of Cross-border Initiatives

The analysis of existing cross-border initiatives revealed the existence of formal and informal cooperation agreements between stakeholders. Formal relationships are preferred and recommended as they can lead to greater stakeholder engagement. This framework recommends, but is not limited to, such formalisation between parties due to the political and regulatory constraints that such contracts entail when dealing with intergovernmental cooperation. Accordingly, the following steps are suggested for establishing cross-border cooperation in the sharing of responsibilities between two or more entities:

STEP 1. IDENTIFICATION OF SKILLS NEEDED AND PARTNERS.

The starting point is the request or wish of a Member State or organisation seeking to acquire/develop specific skills or seeking to share its experience and skills. This Member State or organisation is referred to as the 'requesting entity'. Based on this request, the entity explores the platform to gather information on the experiences and skills of other entities from which it can benefit or offer services to enhance its knowledge and skills.

The tools available to facilitate this process include:

- A registration form to access the platform, and
- A platform that offers information regarding skills development and sharing opportunities.

STEP 2. DEFINING THE COOPERATION FRAMEWORK.

Having identified the skills required and the relevant partners likely to contribute to the development or sharing of skills, the requesting organisation can contact the designated partner through the platform to discuss potential collaboration. In addition to providing information about the organisations, the platform offers a unique opportunity for entities to connect with other organisations with a view to potential collaboration. The organisations then discuss the scope and content of the proposed collaboration, as well as the business plan and funding strategy. A formal agreement or MoU could be drawn up between the organisations if they agree.

The following tools will be used:

- Cooperation framework concept note.
- Sample generic MOU or agreement that can be adopted by collaborating institutions.

STEP 3. IMPLEMENT THE PLAN OF ACTIVITIES.

In this step, partner entities engage in continuous knowledge and skills sharing by implementing a plan of activities. This includes the timely organisation of exchange projects, international events (conferences, workshops, policy dialogues) and joint projects. It also refers to the development of online platforms for sharing resources, professional platforms, the publication of reports, analysis, papers, reviews, and the organisation of training and skills development activities according to skill level (fundamentals, specific, advanced), area, and topic covered. A tool for this step could be a plan of activities of the cooperation agreement.

STEP 4. FEEDBACK MECHANISM AND MEASURING IMPACTS.

The final step in the process is to develop and implement a feedback mechanism to ensure the monitoring and evaluation of the cooperation's effectiveness. The feedback loops consist of regular surveys and reviews from participating entities, an assessment to measure outcomes against the objectives of activities (events, training, staff exchange, joint projects, etc.), and adjustment of the plan of activities and cooperation framework based on results and feedback.

The following tools will be used:

- Survey and review material and tools.
- Monitoring and evaluation tools.
- Activities assessment study and adjustment/ Review plan.
- Cooperation impact study.

4.6.3 Factors to be Considered

during Implementation

This framework outlines a series of actions, as well as the roles and responsibilities of stakeholders, cooperation formats, and a step-by-step approach to building cross-border cooperation between entities. To implement this framework, it is necessary to put in place activities that can be put together as a stand-alone programme or as a sub-programme of AFREC's overall capacity-building programme for the African energy sector.

In addition to the programmatic approach required to operationalise the framework, several challenges, including legal and resource mobilisation issues, need to be fully addressed.

- Legal considerations

The framework contributes to developing cross-border cooperation in skills sharing involving several AU Member States, international organisations, national organisations, governmental, non-governmental organisations, and the private sector. The framework does not cover these legal issues, but it does draw the attention of stakeholders to the importance of working together to anticipate and address related issues:

Bilateral and Multilateral Agreements: AU Member States sign these to govern their interactions.

International Law: Cooperation may be subject to relevant international legal frameworks, such as African Union protocols and RECs protocols, regulations, or ordinances.

Determining the Jurisdiction: Establishing the appropriate jurisdiction and determining the applicable law are essential steps in implementing a framework, as they provide the legal foundation for managing disputes and arbitration among partners. Clearly defining these elements ensures that all parties have a mutual understanding of the legal standards and procedures governing their collaboration, thereby facilitating the effective resolution of any disagreements that may arise.

Conflict of Laws: Cross-border cooperation often involves navigating multiple legal systems, each partner with its own laws. For instance, there may be a difference between common law and civil law. Addressing the question of which legal system should govern the agreement or resolve disputes in advance is essential.

It is also essential to ensure compliance with local laws and regulations. Cross-border cooperation must ensure compliance with all relevant laws in each involved jurisdiction, including those related to labour, environmental protections, data privacy, taxation, and consumer rights.

Intellectual Property Rights (IPR): The protection of IPR is crucial in cross-border cooperation involving knowledge, research outputs, technology, and skills sharing between countries or organisations. This necessitates the consideration and protection of intellectual property rights, including patents, copyrights, and trademarks. The cooperation agreement must clearly define how these rights will be recognised and enforced.

Labor Laws and Work Authorisations: It is important to note that labour laws and employment regulations vary across different countries. These should be taken into consideration within the framework of international cooperation. All partners must facilitate the work authorisation and other relevant permits in the event of staff exchange. This should also include obtaining a work visa or any other visa that may be required to facilitate staff mobility.

- Resource mobilisation for the implementation of the framework

To successfully implement the platform and operationalise the framework, it is essential to mobilise the appropriate resources. This will ensure that all activities related to the setting up and integration of the platform into the AFREC website, the preparation of pilot projects and meetings, including the coordination and governance, and MERL meetings are funded. It is essential to prepare a resource mobilisation strategy, considering the following recommendations:

- Analyse the current resource situation and define a resource mapping which identifies what resources are required, including financial, technical, human, and material.
- Get funding from the AUC through the AFREC budget for the development and implementation of the framework.
- Identify potential donors and partners, as well as diverse funding streams: A diverse funding mix should be planned, including

grants, donations, crowdfunding, and partnerships. Identify donors interested in funding cross-border cooperation in skill sharing (e.g., government, private sector, foundations, international organisations, corporate sponsors, individual donors). It is also important to identify the different types of resources the framework needs, including financial resources for the ICT assignments for the platform and resources for implementing framework activities such as meetings and the MERL process. International, multilateral, and bilateral donors typically engage in capacity building and skills sharing. It would be advisable to identify potential funders, such as the African Development Bank (AfDB), the World Bank Group (WBG), SIDA, AFD, and GIZ.

- Engage with stakeholders: Consider key internal and external stakeholders, namely regional champions and pan-African organisations, who can support the programme or contribute resources either in-kind or by sponsoring staff participation in events. Engage participating organisations and stakeholders in the program's activities to enhance ownership of the platforms and the framework and reduce reliance on external resources over time.
- Consider and define both short-term (immediate) needs and long-term sustainability.
  - Breaking the language barrier.

Cross-border cooperation initiatives shall consider and use the various AU official languages, namely English, French, Portuguese, Arabic, etc. Interpretation and translation services should be considered in the development of the platform and implementation, as well in organising all the various cooperation activities and

initiatives such as training, events, exchanges, etc.

4.6.4 **A proposed action plan 2025-2030**

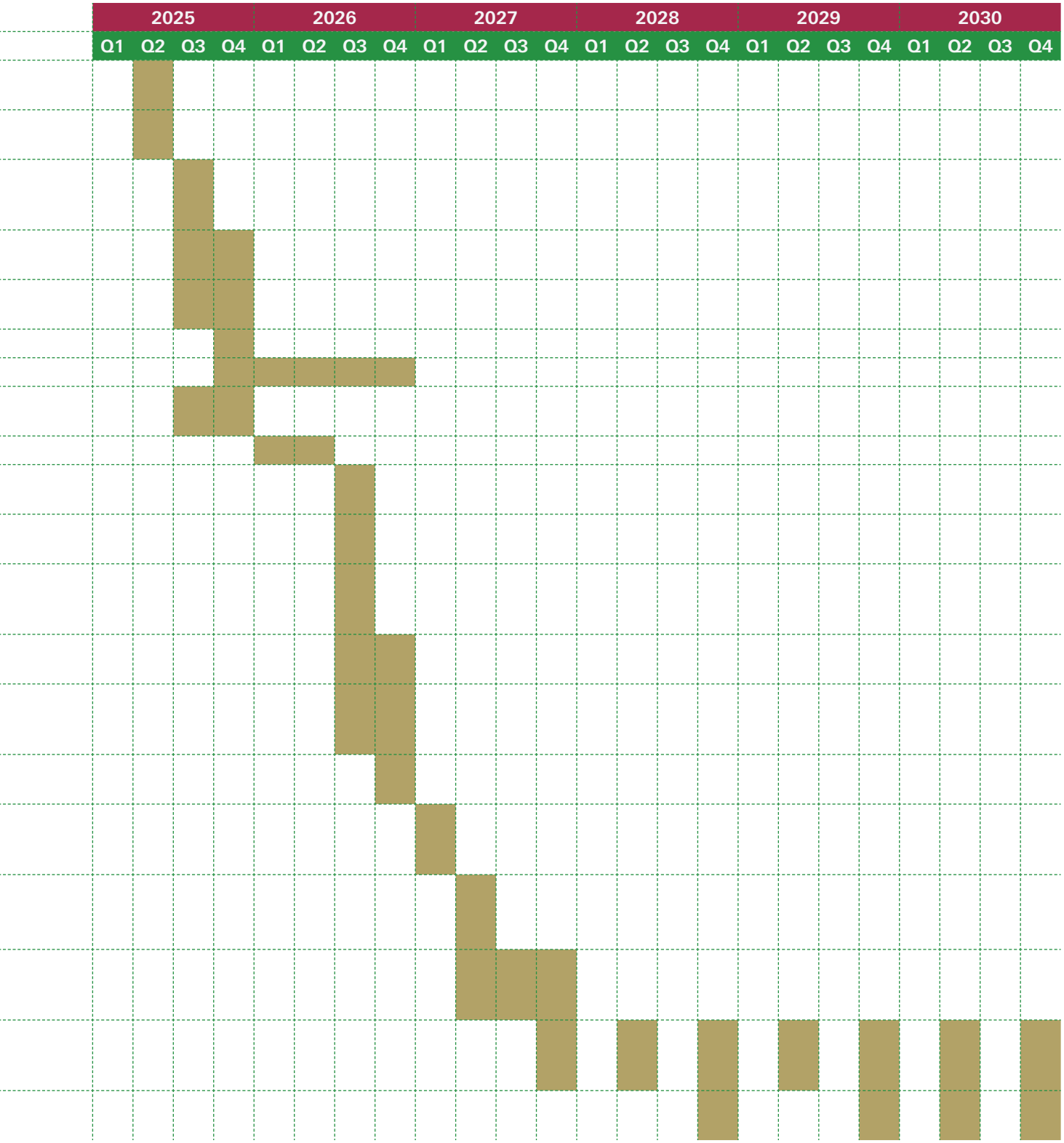
The implementation of the framework for cross-border cooperation in skills development and sharing will commence with the validation of the framework by African energy experts. The proposed action plan presents various activities to operationalise the implementation of the framework:

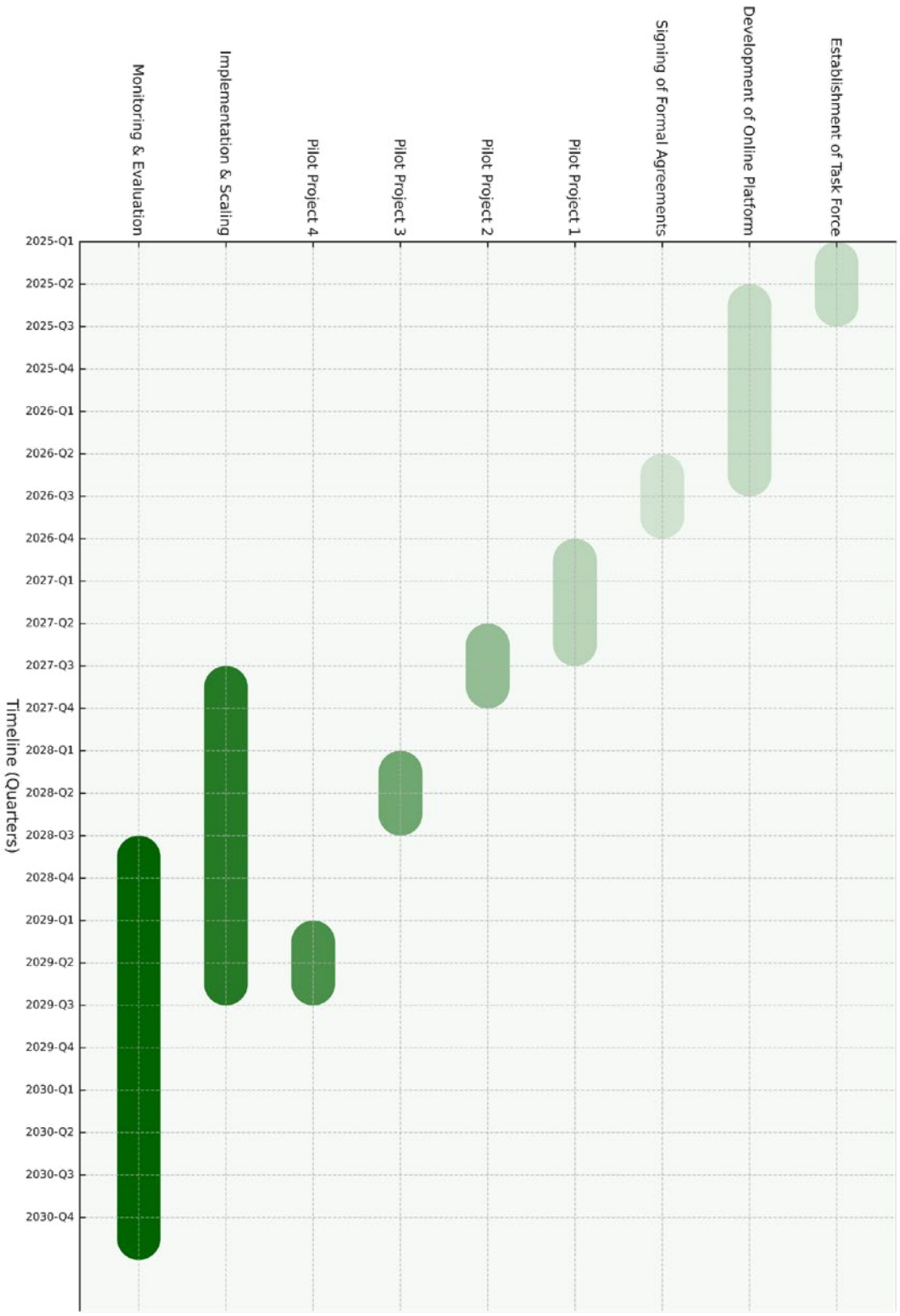
Goal (impact)	Enhanced institutional capacities and individual skills for transforming Africa's energy landscape
Outcome/strategy	▪ Provide an online tool to help stakeholders search for information/opportunities for skills development and sharing. ▪ Support the development of cross-border cooperation agreements between countries/organisations

N°	Activity	Responsible	Period for completion	Indicator (s)	Resources needed and Stakeholders involved
1	Validation of the framework for cross-border cooperation in skills development and sharing.	AFREC and ASR	Q2 2025	Validation workshop report Final report, including the final version of the framework.	African energy experts.
2	Designation of regional champions and key stakeholders and establish.	AFREC	Q2 2025	Regional champions and key stakeholders identified, and focal points nominated.	RECs and related institutions, including Power Pools.
3	Prepare and submit a draft continental declaration/ convention on cross-border cooperation on skills development and sharing for STC-TTIIE for adoption.	AFREC	Q2 2025	A continental convention on cross-border cooperation on skills development and sharing has been adopted.	ASR
4	Fundraising strategy for implementing the platform and framework.	AFREC	Q3 to Q4 2025	Fundraising strategy defined. Number of donors willing to fund the initial stage of the framework implementation.	RECs and related institutions, including Power Pools.
5	Complete definition and finalise pilot projects: cooperation agreement, activity plan, MERL process.	AFREC	Q3 to Q4 2025	Pilot projects concept note drafted and adopted, including funding strategy.	Regional champions, key stakeholders, and parties involved in the pilot projects.
6	Launch pilot projects.	AFREC	Q4 2025	Pilot projects agreement signed.	Regional champions, key stakeholders, and parties involved in the pilot projects.
7	Conduct the MERL exercise on pilot projects.	AFREC, Regional champions, key stakeholders.	Q4 2025 to Q4 2026	MERL results report.	RECs and related organisations, including power pools.
8	Preparation and procurement of an ICT company to develop the platform.	AFREC	Q3 to Q4 2025	ToRs and RfP drafted. ICT company selected.	AFREC and ASR to shape the platform (ASR, AFUR, etc.).
9	Development of the platform.	ICT company	Q1 to Q2 2026	Platform developed.	AFREC and some key stakeholders to assist the ICT company.
10	Updating the platform's exercises with stakeholders in the African energy sector.	AFREC	Q3 2026	Updated Developed Platform.	Regional champions, key stakeholders, and all stakeholders that could be interested to the platform.

Goal (impact)	Enhanced institutional capacities and individual skills for transforming Africa's energy landscape				
Outcome/strategy	▪ Provide an online tool to help stakeholders search for information/opportunities for skills development and sharing. ▪ Support the development of cross-border cooperation agreements between countries/organisations				
N°	**Activity**	**Responsible**	**Period for completion**	**Indicator (s)**	**Resources needed and Stakeholders involved**
11	Preparation and integration of the online platform on the AFREC website.	AFREC	Q3 2026	The platform is linked to the AFREC's website.	An ICT company to assist the AFREC.
12	Establish a task force or working group to oversee the implementation of the framework under the supervision and coordination of AFREC.	AFREC	Q3 2026	Meeting organised.	Some Regional champions and key stakeholders will be members of the task force.
13	Promote the use of the platform and fill in/ update the platform.	AFREC, Regional champions, Key stakeholders.	Q3 to Q4 2026	Webinars/conferences or workshops organised The platform is updated.	RECs and related institutions, including Power Pools.
14	Launch the use of the platform.	AFREC	Q3 to Q4 2026	Regional champions and key stakeholders identified, and focal points nominated.	The ASR, RECs and related institutions, including Power Pools.
15	Updating the platform and adapting the framework based on the results of MERL pilot projects.	Task force or working group	Q4 2026	Task force meeting report Online platform updated Framework adapted.	RECs and related organisations, including power pools.
16	Presentation and discussion of the framework with the STC-TTIIE and AU institutions to achieve a continental agreement.	AFREC	Q1 2027	STC-TTIIE declaration/ decision or continental agreement.	RECs, Regional champions, key stakeholders, and African energy experts.
17	Organise an international workshop to launch the framework for cross-border strategic cooperation in the African energy sector.	AFREC, Regional champions, key stakeholders	Q2 2027	Workshop organised Initiatives pre-formulated by conference attendees.	African energy experts.
18	Conduct the MERL process of the framework for cross-border strategic cooperation in the African energy sector.	AFREC, Regional champions, key stakeholders	Q2 to Q4 2027	MERL results report.	RECs and related organisations, including power pools, participants in cooperation initiatives.
19	Organise a coordination and governance meeting to review the MERL result and formulate recommendations on the framework. (Half-yearly evaluations workshop)	AFREC	Q4 2027 Q2 and Q4 2028 Q2 and Q4 2029 Q2 and Q4 2030	Coordination and governance meeting report.	Regional champions, key stakeholders.
20	Annual reflection workshop and updating the platform and framework.	AFREC	Q4 2027 Q4 2028 Q4 2029 Q4 2030.	Online platform updated Framework adapted.	Regional champions, key stakeholders.

N°	Activity	Indicator (s)
1	Validation of the framework for cross-border cooperation in skills development and sharing.	Validation workshop report
2	Designation of regional champions and key stakeholders and establish.	Regional champions and key stakeholders nominated.
3	Prepare and submit a draft continental declaration/convention on cross-border cooperation on skills development and sharing for STC-TTIIE for adoption.	A continental convention on cross-border cooperation on skills development and sharing has been adopted.
4	Fundraising strategy for implementing the platform and framework.	Fundraising strategy defined. Number of donors willing to fund the framework.
5	Complete definition and finalise pilot projects: cooperation agreement, activity plan, MERL process.	Pilot projects concept note drafted and adopted.
6	Launch pilot projects.	Pilot projects agreement signed.
7	Conduct the MERL exercise on pilot projects.	MERL results report.
8	Preparation and procurement of an ICT company to develop the platform.	ToRs and RfP drafted. ICT company selected.
9	Development of the platform.	Platform developed.
10	Updating the platform's exercises with stakeholders in the African energy sector.	Updated Developed Platform.
11	Preparation and integration of the online platform on the AFREC website.	The platform is linked to the AFREC's website.
12	Establish a task force or working group to oversee the implementation of the framework under the supervision and coordination of AFREC.	Meeting organised.
13	Promote the use of the platform and fill in/ update the platform.	Webinars or workshops organised The platform updated.
14	Launch the use of the platform.	Regional champions and key stakeholders nominated. Task force meeting report
15	Updating the platform and adapting the framework based on the results of MERL pilot projects.	Online platform updated Framework adapted.
16	Presentation and discussion of the framework with the STC-TTIIE and AU institutions to achieve a continental agreement.	STC-TTIIE declaration/decision or continental agreement.
17	Organise an international workshop to launch the framework for cross-border strategic cooperation in the African energy sector.	Workshop organised Conference attendees.
18	Conduct the MERL process of the framework for cross-border strategic cooperation in the African energy sector.	MERL results report.
19	Organise a coordination and governance meeting to review the MERL result and formulate recommendations on the framework. (Half-yearly evaluations workshop)	Coordination and governance meeting report.
20	Annual reflection workshop and updating the platform and framework.	Online platform updated


2025
2026
2027
2028
2029
2030
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4



Proposed 5-year action plan

4.7 Suggested Pilot Projects on Cross-border Cooperation in Skills-sharing in the African Energy Sector

AFREC's Capacity Building Programme for the Energy Sector in Africa 2024 report presents skills gaps, needs by region, and topics of interest for capacity and skills development. These needs cover the five knowledge areas and are specific to each region. In addition, the regions have developed expertise and skills in specific areas over the years that can be shared with others, as shown in the table below. For example, North Africa is quite advanced in issues related to energy access, renewable energy, or the oil industry, and areas of interest to other regions. Facilitating knowledge and skill sharing can be achieved by Organising events, training sessions, exchange programs, collaborative projects, publications, creating online platforms, and establishing professional networks.

Pilot cross-border cooperation projects for the exchange of expertise have been defined, considering the current situation of the regions and AU Member States in terms of gaps and needs on the one hand, and their advanced experiences to be shared on the other. They have also been complemented by direct contributions from stakeholders during the consultation process, as well as their involvement through the survey and the consultation workshop.

Region	Gaps and needs	Experience and skills to share
East Africa	Energy Market and Economies	Renewables: Geothermal (Kenya), Hydropower (Ethiopia, Zambia)
	Energy Technology Implementation	Energy access: off-grid solutions (Kenya)
	Energy Policy and Regulations	Electromobility (Kenya, Rwanda, Uganda)
	Continental Energy Framework	Energy efficiency (Kenya, Uganda, Tanzania)
	Energy Project and Infrastructure Development	
	Energy Infrastructure and Operations	
	Electricity Transmission and Industrial Technology Applications	
	Nuclear (Kenya)	
	Private investments in transmission (Uganda, Kenya), Concessions	
Centre Africa	Regional Planning,	Biomass (DRC, Gabon)
	Policies, Laws, and Regulations,	
	Regional Market Design, and	Energy efficiency (Cameroon)
	Regional Market Integration and Road-Mapping.	Renewables: Hydropower (Cameroon, DRC)
	Strategic planning, management capacity, and multilevel governance.	Generation technologies: Oil and Gas (Gabon, Republic of Congo, and Equatorial Guinea)
	Infrastructure Operations Planning Capacity	
	Infrastructure Operations and Continuous Improvement Capacity	
North Africa	Policymaking Capacity	Energy Policy and Regulation (Morocco, Egypt)
	Energy Project Management	Renewables: Wind and solar (Morocco, Egypt), Green Hydrogen (Morocco, Egypt), Hydro (Egypt)
		Generation technologies: Oil (Algeria, Libya, Egypt), Gas sector, LNG (Algeria and Libya)
		Sector planning, regulation (Egypt, Morocco)
		Energy efficiency (Morocco, Egypt, Tunisia)

Region	Gaps and needs	Experience and skills to share
Southern Africa	Supply Energy to Rural Areas	Coal and Renewable Energy Integration (South Africa)
	Supporting a Just Energy Transition	Energy Storage Solutions (South Africa)
	Renewable energy focusing on the Green Hydrogen Sector	Oil (Angola, South Africa)
	Support the Operation and Expansion of National and Regional Energy Grids	Nuclear (South Africa)
	Increase power accessibility in rural communities.	Regional electricity market (SAPP)
	Regulatory cooperation	Sector planning, regulation (South Africa)
	Private investments in transmission (South Africa)	Renewables: Green Hydrogen (Namibia, South Africa), Hydro (Mozambique, Zambia)
		Water-Energy-Food (WEF) Nexus (Botswana, Namibia, South Africa)
West Africa	Grid flexibility and power systems planning, operation, and maintenance	Renewables: Solar (Burkina, Senegal), Hydropower (Ghana), Green Hydrogen (Mauritania)
	Renewable energy	Energy access: off-grid solutions (Liberia, Sierra Leone, Benin, Nigeria)
	Research and development	Regional electricity market (WAPP)
	Regulatory frameworks for new technologies	Sector planning, regulation (Ghana, Nigeria)
	Policymaking Capacity	

Source: Authors from AFREC (2024)

Table 4 – Skills gaps and needs by African region

PILOT PROJECT 1:
EXCHANGE OF SKILLS AMONG AFRICAN POWER POOLS WITHIN THE AFSEM FRAMEWORK

Project:	**Exchange of skills between African power pools**		
Participating regions/ countries	• CAPP • EAPP • NAPP • SAPP • WAPP	Areas covered	i) Political economy, ii) planning, iii) regulation and iv) technical and operational.
Potential formats of cooperation	• Events • Exchange projects/visits • Joint projects	Topics	All topics related to cross-border issues, regional markets, and the continental dimension of electricity markets.

Table 5 – Pilot project 1

Project:	Exchange of skills between African power pools
Needs and justification of the project	There are five power pools in Africa, with different levels of development and market interaction. The SAPP and WAPP are the most advanced in terms of the effectiveness of power exchanges between countries, the organisation, structuring and operation of markets and the design of institutional architecture. EAPP has made much progress recently. This experience, in addition to the institutional and individual competence of SAPP and WAPP, will benefit the other Power Pools. In addition, the two Power Pools have already begun to collaborate informally, resulting in the organisation of meetings and a study visit by WAPP and ERERA staff to SAPP. A further study visit by SAPP to WAPP is also planned. Informal exchanges have also occurred between the two power pools, EAPP and CAPP. All these informal initiatives deserve to be shared with other power pools, particularly with the intention to integrate them towards the establishment of the African Single Electricity Market (AfSEM). Therefore, cooperation between the five power pools should be strengthened to develop and share their capacities to benefit the people of Africa. The AUDA-NEPAD could take the lead or serve as the coordinating organisation for this pilot project, which is crucial for achieving the AfSEM's goals and impact.
Aims	The project aims to improve cooperation between the five African power pools in developing and sharing skills within the AfSEM framework. In particular, the initiative's objectives are to - Improve the institutional capacity of the various power pool entities, including the regional regulators, by organising cooperation activities. - Enhance the knowledge and skills of technical experts in the power pools and regional entities through skills-sharing activities.
Formalising the project	A Memorandum of Understanding (MoU) between the five institutions and donors could formalise the cooperation. In the latter case, it may be implemented in two or more phases. For example, the first phase could start with a Memorandum of Understanding (MoU) between SAPP and WAPP, followed by an extension to EAPP and/or CAPP in the second phase, and finally covering the entire five-power pool in the third phase. Various formats of engagement will be used to facilitate the exchange of skills and knowledge: - Organising conferences and policy dialogues as experience-sharing events to support and accompany the engagement of political decision-makers and regional politicians around the power pools through conferences and policy dialogues as experience-sharing events and institutional capacity building. - Organising study visits for Power Pool staff to enhance the exchange of experience and skills at the individual level. - Organising joint projects such as research and analysis on issues facing the power pools. - Organisation of other events such as training with an interest in skills sharing.
Funding strategy	The initial period of cooperation may be one or two years, with an extension depending on the expansion plan and the organisation's needs. Of course, the decision on the duration is the responsibility of the participating organisations. Donors strongly interested in developing cross-border exchanges and electricity markets in Africa may finance the cooperation activities. The World Bank, the African Development Bank, and GIZ may jointly or individually finance the initiative.
Expected impact and MERL process	The expected impact of this collaboration is to enhance strategic cooperation between the power pools in terms of development and skills sharing. The result will be power pools with enriched skills that effectively contribute to providing affordable and reliable energy to African populations. The project's results will be measured against key performance indicators agreed upon by key stakeholders. The MERL process associated with this initiative will enable the monitoring and evaluation of the activities' results in terms of the number of study visits, events, and joint activities. It will also be used to identify and learn lessons to adjust the cooperation content, if necessary.

Project:	Exchange of skills between African power pools
Pilot countries/ regions (interested countries/ Regions)	Considering the gaps and needs presented above, this project could initiate and encourage cooperation between: Phase 1: Southern and Western regions SAPP and WAPP are the most advanced power pools and have started cooperation through study visits. Phase 1 of the project will focus on enhancing this collaboration, particularly in areas related to the operation and expansion of national and regional energy grids, as well as grid flexibility and power system planning. The project should also cover regulatory cooperation between national and regional regulatory entities. Phase 2: Southern (SAPP) or Western (WAPP) regions and Central regions (CAPP) The central region has expressed its interest in developing skills in topics related to regional market planning, development, operation and regulatory framework. Given the advanced level of SAPP and WAPP on regional market development and cross-border electricity exchange, this project will allow CAPP to learn from SAPP and WAPP's experiences. Phase 3: Five regions In a later stage of the project, the cooperation should involve power pools and related organisations from the five regions.

PILOT PROJECT 2:
SKILLS EXCHANGE PROGRAM IN THE AFRICAN ENERGY SECTOR

Project:	Skills Exchange Programme in the African Energy Sector (SEPAES)		
Participating regions/ countries	Five regions	Areas covered	i) Political economy, ii) planning, iii) regulation, iv) technical and operational, v) management abilities
Potential formats of cooperation	• Events • Exchange projects: study visit, internship and fellowship • Joint projects	Topics	All relevant topics
Needs and justification of the projects	The Comprehensive Capacity Building Programme for the African Energy Sector report identifies a gap in capacity development and insufficient knowledge sharing among stakeholders. It highlights the importance of enhancing stakeholder collaboration across different sub-sectors and issues. This initiative will address this gap and increase opportunities for stakeholders to collaborate within a framework that benefits all stakeholders, equipping them with the necessary skills to address the current challenges of the African energy sector.		
Aims	The programme aims to enhance the knowledge and skills of stakeholders in the African energy sector by facilitating the transfer of knowledge and skills among stakeholders. More specifically, it seeks to - Develop individual knowledge and skills through an internship programme, - Improve skills between stakeholders through an exchange programme for staff and experts (fellowship, mentorship) in African organisations, - Promote the production and exchange of knowledge and skills through online or face-to-face exchange platforms (conferences, policy dialogues, etc.).		

Project:	Skills Exchange Programme in the African Energy Sector (SEPAES)
Formalising the project	The programme could be established by signing Memoranda of Understanding (MoU) between interested organisations from all regions of Africa. It will be divided into three independent components, which may be launched simultaneously or separately. • Component 1: Knowledge and skill exchanges among universities and vocational training providers with relevant energy programs. Based on the European ERASMUS+ programme, the activities of this component focus on organising exchanges of students and university staff with other universities for short periods of up to one semester. This exchange requires the recognition of the student's and professional qualifications/skills, which are acquired through training by the partner universities or vocational training providers. The ARUA CoE could be considered as the first group of participating universities. Component 2: Develop and enhance the cooperation between existing centres of excellence in the African energy sector, including the organisation of Training of Trainers (ToT) events and a certification program for energy trainers at the regional level. The implementation of this cooperation needs standardised certification to ensure skills are recognised across multiple countries. The collaboration could start with enhancing collaboration between the APUA-supported African Network of Centres of Excellence in Electricity (ANCEE) and the World Bank-supported Energy Centres of Excellence. • Component 3: Talent Mobility Programs which propose a broader exchange between organisations working in the African energy sector, whether at the ministerial level, i.e. an exchange of energy experts between ministries, or at the level of governmental organisations (rural electrification agencies, renewable energy agencies, utilities), non-governmental and private organisations, etc.
Funding strategy	The financing of the initiative can be based on donors with a clear interest in capacity building in the energy sector in Africa, as well as on the contributions of partner universities and institutions, which may be in the form of an annual membership fee or in-kind contributions, such as the provision of premises or the organisation of meetings. The financing of study visits, which are still expensive, could be discussed among the partners. Regarding the financing of study visits, which are still quite expensive, the possibility of co-financing air tickets and living expenses between partners could be discussed, especially in the absence of donor funding.
Expected impact and MERL process	This ambitious initiative aims to influence various stakeholders in the African energy sector. The process of monitoring and evaluating the results of the actions is quite complex. It will need to be set up in perfect collaboration with the stakeholders, especially as this is an evolving project in terms of the potential number and type of participants. It will require coordination by AFREC and the constant involvement of key stakeholders and regional champions. The strategy for implementing, evaluating, and adjusting the programme, based on an adapted MERL process, may involve starting with Component 1, building on the existing ARUA CoE network, or focusing on just two regions and then expanding to other regions. Component 2, which requires more financial and stakeholder investment, could be launched later once experience and lessons have been learnt from the implementation of Component 1.

Project:	Skills Exchange Programme in the African Energy Sector (SEPAES)
Pilot countries/ regions (interested countries/ Regions)	Considering the gaps and needs per region, this project could initiate and promote cooperation between thirteen AU Member States hosting an ARUA CoE (DR Congo, Ethiopia, Ghana, Kenya, Mauritius, Morocco, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda) on issues related to renewable energy and energy transition, with a focus on research and development, new technologies, green hydrogen sector. The following organisations may be connected with the intent of initiating cooperation: As potential providers: Algeria: SONATRACH[13], APRUE[14], CDER[15]. Ethiopia: EREDPC[16]. Ghana: Energy Commission. Morocco: MASEN[17], IRESEN[18], UM6P[19]. Nigeria: ECN[20], REA[21], NAPTIN[22]. Kenya : KEREA[23], REREC[24]. Rwanda: FONERWA[25]. Senegal: ANER[26], ASER[27]. South Africa: SANEDI[28], IDC[29]. Tunisia: ANME[30]. Uganda: CREEC[31]. As potential receivers: Djibouti: ADME[32]. Ghana: Newly established Renewable Energy Agency. Madagascar: ADER[33], FNED[34]. Mauritania: ANADER[35]. Mozambique: FUNAE[36]. Niger: ANPER[37], ANERSOL[38]. Soudan: ERI[39], NERC[40]. Tchad: ADERM[41].

Table 6 – Pilot project 2

13 *National Company for Hydrocarbon Research, Production, Transport, Processing and Marketing*
14 *National Agency for the Promotion and Rationalization of Energy Use*
15 *Renewable Energy Development Center*
16 *Ethiopian Rural Energy Development and Promotion Center*
17 *Moroccan Agency for Sustainable Energy*
18 *Solar Energy and New Energies Research Institute*
19 *University of Mohammed VI Polytechnic*
20 *National Agency for the Development of Renewable Energy*
21 *Rural Electrification Agency*
22 *National Power Training Institute of Nigeria*
23 *Kenya Renewable Energy Association*
24 *Rural Electrification and Renewable Energy Corporation*
25 *Rwanda Green Fund (FONERWA)*
26 *National Renewable Energy Agency*
27 *Senegalese Rural Electrification Agency*
28 *South African National Energy Development Institute*
29 *Industrial Development Corporation*
30 *National Agency for Energy Management*
31 *Centre for Research in Energy and Energy Conservation*
32 *Djiboutian Agency for Energy Management*
33 *Rural Electrification Development Agency*
34 *National Sustainable Energy Fund*
35 *National Agency for the Development of Renewable Energy*
36 *Fundo Nacional de Energia*
37 *Niger Agency for the Promotion of Rural Electrification*
38 *National Solar Energy Agency*
39 *Energy Research Institute*
40 *National Energy Research Centre*
41 *Rural Electrification Agency*

PILOT PROJECT 3:
PROFESSIONAL NETWORK OF AU MEMBER STATES' ENERGY EXPERTS FOR THE EXCHANGE OF EXPERTISE

Project:	**Professional network of AU Member States ' energy experts for the exchange of expertise**		
Participating regions/countries	Five regions	Areas covered	i) Political economy, ii) planning, iii) regulation, iv) technical and operational, v) management abilities
Potential formats of cooperation	• Events • Exchange projects: study visits, internships, and fellowships • Professional network and other platforms	Topics	All relevant topics
Needs and justification of the project	The Comprehensive Capacity Building Programme for the African Energy Sector report identifies a gap in capacity development and insufficient knowledge sharing among stakeholders. It highlights the importance of enhancing stakeholder collaboration across the continent between regions and AU Member States that have tried and tested skills to share with others. This initiative aims to enhance cross-border capacity development and sharing between Member States or regions on specific topics related to the context and skills needed to address the African energy sector's current challenges.		
Aims	The programme aims to strengthen AU Member States ' energy expertise by organising skills development and exchange activities between Member States. More specifically, it aims to - Develop individual knowledge and skills through the organisation of skill-sharing events, - Improve the exchange of skills between Member States through an exchange programme for staff and experts (study visits) in African organisations, - Promote the production and exchange of knowledge and skills through online or face-to-face exchange platforms (conferences, policy dialogues, etc.).		
Formalising the project	The programme could be established by a Memorandum of Understanding (MoU) between interested Member States. It will be divided into two independent components, which may be launched simultaneously or separately. The initiative would establish a network of energy experts who would exchange knowledge and skills through webinars, workshops or exchange programmes such as study visits between two or more Member States. The energy experts could come from ministries, governmental organisations (electrification agencies, utilities), non-governmental and private organisations (electrification agencies, utilities), etc. The Member States will select the topics for the events and the exchange programme according to their needs and the availability of their counterparts to fill the gaps.		
Funding strategy	Multilateral and bilateral donors with a clear interest in capacity building and knowledge sharing in the energy sector in Africa may be interested in funding the initiative, such as the World Bank, the African Development Bank (AfDB), GIZ, SIDA, AFD, etc. Depending on the activities to be funded, potential funding from other international organisations could be explored: SEforALL, RES4Africa, SEA, etc. Partners could discuss the funding of study visits, which are quite expensive, and explore a strategy for co-financing airfares and living expenses, especially in the absence of donor funding.		
Expected impact and MERL process	This initiative aims to affect several types of actors at the national level. The process of monitoring and evaluating the results of the actions is quite complex and will need to be set up in perfect collaboration between the stakeholders, especially as this is an evolving project in terms of the potential number and type of participants. The monitoring and evaluation of the initiative's results and impact could be done through a survey using qualitative and quantitative data, such as the number, type of actors, origin, regions, topics covered, use of skills acquired, relevance of the format of skills exchange and topics, etc. The survey could be carried out immediately after each activity and have a regular (annual) assessment and analysis of the overall activities and impact of the initiative to learn and adjust the scope if necessary.		

Project:	Professional network of AU Member States ' energy experts for the exchange of expertise
Pilot countries (interested countries)	The consultative workshop held in December 2024 allowed national energy experts from Member States to express their interest in participating in cross-border cooperation on knowledge sharing on some specific topics. Implementing this initiative could start with the interested countries on topics they chose. AFREC, possibly in cooperation with regional champions, could initiate a kick-off meeting between these interested Member States to discuss the initiative and open it to other potentially interested Member States. Participating Member States (only) will organise further meetings and discussions to shape the cooperation (topics covered, format, level of experts involved, national organisation concerned, timeline, etc.) and define an action plan. The pilot countries and topics identified during the consultative workshop in Côte d'Ivoire in December 2024 are: • Topic 1: Regulation of new technologies (EV and Eco mobility, PV, batteries, off-grid, tariffs, waste management, smart grid). Format of activities identified: i) Facilitating benchmarking analysis by Organising exchange events. ii) Carry out a benchmark on tariffs. iii) provide operational training and organize grid simulations. Pilot country willing to share skills and experience: Benin. Pilot countries willing to learn from others' experience: Equatorial Guinea, Madagascar, Senegal. • Topic 2: Transmission network planning Sub-topics: (i) Accelerating the interconnection of countries and the creation of a cross-border transmission network. ii) Energy exchanges between Guinea and Senegal. iii) Purchase energy from Senelec and resell the surplus. iv) extending cooperation with other countries. Format of activities identified: i) events ii) Exchange of personnel and organisation of joint projects Pilot countries willing to share skills and experience: Burkina Faso, Senegal. Pilot countries willing to learn from others: Equatorial Guinea, Madagascar.

Table 7 – Pilot project 3

PILOT PROJECT 4:
POLICY DIALOGUE SERIES FOR THE TRANSFORMATION OF AFRICA'S ENERGY SECTOR

Project:	Policy dialogue series for the transformation of Africa's energy sector		
Participating regions/countries	Five regions	Areas covered	i) Political economy, ii) planning, iii) regulation, iv) technical and operational, v) management abilities
Potential formats of cooperation	Events	Topics	All relevant topics
Needs and justification of the project	The Comprehensive Capacity Building Programme for the African Energy Sector report identifies a gap in capacity development and insufficient knowledge sharing among stakeholders. It highlights the importance of enhancing stakeholder collaboration across different sub-sectors to transform Africa's energy sector and serve Africa's sustainable development. This initiative aims to address this gap by strengthening opportunities for sector stakeholders to collaborate on various issues related to the challenges, needs, and regional and continental contexts.		
Aims	The programme aims to improve the knowledge and skills of African energy sector stakeholders by organising a series of policy dialogues for cross-border skills development and exchange. More specifically, it aims to - Develop individual knowledge and skills, - Improve the skills exchange between stakeholders from AU Member States and various African organisations, including private companies.		

Project:	Policy dialogue series for the transformation of Africa's energy sector
Formalising the project	The programme could be established under the auspices of AFREC in collaboration with key regional players and selected key stakeholders. The initiative would include organising a series of policy dialogues for policymakers, investors, RECs, regional organisations, power exchange groups, regulators, utilities, NGOs, and private companies on various topics of key interest for the transformation of the African energy sector. Topics may include, but are not limited to, innovative policies and approaches to electrification planning, attracting private investment in transmission infrastructure, regulatory frameworks and models for energy transition in Africa, etc. The series of policy dialogues may be organised by topic in an African region identified as having a capacity gap on the topic, with two dialogues per year and the possibility of more. The policy dialogues organised by AEEP or ASR are examples of this.
Funding strategy	Funding may come from DFIs and bilateral donors with a clear interest in capacity building and knowledge sharing in the energy sector in Africa.
Expected impact and MERL process	This initiative aims to influence various stakeholders in the African energy sector. The process of monitoring and evaluating the results of the initiative's actions and their impact can be carried out using quantitative methods, such as participation (number, type of actors, origin, regions, etc.), topics covered, and other relevant metrics.
Pilot countries/regions (interested countries)	According to the gap identified in the AFREC report on the comprehensive capacity building programme for Africa's energy sector in 2024 and the current context in skills sharing, two pilot regions and topics have been identified for the initial stage of this initiative: • Topic 1: Private investments in transmission Format of activities identified: events (policy dialogue) Pilot regions, including the Southern region (South Africa) and the Eastern region (Uganda, Kenya, Tanzania), express their willingness to share skills and learn from international best practices and experiences in Africa and worldwide. • Topic 2: Unlock nuclear energy in Africa: regulation, safety, R&D, energy security Format of activities identified: events (policy dialogue) Pilot regions: Southern region (South Africa) have experience that could be share with East Africa (Kenya, South Sudan, Uganda), West (Burkina Faso, Mali, Niger, Ghana, Nigeria), North Africa (Egypt, Morocco), Southern region (Zambia) Other topics could be selected from the gaps and experiences listed by region in the table below.

Table 8 Pilot project 4

5. SUGGESTIONS FOR FURTHER WORK

This section suggests the next steps for expanding and operationalizing the project's outputs, emphasizing the development of a fully functional, web-based platform to facilitate skills sharing and collaboration in the African energy sector. It highlights that while the project has produced a detailed matrix of knowledge areas and topics, a framework for cross-border cooperation, and a proposed platform design, realizing their full potential requires additional ICT work, including programming, user-friendly interface design, multilingual support, AI-powered search, reporting tools, and strong security measures. The section also recommends coordinating with AFREC's planned "Energy Sector Capacity Building Information System" to create a single, comprehensive platform that centralizes information on capacity-building and skills-exchange opportunities across the sector.

This project provides the following three outputs:

- *The matrix of areas and topics.* The matrix creates a structured and prioritised framework that makes explicit the situation of skills development and sharing within the African energy sector. It is a static tool that links each of the five distinct knowledge areas to specific topics across three levels. It provides essential information on existing capacity-building and skills-sharing initiatives for each knowledge area-topic combination. It has been developed in Excel based on rigorous information gathering from a range of organisations working in the sector. For each organisation identified, it provides information on its territorial area of competence, the proposed formats for strengthening and sharing skills, the interest in cross-border cooperation in terms of sharing skills, and contacts. This Excel tool is provided with this report.
- *The design of the platform*. It is proposed that the platform should be a web-hosted, user-friendly, open-access tool designed to act as a marketplace for skills development and exchange for stakeholders in the African energy sector. This project does not provide the platform itself, which will require substantial additional development and programming work that is beyond the scope of this project. Here, it is defined how the information provided by the matrix can be restructured into an online tool (the "platform") that will allow users to efficiently search and retrieve information relevant to their skills development needs.
- *The framework*. It establishes a structured approach for building cross-border cooperative initiatives in the five knowledge areas between international, regional, and national organisations, including governmental, private, and non-governmental entities. Drawing on lessons learned from established best practices, the framework engages key players in the sector in a systematic and formal process aimed at adding value to cross-border skills-sharing initiatives and strengthening the overall capacity of the energy sector in Africa.

The harmonious implementation of these results requires additional ICT work, namely the web development of the platform. There are similarities between this project and the European collaborative project EDDIE[42] (Education for Digitalisation of Energy), One of the specific objectives of which is to promote cooperation and mobility between European training centres, universities, and industry. The similarity lies mainly in the KA2 strand of the project, 'Collaboration for Innovation and Exchange of Good Practice - Sector Skills Alliances', which aims to identify the current and future skills needs of the digital energy sector, map stakeholders, and develop a strategic network. As with this project, a specialist ICT company will need to be recruited to effectively carry out the additional work involved in developing the online platform as an IT-based information system on organisation and skills exchange opportunities. It follows the description of the additional ICT development task.

5.1 Development of an IT-based information system on Organisations and Opportunities for Skills Exchange

The design of the future online platform, as proposed in this report, should be programmed and developed as a website with easy access for users[43]. The online platform must provide a unique and user-friendly experience to help users identify collaborative partners for skills sharing. It must include advanced features that enable users to intuitively navigate, search, filter, and extract information in real-time according to their needs. It must also be scalable, allowing it to be updated by specific types of users.

The development of this online tool would require the recruitment of an experienced company specialising in information technology and web development. Based on the platform's requirements and functionalities, this company will design, test, and launch the tool in accordance with the recommendations of this report and the stakeholders. The platform should meet the following basic specifications:

- Access:

42 *More information on this project can be found on the following website: https://eddie-erasmus.eu/*

43 *The expected users of the online platform are experts from a Member State (mainly from the ministry in charge of energy or any other ministry with an interest), an international, continental or sub-regional organisation (RECs and associated entities), a power pool, a regulator or utility, a university or professional training body, a non-governmental organisation and any private entity.*

- Access to the information is free after registering using a simple form. This form includes information about the person (surname, first name) and the organisation (name, business sector, country).
- Unique identifiers and passwords are automatically created for each user when they register on the platform. People representing an organisation must use their business address to register.
- The automatically generated ID must be set up with the authorisation level (e.g., administrator, moderator, and user).
- Even if access to the platform is open, it is necessary to define and implement a role-based access system with different levels of permissions and functions:
  i. The administrator (in principle, the staff of AFREC) must have full control over all the functionalities of the platform.
  ii. The moderators must oversee updating the organisation's information. They must be the contact people for each organisation present on the platform. The system must allow each organisation to have one moderator and as many users as it wishes.
  iii. Users would only be able to search for information on the online platform.

- The interface must include[44]:
  - A simple, user-friendly means for consulting information on the organisation and interacting with the system.
  - A user-friendly administration panel for the administrator to manage the database (insert, update, delete information about the organisations, etc.).
  - A dashboard to display the information requested by the user. This must be defined by AFREC and the project team, but should include at least the following functionalities:
    i. *Search & Filter*: Users can carry out a search by entering the search[45] in the search bar or using keywords[46] and Boolean operators (AND, OR, NOT). The result can be refined by date, topic, knowledge area, engagement format, and location (geospatial search).
    ii. *User-Friendly Interface*: Features autocomplete, spell check, and AI-powered recommendations derived from a database of keywords.
    iii. *Personalisation*: Users can save or bookmark search results for future reference.
    iv. *Scalability*: The platform will support multiple concurrent users to ensure high availability and performance.
    v. *Language* : Users shall have the option to select any of the AU's official languages on their dashboard to conduct searches and display results. They should be able to utilise any of the AU's official languages.

- Updating and maintenance
  - Powered by AI tools, the system must periodically ask moderators and administrators to update the organisation's information. The timing of these updates and the form and content of the request could be further specified by AFREC and the project team. For example, an automatic request for updates could be sent to moderators every three to six months.
  - The AFREC would carry out the overall maintenance of the system with the support of relevant stakeholders or an IT company.

- Reporting
  - Set up a system to provide automated reports in formats that are ready to use or formats that allow additional/further analysis to meet the information needs of AFREC and stakeholders. Three types of reports can be set up and produced automatically:
    i. A monthly report on the use of the platform (number of users, profile, organisation, region, and country, information searched for).

---

44 The rapidly developing capabilities of generative AI tools may render unnecessary the rigid use of keywords which has been the basis of the information search methods until recently. We do recommend exploring the use of natural language and the adoption of an advanced AI tool to perform the search for information in the platform, in both directions, i.e., offering capacity building resources or requesting them. A list of keywords can be ready in the platform to help the user to write the search in natural language using the most adequate words to achieve good results, but these keywords do not have to be mandatory. Once the search for some information is launched and preliminary results are obtained, it will be up to the user to refine the search using natural language again, and ingenuity. It is known that generative AI tools are not fully reliable and that they sometimes invent results (they "hallucinate", although this is less likely to happen when objective info is being searched for, which is the case here). At least initially, the administrator and the moderators must monitor the behaviour of the search engine, for precision and comprehensiveness.

45 The user may input sentences such as: "Training on energy infrastructure financing in French" or "Twining or exchange of staff on green hydrogen" for refinement results.

46 Keywords can be defined according to themes (i.e. Cross-border - Distribution - Electricity - Gas - Solar - Performance - Mobility, etc.), fields (i.e. Planning - Policy - Regulation - Operational - Management), geographical areas namely per region or country (i.e. Algeria - Benin - Gabon - Ethiopia - Madagascar or North-East, etc.), cooperation format (i.e. Conference - Twining - Workshop - Networking, etc.), language (English, French, Portugues, Arabic, Swahili, etc.) or a combination of all these elements.

ii. A bi-annual report which, in addition to the information in the monthly report, provides an analysis of trends by topic, country, and region.

iii. A more comprehensive annual report providing an in-depth analysis, using artificial intelligence tools, of cooperation initiatives launched during the year, their results, and prospects. The reports should include interactive dashboards and reports, data visualisation tools, etc.

- Security and confidentiality
  - Integrate rules and parameters for control and confidentiality, among other aspects of quality and a good functioning system.
  - Ensure that the confidential information of the organisation is respected and that the privacy of users is protected. It will also ensure that information is stored securely and that a backup system is provided following the necessary data security policies to be defined by AFREC, the project team, and stakeholders.
  - Establish a protocol for computer security and protection against cyber-attacks.

The functionalities of the online platform described above correspond exactly to those expected from the capacity-building platform that AFREC is planning to develop, the "Energy Sector Capacity Building Information System". There is a similarity in the functionalities offered by the two platforms and a complementarity in their use. It would be beneficial to combine the two projects to pool efforts and define a single platform for users as a one-stop shop for information on capacity building and skills exchange opportunities in the African energy sector.

6. REFERENCES

This section lists the key sources cited throughout the report, including publications, reports, and research studies on capacity building, knowledge transfer, vocational training, and sustainable energy development in Africa. It provides a comprehensive overview of the literature and data that informed the analysis and recommendations in the report.

AFREC. 2024. "Comprehensive Capacity Building Programme for the African Energy Sector,." Algeria: African Energy Commission.

African Development Bank (AfDB). 2019. "Jobs for Youth in Africa: Catalysing Youth Opportunities Across Africa's Energy Sector." Abidjan: AfDB.

Ambole, Amollo, Josephine Kaviti Musango, Kareem Buyana, Madara Ogot, Christer Anditi, Baraka Mwau, Zora Kovacic, et al. 2019. "Mediating Household Energy Transitions through Co-Design in Urban Kenya, Uganda and South Africa." Energy Research & Social Science 55 (September):208–17. https://doi.org/10.1016/j.erss.2019.05.009.

Amin, A., Bargach, S., Donegan, J., Martin, C., Smith, R., & Burgoyne, M. 2001. "Building a Knowledge-Sharing Culture." Oilfield Review 13 (1): 48–65.

Ayla Majid. 2025. "Collaboration Key to Unlocking Clean Energy in Global South." World Economic Forum. February 3, 2025. https://www.weforum.org/stories/2025/02/cross-border-collaboration-clean-energy-global-south/.

Bishoge, Obadia Kyetuza, Godlisten Gladstone Kombe, and Benatus Norbert Mvile. 2020. "Renewable Energy for Sustainable Development in Sub-Saharan African Countries: Challenges and Way Forward." Journal of Renewable and Sustainable Energy 12 (5). https://pubs.aip.org/aip/jrse/article/12/5/052702/1017497.

Blyden, Bai K. 2005. "African Power Pool Development: Accelerating the Technical Skills Factor." In IEEE Power Engineering Society General Meeting, 2005, 1793–96. IEEE. https://ieeexplore.ieee.org/abstract/document/1489759/.

Brennan, Jennifer, and Hayley Limmer. 2015. "Sector Insights: Skills and Performance Challenges in the Energy Sector." Commission for Employment and Skills: London, UK. https://www.voced.edu.au/content/ngv:67916.

Brunhaver, Samantha R., Russell F. Korte, Stephen R. Barley, and Sheri D. Sheppard. 2017. "Bridging the Gaps between Engineering Education and Practice." In US Engineering in a Global Economy, 129–63. University of Chicago Press. https://www.nber.org/system/files/chapters/c12687/c12687.pdf.

Eberhard, A., Gratwick, K., Morella, E., and Antmann, P. 2016. "Independent Power Projects in Sub-Saharan Africa: Lessons from Five Key Countries." Washington, D.C.: World Bank.

Edwards, John S. 2008. "Knowledge Management in the Energy Sector: Review and Future Directions." International Journal of Energy Sector Management 2 (2): 197–217. https://doi.org/10.1108/17506220810883216.

Gambin, Lynn, and Terence Hogarth. 2016. "The Costs and Benefits of Apprenticeships to Employers: Policy, Funding and Training Quality." In Human Resource Management, Innovation and Performance, edited by Helen Shipton, Pawan Budhwar, Paul Sparrow, and Alan Brown, 80–94. London: Palgrave Macmillan UK. https://doi.org/10.1057/9781137465191_6.

Grigorescu, Adriana, Amalia-Elena Ion, Cristina Lincaru, and Speranta Pirciog. 2022. "Synergy Analysis of Knowledge Transfer for the Energy Sector within the Framework of Sustainable Development of the European Countries." Energies 15 (1): 276. https://doi.org/10.3390/en15010276.

International Renewable Energy Agency (IRENA). 2021. "Renewable Energy and Jobs: Annual Review 2021." Abu Dhabi: IRENA.

Kuada, John, and Esther Mensah. 2020. "Knowledge Transfer in the Emerging Solar Energy Sector in Ghana." Contemporary Social Science 15 (1): 82–97.

Nadison, Donovan, Obafemi Olekanma, and Viwe Mgedezi. 2023. "Knowledge Sharing and Transfer Frameworks: Lessons from Sub-Saharan South Africa." European Conference on Knowledge Management 24 (1): 940–48. https://doi.org/10.34190/eckm.24.1.1520.

Oviawe, Jane Itohan. 2018. "Revamping Technical Vocational Education and Training through Public-Private Partnerships for Skill Development." Makerere Journal of Higher Education 10 (1): 73–91.

———. 2020. "Strategies for Funding Technical Vocational Education and Training for Achieving Sustainable National Development in Nigeria in a Post-Oil Boom Economy." Vietnam Journal of Education, 1–10.

Psacharopoulos, George. 1997. "Vocational Education and Training Today: Challenges and Responses." Journal of Vocational Education & Training 49 (3): 385–93. https://doi.org/10.1080/13636829700200022.

UNESCO. 2020. "Technical and Vocational Education and Training (TVET) for Sustainable Energy Development in Africa." Paris: UNESCO.

World Bank. 2022. "Africa Energy Outlook 2022: Sustainable Solutions for Energy Access and Workforce Development." Washington, D.C.: World Bank.

Ziderman, Adrian. 2003. Financing Vocational Training in Sub-Saharan Africa. World Bank Publications.

———. 2018. "Funding Mechanisms for Financing Vocational Training: An Analytical Framework." In Education Finance, Equality, and Equity, edited by Iris BenDavid-Hadar, 135–64. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-90388-0_8.

7. ANNEXES

This section compiles all supporting materials referenced in the report, including detailed descriptions of knowledge areas and topics, the questionnaire used, and data on organisations' willingness to share or acquire skills. It also presents examples of cross-border collaboration initiatives, and guidance for developing an online platform to centralize information on skill-sharing in Africa's energy sector. The annexes provide comprehensive background, practical tools, and illustrative examples to support the framework and its implementation.

ANNEX 1:
DESCRIPTION OF AREAS OF KNOWLEDGE

Table 9 Description of areas of knowledge

Area	Description
Policy and political economy	Refers to the interaction between governance, institutions, and the economic and political forces that shape energy production, distribution, and consumption. It involves the creation and implementation of policies that address electrification, industrialisation, climate goals, environmental protection, and the energy transition, balancing foreign investment, regional cooperation, and dependency on external energy sources.
Planning	Involves the strategic development of energy infrastructures, including the design and implementation of systems for electricity generation, transmission, and distribution. It includes electrification planning, which focuses on expanding access to electricity in underserved areas and incorporates financing strategies to secure funding for large-scale projects. Quantitative models must be used to predict demand, optimize resource allocation, and assess the economic viability of energy infrastructure projects, ensuring that planning decisions are data-driven and sustainable.
Regulation	Refers to the rules, standards, and oversight mechanisms established by authorities to govern the production, transmission, distribution, and consumption of energy. It oversees system operation to ensure reliability and efficiency, while also regulating off-grid supply and distributed resources. Regulators set tariffs to determine pricing structures, create incentives for improved performance, and establish standards to maintain safety, quality, and sustainability across the energy value chain.
Technical and operational capacity	Refers to the technical expertise and infrastructure needed to ensure reliable and efficient operation of the generation, transmission, and distribution of electricity infrastructures. It encompasses grid management, system maintenance, measurement, and the integration of new technologies.
Management abilities	Refer to the skills and organisational capacity required to effectively oversee and coordinate energy projects and operations. Effective management involves project planning and implementation, ensuring that energy infrastructure and services are developed on time, within budget, and in alignment with regulatory and performance standards, while addressing long-term sustainability and community needs.

ANNEX 2:
DESCRIPTION OF TOPICS

Table 10 Description of topics

Topics	Description
Tier 1 (Most Relevant)	
Cross-border issues, regional markets, continental dimension	Involve the movement of energy across national borders, addressing challenges like infrastructure connectivity, trade regulations, and political relations. This also involves the allocation of costs of cross-border transmission lines in regional power trade and the adaptation of the rules of utilisation of physical bilateral contracts to regional power markets.
Electricity distribution (on-grid and off-grid)	Refers to delivering electricity from substations to end consumers, either through on-grid systems, where power is supplied via interconnected networks, or off-grid systems, which provide electricity independently of the main grid, often using renewable sources. Distribution generally includes the activity of retailing (commercialisation) of electricity supply.
Electricity transmission	Involves the transfer of high-voltage electricity from power plants to substations over long distances. This process relies on high-voltage power lines and transformers to reduce losses and ensure efficient delivery. This also involves the subject of the lack of private investment in transmission networks in African countries and for cross-border power trade.
Electrification: electricity access	Refers to the process of extending electricity access to areas that lack an electricity supply, ensuring reliable and affordable energy for homes, businesses, and communities. It involves planning, establishment of sustainable and scalable regulatory and business models for on- and off-grid electrification, and financial models for the companies that supply electricity and for the entire electrification plan.
Energy costs and tariffs	Energy costs refer to the expenses incurred in the production, transmission, and distribution of energy, including fuel, infrastructure, and maintenance. Tariffs are the prices set by governments or utilities that consumers pay for energy, influenced by factors like supply and demand, production costs, and regulatory policies

Topics	Description
Energy efficiency and management	Energy efficiency refers to the approaches that can be employed to use less energy to perform the same task, reducing waste and optimizing energy use across industries, buildings, and transportation. Energy management involves strategies, systems, and technologies to monitor, control, and displace in time energy consumption, improving operational efficiency and reducing costs.
Financial sources and instruments	Financial sources in the energy sector refer to the various channels through which funding is obtained, including public and private investments, government grants, development banks, and commercial lenders. Financial instruments are tools used to raise capital or manage risk, such as green bonds, project financing, equity investments, and Power Purchase Agreements (PPAs).
Markets design	Refers to creating frameworks and mechanisms that define how energy is traded, priced, and distributed among producers, consumers, and other stakeholders under competitive conditions. It involves setting rules for competition, pricing models, and grid access to ensure efficiency, reliability, and fairness. It requires paying attention to the best international practices.
Project implementation: procurement, construction, and engineering	Involves executing plans through procurement, construction, and engineering. Procurement ensures cost-effective and quality sourcing of materials and services, while construction handles the physical execution, adhering to timelines and safety standards. Engineering designs and optimizes technical solutions to meet functional, environmental, and regulatory requirements
Regulation for new technologies: PV, DERs, batteries, EVs, off-grid supply	Regulation for new technologies like Photovoltaics (PV), Distributed Energy Resources (DERs), batteries, electric vehicles (EVs), and off-grid supply focuses on creating frameworks to ensure safety, interoperability, and efficient integration into existing energy systems. It also involves the adaptation of electricity tariff design to the presence of DERs, digitalisation, and the future power sector in Africa
Renewables: integration, financing, contract, regulation	Involves integrating variable sources like solar and wind into existing grids while ensuring stability, system security, flexibility, and reliability. For large volumes of renewable penetration, new system operating practices are needed, as well as innovative financing mechanisms to attract investment and share risks. Strong regulatory frameworks guide the adoption, incentivize growth, and ensure fair contracts and market access for stakeholders.
Sustainable energy and climate change	Refers to the development and use of energy systems that meet current needs without compromising future generations, while addressing the impacts of climate change and other environmental impacts. This involves promoting renewable energy, improving energy efficiency, and reducing greenhouse gas emissions to mitigate climate change.
Tier 2 (Intermediate Relevance)	
Clean cooking	Refers to the use of energy-efficient, low-emission cooking technologies that reduce the health and environmental impacts of traditional cooking methods, such as open fires or biomass stoves.
Climate resilience and adaptation	Climate resilience refers to the ability of energy systems to withstand and recover from the impacts of climate change, such as extreme weather events and changing temperature patterns. Adaptation involves adjusting infrastructure, policies, and practices to minimize vulnerabilities and ensure a reliable energy supply in the face of climate challenges.
Gas sector, LNG	The gas sector involves the extraction, production, transportation, and distribution of natural gas, a key fossil fuel used for heating, electricity generation, and industrial processes. Liquefied Natural Gas (LNG) is natural gas that has been cooled to a liquid state for easier storage and transport, especially over long distances where pipelines are not feasible. Like the electricity sector, the gas sector also must be regulated.
Generation technologies: hydro, wind and solar, oil and gas, nuclear, hydrogen, bioenergy	Generation technologies refer to the multiple methods used to produce electricity. Hydropower, geothermal, wind, and solar are renewable sources that harness natural forces to generate clean energy, while coal, oil, and gas are traditional fossil fuels that provide reliable but polluting energy. Nuclear energy uses controlled atomic reactions for large-scale power, hydrogen is an emerging fuel with zero emissions when used, and bioenergy converts organic materials into energy, offering a renewable alternative to fossil fuels.
Hydrogen supply chain regulation	Involves the establishment of policies, standards, and guidelines to ensure the safe, efficient, and sustainable production, storage, transportation, and utilization of hydrogen.
Performance: reliability, quality of service, measurement, losses	Performance in the energy sector focuses on the reliability of supply, ensuring that electricity is consistently available without interruptions and with adequate quality of the electricity waveform, without distortions, over- or under-voltages, or micro cuts. It also includes quality of customer service, which measures the efficiency, customer satisfaction, and response times of energy providers. Additionally, performance involves measurement of energy consumption and system efficiency, as well as minimizing losses in transmission and distribution to improve overall system effectiveness

Topics	Description
Policy making, governance & public administration	Policy making in the energy sector involves developing strategies and regulations that guide the production, distribution, and consumption of energy, balancing economic, environmental, and social goals. Governance ensures that these policies are effectively implemented through institutions, coordination between stakeholders, and decision-making processes. Public administration plays a key role in managing and executing energy policies, ensuring transparency, accountability, and efficient service delivery to the public.
Standards: appliances, quality of service, safety, health	Ensure that appliances, quality of service, safety, and health meet established benchmarks for performance and protection. These standards govern the efficiency, reliability, and safety of appliances, ensuring they operate effectively while minimizing risks to users. This also involves regulatory and business model design of distribution concessions and performance-based regulation of electricity distribution companies.
Technological innovation, research	Technological innovation in the energy sector involves developing new technologies or improving existing ones to enhance energy production, efficiency, and sustainability. Research is crucial in advancing these innovations, exploring cutting-edge solutions like renewable energy, energy storage, and grid modernisation to address current and future energy challenges.
Gender mainstreaming in the energy sector	Involves integrating gender considerations into energy policies, programs, and projects to ensure that both women and men have equal access to and benefit from energy resources and services.
Tier 3 (Less Relevant)	
Audits, inspections	Audits typically involve a thorough review of energy usage, system performance, and operational practices to identify inefficiencies, potential savings, and opportunities for improvement. Inspections, on the other hand, are physical checks of infrastructure, equipment, or installations to ensure they meet safety, regulatory, and operational standards.
Community relations	Refer to the strategies and practices used by energy companies to engage with and build positive relationships with local communities that use the electricity for multiple purposes and are affected by the energy projects.
Data management	Involves the collection, storage, analysis, and sharing of energy-related data to optimize operations, improve decision-making, and ensure regulatory compliance.
Desalination	This is the process of removing salt and other impurities from seawater or brackish water to produce freshwater suitable for drinking, irrigation, and industrial use. Desalination is increasingly important in areas facing freshwater scarcity, but it requires significant energy and infrastructure, and it can have environmental impacts such as brine disposal and energy consumption.
Economic growth and energy demand	Economic growth is closely linked to energy demand, as expanding industries, urbanization, and increased living standards lead to higher consumption of energy. As economies grow, there is a greater need for energy to power industries, transportation, and households, which can drive demand for both traditional and renewable energy sources.
Electro-mobility	Refers to the use of electric-powered vehicles (EVs), the infrastructure required to support them, including charging stations, batteries, and grid integration, as well as the measures that are necessary from the viewpoint of the power sector and its regulation to cope with this new phenomenon.
Urbanization and energy services	Urbanization refers to the growing trend of populations moving into cities, which significantly increases the demand for energy to support housing, transportation, industries, and infrastructure. Energy services, in this context, encompass the provision of electricity, heating, clean cooking, and transportation fuels, which are necessary to meet the needs of urban populations.
Water-food-energy nexus	Refers to the interconnectedness of water, food, and energy systems, highlighting how the approach to developing and using each of these resources impacts the others.

ANNEX 3:
THE QUESTIONNAIRE[47]

Questionnaire on developing cross-border strategic cooperation in skills sharing in Energy

The African Energy Commission (AFREC) is working with the African School of Regulation (ASR, https://africanschoolregulation.org/) to develop a framework for cross-border strategic cooperation on skills sharing in the African energy sector. To accomplish this task, the ASR is collecting information from relevant organizations and stakeholders in the African energy sector. The project's timeline is very demanding, and the deadline for collecting this information is 15 December 2024. Therefore, we would be very grateful if you could respond to our request before or on this date. Thank you very much. Once we receive your response, we may contact you for an online interview to clarify or expand on some aspects of the questionnaire. The purpose of this data collection is to have a comprehensive knowledge of ongoing and recent activities in cross-border cooperation in capacity building in the African energy sector, as well as to find out the willingness of the contacted organizations to further participate in this kind of cooperation as beneficiaries or providers. The project aims to facilitate these activities by creating an appropriate platform. The following link describes the training areas and topics presented in the questionnaire : https://bit.ly/3Zoo7gB

DISCLAIMER: The information collected in this survey will be used to develop a publicly accessible platform to facilitate cross-border knowledge sharing in the African energy sector. ASR will only treat the data as confidential if declared as such. For any question related to the task or the questionnaire, please contact: cgatete@africanschoolregulation.org

1. Information on the organization/institution/company

1.1. Organization name: ___

1.2. Type of organization:

(Select one)

- ◯ Ministry
- ◯ Governmental agency
- ◯ International organization beyond Africa
- ◯ Other regional and pan-African institution
- ◯ Regional power pools
- ◯ Regulatory authorities
- ◯ Association of regulatory authorities
- ◯ Utility
- ◯ Association of Utilities
- ◯ DFI
- ◯ Philanthropic or other non-profit organisation
- ◯ Think tank
- ◯ NGO
- ◯ Academia and research organization
- ◯ Professional education centre/organization
- ◯ Other (specify): _____

1.3. Name of the respondent: ___

1.4. Position: ___

1.5. Organization website

1.6. Phone number: ___

1.7. Email: ___

47 *This is the original text of the online questionnaire, as it was sent to many organisations in December 2024*

2. Current engagement in cross-border cooperation in skills and knowledge exchange

2.1. Does your organisation have activities in energy capacity building? _Y ◯ N ◯

2.2. Has your organisation recently been involved in any form of cross-border cooperation to exchange skills and knowledge? _ Y◯ N ◯

2.3. If yes, please give details of the organisation(s) concerned as provider or recipient (specify the name and Region or Country) ____

2.4. When this cooperation started and/or ended? (specify the year) ___

2.5. Please describe the activity in broad terms and provide a website link if it exists

2.6. What are (were) the objectives of the cross-border cooperation? _____

2.7. What are (were) the main achievements of the cross-border cooperation? _____

2.8. What are (were) the main challenges of the cross-border cooperation? _____

2.9. What is/are (was/were) the format(s) of the cooperation? *(Select at least one)*

◯ Training: online & in person	◯ Professional network and other platforms
◯ Events: conference/forum, workshop, policy dialogue	◯ Publication: reviews, reports, joint studies and analysis
◯ Joint projects	◯ Online platforms with shared resource)
◯ Exchange projects: Study visits, internship & fellowship, Twinning program, peer review sessions,	◯ Other (specify): _____

2.10. Following your answer to the previous question, provide details on each format by providing:

TRAINING: indicate the topic, duration, frequency, and number of participants, online or in-person

EVENTS: indicate the topic, duration, frequency, place, number of participants, online or in-person

PROJECTS: topic, kind of participation, duration, budget, number of participants, type of outcome.

EXCHANGE: topic, duration, frequency, number of participants.

NETWORK: topic, kind of participation, frequency, number of participants.

PUBLICATIONS: topic, format, frequency, audience

PLATFORMS: topic, frequency, kind of resources, online tools,

Other (specify): topic, online or in-person, frequency, audience, number of participants, type of outcome

3. Interest in future cross-border cooperation for skills and knowledge exchange

3.1. How much experience does your organisation have in this sub-sector? ____

3.2. Does your organisation have experience in the following areas that it can share with other :

Areas and a brief description	Yes	No	Doesn't have but wants to acquire
Policy & political economy. *Governance. Institutions. Climate. Foreign investment. Dependency. Regional cooperation. (Just) energy transition. Environmental policy.*			
Planning. *Development of energy infrastructures. Electrification planning. Financing. Quantitative models.*			
Regulation. *Markets & monopolistic activities. Generation. Transmission. Distribution. Off-grid supply. Distributed resources. Retail. System operation. Tariffs. Performance. Incentives. Standards*			
Technical & operational capacity. *Generation technologies. Power system operation. Measurement.*			
Management abilities. *Organizations. Institutional capacity. Project planning & implementation.*			

3.3. Does your organisation have an interest in sharing its experience in the above-selected areas? Y ◯ N ◯

3.4. Select topics in which your organisation has experience that it would like to share with others, and topics in which your organisation would like to acquire skills and knowledge as part of a cross-border cooperation programme.

Topics	My organisation would like to share its skills on	My organisation would like to learn/ acquire skills in	Both of them
• Renewables: integration, financing, regulation • Project implementation: procurement, construction • Energy efficiency & management. • Cross-border issues, regional markets, continental dimension. • Markets design. • Electrification: electricity access.			

• Financial sources & instruments. • Energy costs & tariffs. • Regulation for new technologies: PV, DERs, batteries, EVs, off-grid supply. • Electricity transmission • Electricity distribution (on & off-grid). • Sustainable energy and climate change			
• Standards: appliances, quality of service, safety, health. • Policy making, governance & public administration. • Generation technologies: oil & gas, nuclear. • Performance: reliability, quality of service, measurement, losses. • Technological innovation, research. • Climate resilience & adaptation. • Gas sector, LNG. • Hydrogen supply chain regulation • Clean cooking.			
• Economic growth & energy demand. • Urbanisation and energy services • Audits, inspections. • Data management. • Community relations. • Electro-mobility. • Water-food-energy nexus. • Desalination. • Gender mainstreaming in energy sector			

3.5. In what form(s) of cooperation would your organisation like to share this (these) experience(s)? *(You can select more than one)*

◯ Training: online & in person ◯ Events: conference/forum, workshop, policy dialogue ◯ Joint projects ◯ Exchange projects: Study visits, internship & fellowship, Twinning program, peer review sessions,	◯ Professional network and other platforms ◯ Publication: reviews, reports, joint studies and analysis ◯ Online platforms with shared resource) ◯ Other (specify): _____

3.6. Please provide names and details if your organisation already has targeted benchmark regions/countries or stakeholders with whom it would like to develop cross-border cooperation in skills and knowledge exchange: ____

3.7. Are you available for a short follow-up meeting to discuss the completion of the questionnaire and your interest? Y ◯ N ◯

3.8. Provide any final comments _____

ANNEX 4:
FULL DETAILS OF ORGANISATIONS' WILLINGNESS TO SHARE OR ACQUIRE SKILLS IN EACH TOPIC.

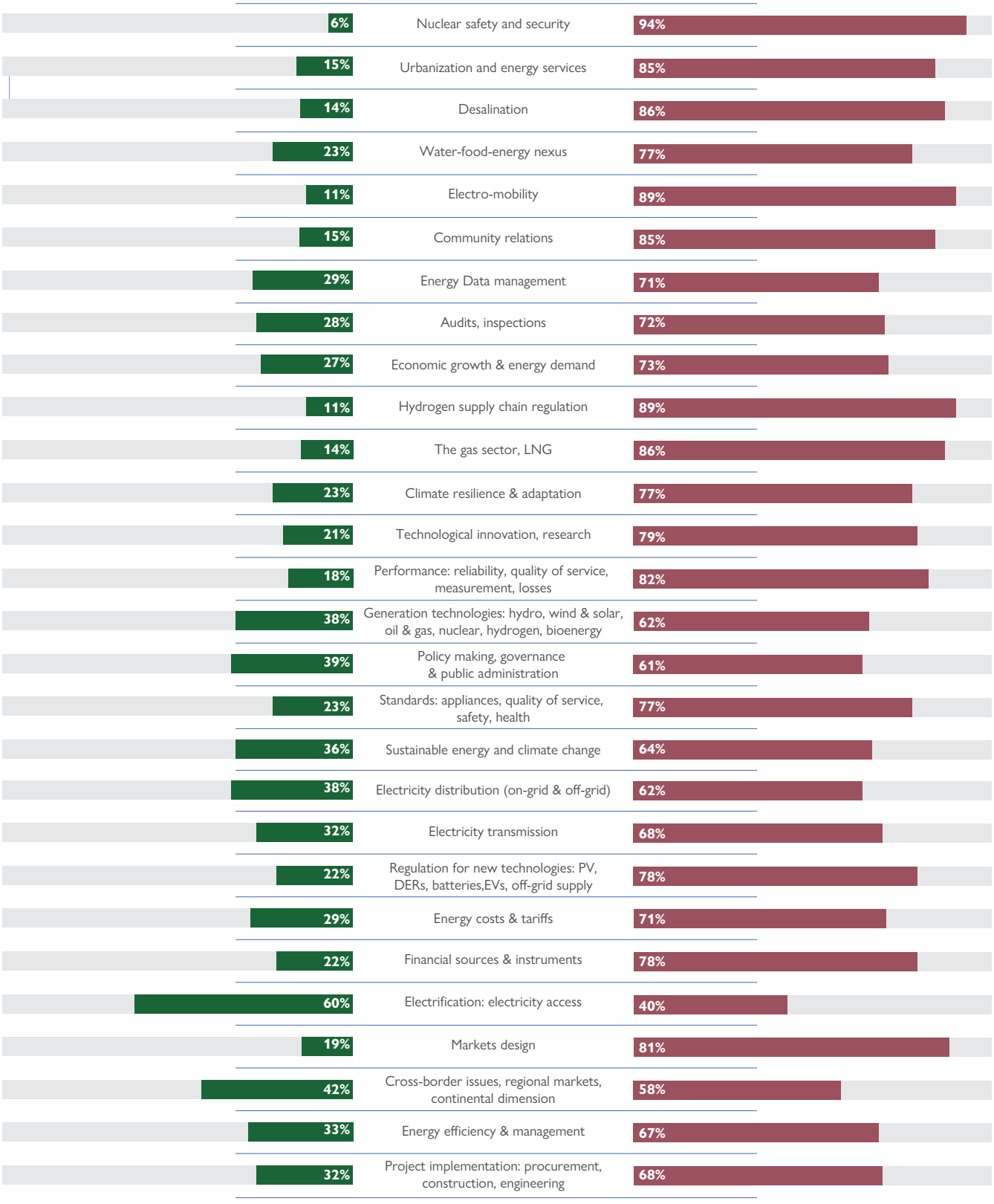


Figure 10 – Full details of organisations' willingness to share or acquire skills in each topic

ANNEX 5:
EXAMPLE OF SOME CROSS-BORDER COLLABORATION INITIATIVES

The format and content of these activities will be proposed based on the needs identified and will also draw on the experience of existing and successful initiatives. Examples of the latter include:

i. The Peer Review and Learning Network (PRLN) of the Power Futures Lab (University of Cape Town) is a peer-to-peer regulatory exchange project that aims to empower policymakers, regulators, and utility CEOs by providing them with a unique opportunity to develop a deeper understanding of regulatory practice in Africa. The African countries initially involved are Kenya, Ghana, Namibia, Uganda, and South Africa. The project is presently being extended to a new group of countries. https://www.get-transform.eu/the-peer-review-and-learning-network-prln/

ii. Green Africa Innovation Network (GAIN): a network of 18 institutions from 13 African countries, established to strengthen scientific cooperation across the continent in the field of renewable energy and sustainable development, to promote the development of human resources and to support economic, scientific and technical projects of common interest to all its members. Forms of cooperation: Joint workshops and research projects, scholarships, and student exchanges. www.greenaib.com

iii. AFUR's programs to harmonise regulation in African countries on issues such as the design of mini-grid tariffs and business models, to foster cooperation among utility regulators across Africa through the organisation of forums, workshops and webinars, regional/ continental projects and studies. The African countries involved are Algeria, Gambia, Mauritania, Senegal, Mali, Ivory Coast, Sierra Leone, Liberia, Burkina Ghana, Togo, Nigeria, Niger, Cameroon, Ethiopia, Kenya, Uganda, Tanzania, Rwanda, South Africa, Egypt, Mozambique, Namibia, Zambia, Zimbabwe, and Malawi. https://afurnet.org/

iv. The International Energy Agency's Regulatory Energy Transition Accelerator (RETA) project also aims to harmonise regulatory approaches globally through the organisation of conferences, webinars, round tables, and the publication of working papers. Cameroon, DRC, Egypt, Kenya, Mauritius, Morocco, Rwanda, and Sierra Leone are the African countries involved. https://retatheaccelerator.org/

v. The ECOWAS Regulatory Twinning Programme: The programme aims to promote cross-border skills and knowledge between experienced and less experienced regulators in ECOWAS member states. The programme proposes two-week study visits between electricity regulators. https://erera.arrec.org

vi. GEF Global E-Mobility Programme: The programme consists of an online platform providing tools to build knowledge and networks on policies for electric light-duty vehicles and charging infrastructure and grid integration. An important area of work is the annual EV policy and data collection. The African countries involved are: Burundi, Côte d'Ivoire, Ethiopia, Ghana, Mozambique, Seychelles, Sierra Leone, Tanzania, Togo, Tunisia, Rwanda, Uganda, Kenya, Cape Verde, Madagascar, and Mauritius.https://www.iea.org/about/international-collaborations/gef-global-e-mobilityprogramme

vii. Women in Energy Network Africa (WEN-Africa): The network aims to increase the overall participation of women professionals in the energy sector, focusing on technical and managerial roles in science, technology, engineering, and mathematics (STEM). All AU Member States are involved in professional networking, forums and workshops, fellowship, interdisciplinary advocacy, knowledge sharing, policy dialogue, and capacity development. WEN Africa

viii. West Africa Centres of Excellence on Energy Network (WACEENET): This is a network of centres of excellence established by the World Bank's ACE IMPACT project in 2021 to strengthen energy research and training capacity in West Africa. It brings together five centres of excellence working together to promote sustainable and accessible energy solutions through training, workshops, joint projects, scholarships, and exchange of experts/researchers. https://www.waceenet.org/Energy Regulators Association of East Africa (EREA): EREA was established in 2008 through the Memorandum of Understanding (MoU) between regulatory bodies of five East African countries. According to the MoU, the primary function of the association has been to pool expertise in regulatory matters relating to the energy sector, including but not limited to facilitating the development of good policy proposals and legislation on energy regulation, in line with international trends and best regulatory practices., the EREA has established an Energy Regulation Centre of Excellence (ERCE) https://erce.energyregulators.org

ix. Transforming Energy Access Learning Partnership (TEA-LP): It is a partnership of African, South Asian, and Indo-Pacific universities and other stakeholders committed to ensuring a highly qualified workforce to drive the transition to sustainable energy access for all. The university partners aim to deliver innovative and relevant Master 's-level courses, and our CPD courses aim to support professionals already working in the energy sector. In addition, TEA-LP is building a network of southern expertise. TEA-LP is part of the Transforming Energy Access platform, a research and innovation platform supporting the technologies, business models, and skills needed to enable an inclusive clean energy transition. https://tea-lp.org

x. OpenMod4Africa: It aims to develop an open toolbox containing state-of-the-art models to analyse long-term pathways towards a sustainable, secure and competitive energy system in Africa. The OpenMod4Africa toolbox will provide science-based results to policymakers and local actors to assist them in achieving a clean energy transition. https://openmod4africa.eu

xi. IRENA, Capacity building for energy planning and modelling: IRENA provides energy planning capacity building in these areas, at both the national and regional levels, through a mix of online software training and hands-on workshops. Throughout the training activities and the process of developing and updating national energy master plans, IRENA and its expert partners guide country teams with customised technical support, on-demand advisory services, and draft output reviews. IRENA's approach is grounded in the belief that country ownership of the energy planning process is of singular importance for sustainable energy sector development. https://www.irena.org/Energy-Transition/Planning/Long-term-energy-planning-support/Capacity-building-for-energy-planning-and-modelling

xii. Smart Energy Solutions for Africa (SESA): Running from October 2021, SESA is a collaborative project between the European Union and nine African countries (Ghana, Kenya, Malawi, Morocco, Namibia, Nigeria, Rwanda, South Africa and Tanzania) that aims at providing energy access technologies and business models that are easily replicable and generate local opportunities for economic development and social cohesion in Africa. https://sesa-euafrica.eu/

xiii. ECOWAS Certification for Sustainable Energy Skills (ECSES) and West Africa Network of Sustainable Energy Academicians and Researchers (WANSEAR): These are two initiatives commenced by ECOWAS Centre for Renewable Energy and Energy Efficiency. The ECSES commenced in 2015 and is a certification program designed to enhance and standardize the skills of professionals working in the sustainable energy sector across the ECOWAS region, following the requirements of ISO 17024. The certification aims to provide individuals with the knowledge and skills required to develop and manage renewable energy projects, ensuring that energy systems and projects in West Africa are designed, installed, and implemented sustainably and efficiently. ECSES commenced with the Solar PV Installers and Designers Certification and expanded to Mini Grid. It is now being expanded to cover all energy efficiency professions. Home | CERTIFICATION CEREEC

xiv. ECREEE has begun establishing a West Africa Network of Sustainable Energy Academicians and Researchers (WANSEAR) to unite experts from academic and research institutions across the ECOWAS region to foster collaboration, innovation, and knowledge-sharing in the field of sustainable energy. This network will serve as a platform for addressing regional energy challenges, supporting policy development, and advancing the transition to clean and reliable energy systems aligned with ECOWAS and global sustainable energy goals. WANSEAR also established an open-access, peer-reviewed journal dedicated to sustainable energy research. https://www.ecreee.org/

xv. Africa Energy Fellowship for Young Energy Leaders: It is an education venture designed to invest in the next generation of energy leaders who will deliver sustainable access to energy and ultimately a zero-carbon Africa. The ambition of the Program is to train recent graduates in several STEM topics on core aspects of Renewable Energy Technology, as well as opportunities for career advancement in the energy value chain. https://afyel.org/about/.

ANNEX 6:
SUGGESTIONS FOR THE CONTENT OF THE TERMS OF REFERENCE FOR THE PLATFORM DEVELOPMENT

Here are some suggestions on the content of the Terms of Reference (ToR) for the recruitment of an ICT consultant to develop the online Platform.

1. OBJECTIVE

The primary goal of this assignment is to design, develop, and deploy an intuitive, secure, and scalable online platform that serves as a comprehensive repository of structured information on skill-sharing initiatives in the African energy sector. This platform will outline various activities, pinpoint target beneficiaries, specify geographic focuses, and showcase partnership opportunities. Acting as a marketplace will facilitate connections between providers and potential beneficiaries of services, fostering skills development and sharing among stakeholders.

Specifically, the platform should:

- Provide an intuitive user interface that is accessible on multiple devices.
- Offer comprehensive information about all skills-sharing initiatives and opportunities, detailing topics addressed, collaboration formats, target audiences, and available funding options from various organisations.
- Oversee and provide updates on the execution of the framework.
- Generate automated reports in user-friendly formats or those suitable for further analysis, including interactive dashboards and data visualization tools.
- Connect with existing systems and third-party services as needed.
- Guarantee compliance with pertinent data protection and security regulations.

The specific objectives of this assignment are as follows:

- Conduct a business analysis to design and develop the platform, encompassing user interface mock-ups, the data model, and features like the MERL process.
- Incorporate all existing skills-sharing initiatives into the system, detailing the participating organisations.
- Set up and integrate the online platform with the AFREC website.
- Organize the official platform launch.
- Offer six months of user support for system implementation, usage, and maintenance.

2. SCOPE OF WORK

The consultancy firm shall:

1. Review the final report on the Framework for Cross-Border Strategic Cooperation in Skills Sharing within the African Energy Sector to understand the platform's expected roles and features for framework implementation.
2. Consult with AFREC teams and experts from selected organisations.
3. Evaluate the platform's development needs and analyse business aspects such as functionalities, system design, technology architecture, mock-ups, and hardware requirements.
4. Create a skills development and sharing database that comprises details on participating organisations, covered topics, cooperation formats, target audiences, and funding opportunities.
5. Build a user-friendly administration panel (Backend) for managing the database, which allows insertion, updates, deletion, and other relevant functions and inputting additional important information.
6. Implement various access levels for the backend (e.g., Administrator, Editor).
7. Design a user-friendly front end for information consultation and system interaction.
8. Conduct thorough testing and quality assurance to identify and rectify any bugs, errors, or performance issues that may arise during platform usage.
9. Integrate monitoring and reporting functionalities to ensure regular reports on platform usage, outputs, and key performance indicators.
10. Maintain usability, controls, confidentiality, and other quality aspects to ensure a well-functioning system.
11. Write a developer guide for maintenance by AFREC and other users.
12. Offer six months of user support for the system's technical functionality, documenting experience and development lessons and suggesting adjustments and improvements as needed.
13. Coordinate the official launch with AFREC, regional champions, and key stakeholders.
14. Securely store confidential information and establish a backup system.
15. Protect collected data by developing and enforcing necessary data security guidelines.
16. Prepare the Final Report for AFREC.REC.

3. EXPECTED OUTCOME

This consultancy aims to create an information hub for skills-sharing initiatives and opportunities, promoting cross-border collaboration in the African Energy sector. Key objectives include:

- Design and develop a user-friendly platform that allows stakeholders to access and contribute information about skill-sharing initiatives, resources, and best practices.
- Establishing a centralised database for cross-border skills-sharing programs and collaborations, detailing the cooperation format, participating organisations, target audience, funding opportunities, and pertinent documents.
- Integrating features for data visualization, reporting, and analysis to monitor the framework's outputs and performance.
- Providing training and technical support to AFREC staff and stakeholders on the platform's usage and maintenance.

4. DELIVERABLES

a. Inception Report/System Requirements Document detailing the system's functional and technical requirements and the role and expected output from the platform.

b. Thorough documentation encompassing system architecture, design choices, codebase, configurations, user interface, and other technical elements, including customizations made during the development cycle.

c. Stakeholder meeting draft report.

d. A Maintenance Plan that specifies procedures for system updates, bug fixes, troubleshooting, and continuous technical support following the system's deployment.

e. Validation workshop report.

5. EXPERTISE & COMPETENCIES REQUIRED

The consulting firm or team of consultants shall possess a minimum of the following competencies. The team leader shall hold a master's degree in business analysis, information systems, database management, software development, or a related field, coupled with significant professional experience on comparable projects. Furthermore, they must have specific experience in developing platforms or applications for international organisations, government agencies, or non-profit institutions, particularly in designing and constructing web-based information systems or databases.

Key experts should include at least one web developer and one web integrator, each possessing a minimum of a bachelor's degree in computer science or a related field, with demonstrated expertise in developing content management systems, such as Drupal, web applications, and web design.

African Energy Commission (AFREC)

02 Rue Chenoua, BP791, Hydra,16035, Algiers, Algeria

Tel: +213 23 45 9198

Fax: 213 23 45 9200

Email: afrec@africanunion.org

www.au-afrec.org