



The African Energy Transition Strategy and Action Plan



ABOUT

About the ETSAP

The Energy Transition Strategy and Action Plan (ETSAP) is a continental framework developed by the African Energy Commission of the African Union as a guiding framework for Africa's transition to a sustainable, low-carbon energy future by 2063. ETSAP is based on the African Common Position on Energy Access and Just Transition, which was endorsed by the African Union (AU) Heads of State and Government in 2022. This position emphasizes on the need to leverage on Africa's natural resources to advance universal energy access, support economic growth, and respond to climate change. It aligns with Agenda 2063, the Paris Agreement, the Sustainable Development Goals and strategic initiatives being implemented by the African Union Commission. Covering seven key energy subsectors and structured around six strategic pillars, the ETSAP provides AU Member States with a flexible roadmap for the domestication of decarbonization pathways.

About AFREC

The African Energy Commission (AFREC) is a specialised agency of the African Union mandated to coordinate, harmonise, and develop energy policies and programmes across the continent. AFREC works closely with among others African Union institutions and organs, Member States, regional bodies, and development partners to advance Africa's energy development under Agenda 2063. Details of the programmes being implemented by AFREC can be found on <https://au-afrec.org/>.

About the AfDB

The African Development Bank (AfDB) is Africa's premier development finance institution, committed to promoting sustainable economic growth and reducing poverty across the continent. The Bank's key mandate in the energy sector is to ensure universal access to affordable, reliable, sustainable, and modern energy services for all Africans. This includes promoting a diversified energy mix with a focus on clean energy sources. To achieve its mandate in the energy sector, the AfDB supports policy development, mobilize infrastructure investment through innovative financing, public private partnership, technical assistance and strengthen the capacity of African countries to manage their energy resources effectively. The Bank plays a key role in accelerating Africa's energy transition while supporting inclusive and climate-resilient development, support renewable energy projects, and ensuring that the transition is inclusive and equitable for all Africans. Details of the AfDB in the power sector can be found on www.afdb.org/en/topics-and-sectors/sectors/energy-power.



FOREWORD

*By the Executive Director,
African Union Commission*

Central to the African vision for an “integrated, prosperous and peaceful Africa”, is the urgent need to transform Africa’s energy landscape. The energy transformation requires collaborative efforts to address the dual challenge of energy poverty and an escalating global climate crisis. This can only be achieved by leveraging our comparative advantage in natural resources, as well as the current and projected population dividend.

Despite recent progress in electrification, about 600 million people in Africa still lack access to basic electricity services, which represents about 83 percent of the global electricity access gap. Additionally, nearly one billion people in Africa continue to rely on traditional biomass and kerosene for cooking, with profound consequences on public health, gender equity, and environmental degradation. Despite this acute energy poverty, fossil fuels still account for over 52% of the continent’s total primary energy supply (TPES) and 38% of final energy consumption (FEC).

The African Common Position on Energy Access and Just Transition endorsed by the African Union (AU) Heads of State and Government in 2022 established a preamble for Africa’s energy transition journey. This position was reaffirmed in the Nairobi Declaration on Climate Change and Call to Action, where African leaders acknowledged the global decarbonization paradigm as an opportunity to promote equality and contribute to our shared prosperity.

This African Energy Transition Strategy and Action Plan (ETSAP) reinforces Africa’s commitment to a low-carbon energy future and emphasizes our position- energy transition is not exclusive to Africa’s pathway to realizing its development aspirations. The ETSAP along with its initial domestication in Madagascar, Botswana, and Gambia demonstrates the pivotal role access to modern energy services in Africa and beyond can play in the global decarbonization journey. This is along with other pillars on improving energy efficiency across all sectors of the economy; call for management of fossil-derived energy for a balanced transition; harmonization of energy policies and regulations as a priority across the continent; need to foster innovation, technology development, and capacity building to drive Africa’s sustainable energy transition; and the potential to maximize the economic opportunities of Africa’s energy transition.

The strategy is a culmination of extensive consultations with AU Member States, regional economic communities, private sector stakeholders, civil society organizations, and development partners. It builds on and seeks to advance other AU initiatives such as the African Energy Efficiency Strategy and Action Plan, the African Green Hydrogen Strategy, the African Single Electricity Market, and the African Green Minerals Strategy. However, its success depends on collective leadership and collaboration during implementation.

Allow me to emphasize that the ETSAP is not a one-size-fits-all strategy but a guiding framework upon which Member States will domesticate their energy transition pathways. ETSAP is a call to action for governments, institutions, partners, and citizens alike by challenging us to act with urgency, but also with unity and vision.

It is in view of this, that the NDDPs for Madagascar, Botswana, and Gambia have been developed as pilot countries. More work lies ahead to support other AU Member States that expressed interest for support. I rally all our partners to join us in this endeavour and to support the building of technical expertise for regular updates of the pathways as more data becomes available and to accommodate the dynamic energy landscape.

I call for African leadership and ownership, and multis-stakeholder collaboration in advancing the six pillars of the ETSAP. I urge AU Member States to show political leadership by enacting energy sector reforms and allocating budgetary support to energy transition planning and implementation aligned with the ETSAP. By harnessing the private sector and academia research, innovation, and investments potential along with increased commitments from development partners and financial institutions, we can coalesce around harmonized pipelines of bankable projects that support our low carbon future.

Together we can make the energy transition journey a beacon for realizing the vision of Agenda 2063’s “Prosperous Africa based on Inclusive Growth and Sustainable Development.”

Mr. Rashid Ali Abdallah,
Executive Director,
African Energy Commission



FOREWORD

*By the Director responsible for
Energy Financial Solutions,
Policy and Regulations,
African Development Bank*

At the outset, I am honoured to note the African Development Bank's close collaboration with the African Energy Commission in the conceptualization and financing of the Energy Transition Strategy and Action Plan (ETSAP). This document encapsulates our shared conviction that a just and inclusive energy transition is indispensable for fostering resilient economies, enhancing climate adaptation, and catalysing the achievement of multiple Sustainable Development Goals. Under the Bank's High 5 priority "Light up and Power Africa," ETSAP provides a comprehensive framework to align policy reforms, technical solutions, and financing strategies for maximum socio-economic impact.

Africa's energy landscape stands at a critical juncture, defined by the dual imperatives of surging energy demand—driven by rapid urbanization and industrialization—and the imperative to mitigate climate change. Achieving universal energy access must not come at the expense of our planet's stability. The Bank has consistently championed investments that combine affordability with sustainability, recognizing that modern energy services underpin healthcare delivery, educational advancement, and economic diversification.

Over the past decade, the African Development Bank has invested more than USD 55 billion in infrastructure across the continent, including critical power generation, transmission, and distribution projects that have catalysed regional economic integration and job creation. As the largest financier of infrastructure in Africa, the Bank continues to leverage its balance sheet and convening power to mobilize blended finance, concessional funding, and policy-based lending in support of high-impact projects.

Central to our deployment strategy is the flagship initiative Mission 300—a joint endeavour of the African Development Bank and the World Bank Group—that aims to connect 300 million Africans to electricity by 2030. Under this initiative, the African Development Bank is committed to extending access to at least 50 million people, prioritizing underserved regions with off-grid and mini-grid solutions that complement national electrification plans. Mission 300 embodies our dedication to scalable, evidence-based interventions and exemplifies the power of coordinated multilateral action.

The inaugural Africa Energy Summit held in Dar es Salaam in January 2025 marked a pivotal milestone for Mission 300. The first cohort of twelve countries presented National Energy Compacts—comprehensive roadmaps delineating targets and reforms—culminating in the Dar es Salaam Energy Declaration,

which formalizes continental leaders' commitment to priority sectoral reforms and investments. These compacts underscore the importance of governance, tariff rationalization, and utility performance improvements as enablers of sustainable energy expansion.

Innovative financing vehicles are fundamental to bridging the continent's energy access financing gap. The Zafiri Investment Facility, co-launched by the African Development Bank, IFC and Rockefeller Foundation, is capitalized with USD 300 million in its first phase and is designed to mobilize up to USD 1 billion in equity for distributed renewable energy companies across Africa. This facility de-risks private sector engagement by offering anchor equity, guarantees, and technical assistance to early-stage developers, thereby unlocking new pools of capital.

Our partnerships further extend to philanthropic and civil society actors. Through the Mission 300 Accelerator, the Rockefeller Foundation has provided a USD 3.4 million grant to Sustainable Energy for All for technical assistance and progress tracking, alongside a USD 2.5 million grant to ODI Global Washington to launch a Fellowship Program that builds governmental capacity for energy compact implementation. Such collaborations exemplify our belief in inclusive platforms that harness the strengths of diverse actors.

In alignment with our integrated "High 5" agenda, the Energy Transition Strategy dovetails with initiatives to "Feed Africa" and "Industrialize Africa," recognizing that energy underpins agricultural value chains and manufacturing clusters. By applying insights from climate science, systems engineering, and development economics, we will foster resilient infrastructures that adapt to changing hydrological cycles, evolving market dynamics, and emerging technologies such as renewable hydrogen and synthetic fuels.

We call upon multilateral and bilateral development partners, private sector investors, philanthropic foundations, and Member States to champion this Strategy, to co-invest in pipeline projects, and to share expertise in project preparation and risk mitigation. Our collective engagement is paramount to achieve economies of scale, drive down costs, and deliver reliable, affordable power to underserved communities.

It is our aspiration that the Energy Transition Strategy and Action Plan serves as a living blueprint—informing policy dialogues, guiding project development, and enabling measurable progress toward Africa's energy goals. The African Development Bank reaffirms its unwavering commitment to this mission and looks forward to working with stakeholders across the continent to translate ambition into tangible, transformative outcomes for generations to come.

Wale Shonibare
Director responsible for Energy Financial Solutions,
Policy and Regulations
African Development Bank

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The African Energy Transition Strategy and Action Plan (ETSAP) has been prepared under the African Energy Transition Programme (AFRETRAP), spearheaded by the African Energy Commission (AFREC) of the African Union Commission. The project was co-funded by the African Development Bank (AfDB) under the Africa Energy Transition Catalyst (AETC) Programme through the Sustainable Energy Fund for Africa (SEFA) and by AFREC. It includes the domestication of the ETSAP through the development of the National Deep Decarbonization Pathways (NDDPs) for three pilot countries: Madagascar, Botswana, and The Gambia. Stantec led the development process with technical input from AFREC and AfDB.

The strategy was prepared under the leadership of Rashid Ali Abdallah, Executive Director at AFREC, and Wale Shonibare, Director of Energy Financial Solutions, Policy and Regulations at AfDB, and under the general supervision of Yagouba Traore, Head of Policy Planning Strategy at AFREC, and Callixte Kambanda, Manager for Energy Policy, Regulation & Statistics Division at AfDB.

The core team responsible for designing, authoring, and reviewing the ETSAP included Nickson Bukachi, Mehdi Khouili, and Bob Felix Ocitti from AFREC; Neza Guillaîne, Mollinedo Carlos, Etidel Labidi, Freda Opoku Akyeabea, and Sana Essaber from AfDB; and Peter Zhou, George Kyriakarakos, George Giannakidis, Pascal Augareils, Rachid Ben Daly, Goodman Kazoora, and Francis Dangare from Stantec.

At the project level, Nickson Bukachi Onger, Neza Guillaîne, and Alba Merillas Dochao were responsible for the overall coordination of the project, while stakeholders contributed input and ensured ownership of the strategy.

Given the strategic role of the ETSAP, valuable inputs were contributed through the circulation of outputs to stakeholders for comments, bilateral meetings with African Union organs and institutions, and an expert review meeting held in Abidjan, Côte d'Ivoire, on 10–13 December 2024. The validation meeting was held on 24 April 2025, with representation from stakeholders across the continent and beyond. The stakeholders consulted were drawn from AU Member States, Regional Economic Communities, Regional Centres for Renewable Energy and Energy Efficiency, academia, private sector stakeholders, civil society organisations, and development partners.

Thank you for your valuable contributions towards a truly pan-African ETSAP.

A comprehensive list of the stakeholders who reviewed the strategy, and their organisations, is provided on the last page of this document.

1. INTRODUCTION AND CONTEXT	2		
1.1 BACKGROUND	2		
1.2 RATIONALE	3		
1.2.1 What is the Problem? Addressing Africa's Energy and Climate Gaps	3		
1.2.2 Why Does It Matter? Energy as the Engine of Transformation	3		
1.2.3 How Will We Address It? The Role of ETSAP	3		
1.3 ETSAP DESIGN FRAMEWORK	4		
1.4 ETSAP OUTLINE	5		
2. CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS	7		
2.1 INTRODUCTION	7		
2.2 SUBSECTOR SITUATION ANALYSIS	7		
2.2.1 Electricity	7		
2.2.2 Transportation	9		
2.2.3 Buildings	10		
2.2.4 Industry	11		
2.2.5 Oil and Gas and related infrastructure	12		
2.2.6 Agriculture	13		
2.2.7 Clean Cooking	14		
2.3 NATIONAL ENERGY TRANSITION FRAMEWORKS	15		
2.4 NATIONALLY DETERMINED CONTRIBUTIONS	16		
2.5 ET RELEVANT AU INITIATIVES	17		
2.5.1 African Union Climate Change and Resilient Development Strategy and Action Plan	17		
2.5.2 AfSEM	17		
2.5.3 CMP Scenario analysis	18		
2.5.4 African Union Energy Efficiency Strategy and Action Plan Scenario Analysis	23		
2.5.5 African Clean Cooking Initiative	24		
2.5.6 Other projections for the development of the energy sector and related emissions	25		
2.5.7 Mission 300	26		
2.5.8 African Green Hydrogen Strategy and Action Plan	26		
2.5.9 The African Green Minerals Strategy	27		
2.6 GAP ANALYSIS	27		
2.6.1 Gap Analysis Overview	27		
2.6.2 SWOT Analysis	27		
2.6.3 PESTEL Analysis	29		
2.6.4 Summary of SWOT and PESTEL Analyses	30		
3. STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION	32		
3.1 INTRODUCTION	32		
3.2 VISION AND MISSION AND HIGH-LEVEL TARGET	32		
3.3 PILLARS OF THE STRATEGY	33		
3.4 ETSAP SCOPE	35		
3.5 SYNERGIES WITH PAST-ADOPTED AU STRATEGIES	35		
3.6 INTERMEDIATE OUTCOMES (MILESTONES)	37		
3.6.1 Transition Toward a Clean Energy Mix with Accelerated Infrastructure Development	37		
3.6.2 Establishment of a Functioning Continental Energy Market	37		
3.6.3 Increased Energy Efficiency Across All Sectors	37		
3.6.4 Strengthened Governance and Institutional Capacity	38		
3.6.5 Inclusive Economic and Social Development	38		
3.6.6 Sustainable Development of the Oil and Gas Industry	38		
3.7 KEY ASSUMPTIONS	38		
3.8 RISKS AND RISK MITIGATION STRATEGIES	39		
3.9 CRITICAL ENABLERS	41		
4. ACTION PLAN	44		
4.1 INTRODUCTION AND METHODOLOGICAL APPROACH	44		
4.2 ELECTRICITY	44		
4.3 TRANSPORT	50		
4.4 BUILDINGS	57		
4.5 INDUSTRY	66		
4.6 OIL AND GAS	73		
4.7 AGRICULTURE	80		
4.8 CLEAN COOKING	89		
4.9 HORIZONTAL PLANNING	104		
4.9.1 Cross Cutting issues	105		
4.10 CROSS SECTORAL ISSUES	106		
5. IMPLEMENTATION PLAN	109		
5.1 GUIDING PRINCIPLES	109		
5.2 INSTITUTIONAL ROLES	109		
5.3 FINANCING OPTIONS AND RESOURCE MOBILISATION FOR THE ETSAP	114		
5.3.1 Financing the ETSAP	114		
5.3.2 Budgeting assumptions and estimation	116		
5.4 MONITORING AND EVALUATION FRAMEWORK	120		
5.4.1 Formulation of the M&E framework	120		
5.4.2 Evaluation Framework	124		
5.5 COMMUNICATION PLAN	124		
5.5.1 Specific objectives of the communication plan	124		
5.5.2 Communication principles and general approach	125		
5.5.3 Target audiences and key messages to be disseminated	126		
5.5.4 Specific communication tools and channels	127		
6. ANNEXES	130		
6.1 NDCS TARGETS ANALYSIS	130		
6.2 STOCKTAKING REPORT AND GUIDELINES FOR DEVELOPMENT OF DEEP DECARBONISATION PATHWAYS AND "LOW HANGING FRUIT AND HIGH IMPACT ACTIVITIES"	132		
6.3 REFERENCED PAST AU ADOPTED STRATEGIES AND FRAMEWORKS	132		

LIST OF TABLES

Table ES 1.	Summary of ETSAP Strategic objectives, strategic interventions and Proposed Actions for each subsector	XVIII
Table ES 2.	Summary of Horizontal Planning, Cross Cutting and Cross sectoral Actions.	XXIII
Table ES 3.	Summarised budget for all short term ETSAP actions by category	XXIV
Table ES 4.	M&E Framework for the ETSAP	XXV
Table 1.	Summary of Africa's electricity sector	7
Table 2.	Summarised assessment of the transportation sector in the context of ET in Africa.	9
Table 3.	Summarised assessment of the buildings sector in the context of ET in Africa.	10
Table 4.	Summarised assessment of the electricity sector in the context of ET in Africa.	11
Table 5.	Summarised assessment of the oil and gas sector in the context of ET in Africa.	12
Table 6.	Summarised assessment of the agriculture sector in the context of ET in Africa.	13
Table 7.	Summary of clean cooking sector.	14
Table 8.	Noted ET strategies across the Continent by AU region and the timeframe of the ET strategies	15
Table 9.	Initiatives identified in country ET strategies	15
Table 10.	Summary of the common approaches for Carbon Reducing Measures	16
Table 11.	IEA projections for the STEPS and APS scenarios 2010 to 2050	25
Table 12.	SWOT Analysis	28
Table 13.	Overview of PESTEL Analysis	29
Table 14.	Subsector Strategic Objectives for the ETSAP	35
Table 15.	Synergies with Past-adopted AU Strategies	36
Table 16.	Risks and Risk Mitigation Strategies	39
Table 17.	Action Plan for Strategic Intervention 1: Accelerate the deployment of RE	46
Table 18.	Action Plan for Strategic Intervention 2: Foster and Accelerate development of resilient Transmission and Distribution networks to support deployment and trade of clean and RE power	48
Table 19.	Action Plan for Strategic Intervention 1. Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector.	52
Table 20.	Action Plan for Strategic Intervention 2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.	54
Table 21.	Action Plan for Strategic intervention 1: Strengthen and adopt compliance with mandatory building energy codes.	58
Table 22.	Action Plan for Strategic Intervention 2: Boost market demand for energy-efficient buildings.	61
Table 23.	Action Plan for Strategic Intervention 3: Boost capacity for delivery of energy-efficient building	63
Table 24.	Action Plan for Strategic Intervention 1: Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices.	67
Table 25.	Action Plan for Strategic Intervention 2. Transformative industrialisation to leverage Africa's comparative advantage.	69
Table 26.	Strategic Intervention 1: Sustainable supply of natural gas on the continent	74
Table 27.	Strategic Intervention 2: Promote economic and technical efficiency in the production, transport, and use of oil and gas	76
Table 28.	Strategic Intervention 3: Environmental, Social and Governance Sustainability enhanced	78
Table 29.	Strategic Intervention 1. Modernisation of Agricultural Equipment	81
Table 30.	Strategic Intervention 2. Promotion of Renewable Energy in Agriculture	83
Table 31.	Strategic Intervention 3. Enhancement of Agricultural Extension Services	86
Table 32.	Strategic Intervention: 1 Development and Deployment of Advanced Cooking Technologies	90
Table 33.	Strategic Intervention 2 Enhancing Market Structures and Supply Chains	93
Table 34.	Strategic Intervention 3 Policy Development and Regulatory Support	97
Table 35.	Strategic Intervention: 4. Public Awareness Campaigns and Education	100
Table 36.	Summary of ETSAP Strategic objectives, strategic interventions, cross cutting, and cross sectoral issues	103
Table 37.	Action Plan for the Horizontal Strategic Interventions	104
Table 38.	Key Cross cutting issues to be observed for the ETSAP Implementation	106
Table 39.	Sub sectoral Intersections on the proposed measures and actions. Cause/Effect whereby how the Column sectors effect on Row sectors in terms of what we have already presented in the Strategy and Action Plans- Not all we know about their intersections.	107
Table 40.	Principles for implementation of the ETSAP	109
Table 41.	Continental and regional organisations for ETSAP implementation	111
Table 42.	Key Regional Stakeholder Organisations for Implementation of the ETSAP	112
Table 43.	Institutional entities and their role in the Member States	113

Table 44.	<i>ETSAP Stakeholder Power-Interest Matrix</i>	114
Table 45.	<i>Budget estimates for implementing short term (up to 2030) continental Actions of the ETSAP subsectors</i>	116
Table 46.	<i>Estimated Short Term budget for implementing Horizontal Planning ETSAP Actions</i>	118
Table 47.	<i>Cross cutting and Cross sectoral budgets for short continental actions (2025-2030)</i>	119
Table 48.	<i>Summarised budget for all short term ETSAP actions by category</i>	119
Table 49.	<i>M&E Framework for the ETSAP</i>	122
Table 50.	<i>Key Communication Messages and Stakeholders</i>	126
Table 51.	<i>Overview of Nationally determined contributions of AU Member States</i>	130

Figure 1.	<i>Depicts the design Framework that was adopted in framing the ETSAP</i>	4
Figure 2.	<i>Continental Total Installed Generation Capacity</i>	19
Figure 3.	<i>Continental evolution of technology shares in the Installed Capacity mix</i>	20
Figure 4.	<i>Continental Electricity Production for Baseline, Regional and Continental CMP Scenarios</i>	21
Figure 5.	<i>Continental Evolution of technology shares in electricity production mix</i>	22
Figure 6.	<i>Continental CO2 Emissions by CMP Scenarios- Baseline, Regional and Continental Scenarios</i>	23
Figure 7.	<i>High Level Energy Productivity target over the horizon of Agenda 2063</i>	23
Figure 8.	<i>Comprehensive Institutional involvement in ETSAP Implementation</i>	110

LIST OF ACRONYMS

AFAP	African Fertiliser and Agribusiness Partnership	CSR	Corporate Social Responsibility
AFC	African Railway Confederation	DAS	Digital Agriculture Strategy
AfCCF	Africa Clean Cooking Facility	DBSA	Development Bank of Southern Africa
AfCFTA	African Continental Free Trade Area	DDPs	Deep Decarbonisation Pathways
AfDB	African Development Bank	DFIs	Development Financial Institutions
AfEES	African Energy Efficiency Strategy	DIE	Department of Infrastructure and Energy and Transport
AfEMA	Africa E-Mobility Alliance	DREA	Department of Rural Economy and Agriculture
AFREC	African Energy Commission	EAMA	East African Manufacturers Association
AFRETRAP	Africa Energy Transition Programme	EAPP	Eastern Africa Power Pool
AFSEA	African Sustainable Energy Association	EASA	Energy services Companies Association of Southern Africa
AFSEC	African Electrotechnical Standardisation Commission	EE	Energy Efficiency
AfSEM	African Single Electricity Market	ESCOs	Energy Service Companies
AFUR	African Forum for Utility Regulators	ESG	Environmental, Social and Governance
AGHA	Africa Green Hydrogen Alliance	ESS	Energy Storage Systems
AGMS	African Green Minerals Strategy	ET	Energy Transition
AI	Artificial Intelligence	ETSAP	African Energy Transition Strategy and Action Plan
APS	Announced Pledges Scenario	EU	European Union
APUA	Association of Power Utilities in Africa	EVs	Electric Vehicles
ARDA	African Refiners & Distributors Association	E&P	Exploration and Production
AREA	African Renewable Energy Alliance	FAO	Food and Agriculture Organisation
ARSCP	African Roundtable on Sustainable Consumption and Production	FEC	Final Energy Consumption
ARSO	African Organisation for Standardisation	FEWAMA	Federation of West African Manufacturers Associations
ASBN	African Sustainable Building Network	FIDIC	International Federation of Consulting Engineers
AU	African Union	FiPs	Feed-in premiums
AUC	African Union Commission	FT	Fischer – Tropsch
AUC-DIE	African Union Commission's Department of Infrastructure and Energy	GDP	Gross Domestic Product
AUDA-NEPAD	Africa Union Development Agency-New Partnership for Africa's Development	GH ₂	Green Hydrogen
BAU	Business as usual	GHG	Greenhouse Gas
Bcm	Billion cubic metres	Gt	Gigaton
BESS	Battery Energy Storage Systems	GW	Gigawatt
BOAD	West African Development Bank	GWh	Gigawatt hour
CAPP	Central African Power Pool	HVAC	Heating, ventilation, and air conditioning
CBAM	Carbon Border Adjustment Mechanism	ICCT	International Council on Clean Transportation
CCT	Clean Cooking Technologies	ICT	Information and Communication Technology
CCUS	Carbon capture, utilisation, and storage	IEA	International Energy Agency
CfDs	Contracts for difference	IEE	Industry Energy Efficiency
CMP	Continental Master Plan	IFAD	International Fund for Agricultural Development
CoEs	Centres of Excellence	IFC	International Finance Corporation
COMELEC	Maghreb Electricity Committee	IFIs	International Financing Institutions
CP	Communication Plan	IOCs	International Oil Companies
		IoT	Internet of Things

LIST OF ACRONYMS

IPP	Independent Power Producer	PV	Photovoltaic
IRENA	International Renewable Energy Agency	PWh	Petawatt hour
ISO	International Standards Organisation	RCREEEs	Regional Centres for Renewable Energy and Energy Efficiency
IT	Information Technology	RE	Renewable Energy
KPIs	Key Performance Indicators	RECs	Regional Economic Communities
LCAF	Low Carbon Aviation Fuels	RES	Renewable Energy Sources
LCOE	Levelized cost of electricity	ROI	Return on Investment
LNG	Liquified Natural Gas	R&D	Research and Development
LPG	Liquefied Petroleum Gas	SAEEEC	Southern African Energy Efficiency Confederation
LULUCF	Land Use, Land Use Change and Forestry	SAF	Sustainable Aviation Fuels
MDBs	Multilateral Development Banks	SAPP	Southern Africa Power Pool
ME	Ministries in charge of Energy	SDGs	Sustainable Development Goals
MEP	Ministry in charge of Energy and Petroleum	SEA	Sustainable Energy Africa
MEPS	Minimum Energy Performance Standards	SME	Small-medium enterprise
MF	Ministry of Finance	SSATP	Africa Transport Policy Programme
MI	Ministry of Industry	SSDG	Small-Scale Distributed Generation
MoL	Ministry of Labour	STEPS	Stated Policies Scenario
MoUs	Memorandums of Understanding	SWOT	Strengths, Weaknesses, Opportunities, and Threats
MS	Member States	TA	Technical Assistance
MSA	Ministry of Social Affairs	TCF	Trillion Cubic Feet
Mtce	Megaton of Coal Equivalent	TFEC	Total Final Energy Consumption
MtCO ₂	Metric tonnes of carbon dioxide	ToC	Theory of Change
Mton	Metric ton	ToRs	Terms of Reference
MW	Megawatt	TPES	Total Primary Energy Supply
MWh	Megawatt hour	TVET	Technical Vocational Education and Training
M&E	Monitoring and evaluation	TWh	Terawatt-hour
NDCs	Nationally Determined Contributions	T&D	Transmission and Distribution
NEV	New Energy Vehicle	U4E	United for Efficiency
NG	Natural Gas	UATP	African Association for Public Transport
NGOs	Non-governmental Organisations	UN	United Nations
NKE	Non-Key Expert	UNDP	United Nations Development Programme
NMT	Non-motorised transport	UNECA	United Nations Economic Commission for Africa
NOCs	National Oil Companies	UNEP	United Nations Environment Programme
O&G	Oil and Gas	UNFCCC	United National Framework Convention on Climate Change
PAMA	Pan-African Manufacturers Association	UNHCR	United Nations High Commissioner for Refugees
PAQI	Pan-African Quality Infrastructures	VAT	Value added tax
PBL	Netherlands Environmental Assessment Agency	VRE	Variable/intermittent Renewable Energy
PESTEL	Political, economic, social, technological, environmental, and legal	WAPP	West African Power Pool
PM	Project Managers	WFP	World Food Programme
PPP	Private-Public Partnerships	WHO	World Health Organisation
PSP	Pumped Storage Hydro Power Plants	ZEVs	Zero Emission Vehicles
PtX	Power-to-X		

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effect.

Advanced biofuels: They are derived from non-food/feed biomass sources, including agricultural and forestry residues, energy crops, and municipal waste, adhering to sustainability criteria. Advanced biofuels are produced through sophisticated processes such as gasification, pyrolysis, and enzymatic hydrolysis, offering a sustainable and less environmentally impactful alternative to conventional biofuels and fossil fuels.

Beneficiation: The transformation of a primary material (produced by mining and extraction processes) to a more finished product which has a higher value.

Bio-hydrogen: Hydrogen produced from biomass, which is considered a biofuel.

Blended financing: Strategic use of development finance and philanthropic funds to mobilise private capital flows at scale, by combining investors with different financial return expectations – from concessional to market rates – to access greater levels of capital than on a standalone basis.

Carbon Border Adjustment Mechanism: The European Union (EU)'s Carbon Border Adjustment Mechanism (CBAM) is a key regulatory initiative designed to level the playing field for EU producers and their international counterparts, considering carbon pricing. It aims to mitigate the risk of carbon leakage by imposing a carbon price on imports of specific goods from outside the EU. This mechanism requires importers to buy carbon certificates corresponding to the carbon price that would have been paid, had the goods been produced under the EU's carbon pricing rules. The CBAM is part of the EU's broader strategy to meet its ambitious climate targets under the European Green Deal, ensuring that its climate efforts do not lead to an unfair competitive advantage for less-regulated foreign producers.

Carbon intensity: The amount of CO₂ emitted per unit of another indicator associated di-

rectly or indirectly with CO₂ emitting activities. The carbon intensity of electricity is the mass of CO₂ emitted per unit of electricity generated by a plant or by the electricity system. The carbon intensity of the economy is the mass of CO₂ emitted per unit of economic output.

Carbon neutrality: Having a balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks.

Climate action: Activities and policies aimed at addressing climate change, including mitigation, adaptation, and supporting global efforts.

Climate change: Long-term alteration in Earth's climate patterns, primarily due to human activities, especially fossil fuel combustion which increases greenhouse gas concentrations in the atmosphere. Manifests as changes in temperature, precipitation patterns, and increased frequency of extreme weather events.

Climate change adaptation: Adjustments in human and natural systems in response to actual or expected climatic stimuli or effects, to minimize harm or exploit beneficial opportunities. Involves infrastructure resilience and emergency planning for extreme weather events.

Climate change mitigation: Actions to reduce greenhouse gas emissions or enhance their sinks to limit the magnitude of climate change. Includes technological upgrades, energy efficiency improvements, and preservation of natural carbon sinks.

Concessional finance: Below market rate finance provided by major financial institutions, such as development banks and multilateral funds, to developing countries to accelerate development objectives.

Decarbonisation: Strategic reduction of carbon dioxide emissions through the transition from fossil fuel-based energy production to renewable and zero-carbon energy sources. Electrification and hydrogen are at the core of the decarbonisation actions.

Defossilisation: It is the transition from long-cycle carbon to short-cycle carbon use for the sectors that it is challenging (e.g., maritime shipping, aviation, agriculture) or even

infeasible to fully decarbonize (e.g., pharmaceuticals, plastics).

Digitalisation: Digitalisation in the energy sector refers to the integration of digital technologies into various facets of energy systems, including generation, transmission, distribution, and consumption. This process involves among others the use of advanced data analytics, Internet of Things (IoT), artificial intelligence (AI), and blockchain technologies to enhance the efficiency, reliability, and sustainability of energy systems.

Distributed generation: Generation assets that are located close to the particular load that it is intended to serve. General, but non-exclusive, characteristics of these generation assets include: an operating strategy that supports the served load; and interconnection to a distribution or sub-transmission system.

Electricity generation: Another important form of transformation is the generation of electricity. Thermal power plants generate electricity by harnessing the heat of burning fuels or nuclear reactions – during which up to half of their energy content is lost. Renewable power sources generate electricity directly from natural forces such as the sun, wind, or the movement of water.

Energy consumption by sector: The sectoral breakdown of a country's energy demand, which is based on its economy, geography, and history, can greatly impact its energy needs and which energy sources it relies on to meet those needs – such as fuelling automobiles, heating or cooling homes or running factories.

Exploration and Production (E&P): the activities undertaken by Oil and Gas Companies to explore for oil and gas and produce the same when commercial reserves are discovered.

Energy poverty: The absence of sufficient choice in accessing adequate, affordable, reliable, high quality, safe, and environmentally benign energy services to support economic and human development.

Energy security: The uninterrupted availability of energy sources at affordable prices.

Energy supply per capita: The per-capita energy supply is a function of economic devel-

opment as well as the structure of the economy – countries whose economies are largely services-based will use less energy per capita than comparable countries whose economies are focused on heavy industries like iron and steel or pulp and paper.

Energy supply: Total Primary Energy Supply (TPES) includes all the energy produced in or imported to a country, minus that which is exported or stored. It represents all the energy required to supply end users in the country. Some of these energy sources are used directly while most are transformed into fuels or electricity for final consumption.

Energy transformation: Energy sources, particularly fossil fuels, are often transformed into more useful or practical forms before being used. For example, crude oil is refined into many different kinds of fuels and products, while coal, oil and natural gas (NG) can be burned to generate electricity and heat. Other forms of transformation, such as extracting gas or oil from coal, play a relatively minor role in the energy systems of most countries.

Energy transition: A systematic shift from dependency on fossil fuels (coal, oil, natural gas) to renewable and sustainable energy sources.

Final energy consumption: Final Energy Consumption (FEC) is the energy consumed by end users such as individuals and businesses to heat and cool buildings, to run lights, devices, and appliances, and to power vehicles, machines, and factories. Some of the energy found in primary sources is lost when converting them to useable final products, especially electricity. As a result, the breakdown of final consumption can look very different from that of the primary energy supply. Both are needed to fully understand the energy system.

Fischer – Tropsch (FT): A collection of chemical reactions that converts a mixture of carbon monoxide and hydrogen, known as syngas, into liquid hydrocarbons. CO₂ can be converted to CO in FT plants consuming energy.

Green Hydrogen (GH₂): Hydrogen produced by any type of Renewable Energy (RE) resource apart from biomass.

Net Zero: Condition in which metric-weighted anthropogenic Greenhouse Gas (GHG)

emissions are balanced by metric-weighted anthropogenic GHG removals over a specified period. If the term is used to refer to non-CO₂ GHG as well, then the quantification of net zero GHG emissions depends on the GHG emission metric chosen to compare emissions and removals of different gases, as well as the time horizon chosen for that metric.

Oil refining: One of the most important types of transformation for the energy system is the refining of crude oil into Petroleum products, such as the fuels that power automobiles, ships, and planes.

Power-to-X (PtX): Power-to-X converts renewable electricity, from wind, solar, hydro, and geothermal power plants, into a wide variety of storable products (X) which include various fuels and chemicals.

Primary energy productivity: The ratio of Primary Energy Supply over Gross Domestic Product, which is the inverse of primary energy intensity.

Sustainable Aviation Fuel: Sustainable Aviation Fuels (SAF) are defined as renewable or waste-derived aviation fuels that meets sustainability criteria. Currently standardised SAF are essentially biofuels in blends with fossil jet-fuel, while 100% synthetic hydrocarbon SAF are currently in the process of full standardisation.

Sustainable biomass: It involves the use of organic materials sourced in a manner that does not compromise the health of ecosystems or deplete resources at rates faster than they can regenerate. Sustainable biomass production considers ecological (including land use), social, and economic factors to minimize impact on biodiversity, soil health, and local communities. It is a critical component in the production of biomass energy and biomaterials, ensuring that biomass exploitation contributes positively to carbon mitigation efforts and sustainable development goals.

Technical Assistance (TA): The process of providing targeted and expert support for development purposes.

Wheeling agreement: An agreement between generators, consumers, and the owners/operators of the relevant transmission and distribution systems to transmit energy from a generator to an end-user located in another area through the use of existing distribution or transmission networks.

SECTION

EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

The use of fossil fuels in Africa remains high (52% of Total Primary Energy Supply (TPES) and 38% of Total Final Energy Consumption (TFEC)), yet development continues to lag behind other developing regions such as Asia and Latin America. The Energy Transition is intended to support Africa in advancing its development agenda while shifting towards sustainable energy and a low-carbon economy. This Energy Transition Strategy and Action Plan (ETSAP) has been developed to guide the continent's transition towards a net-zero emissions target, aligned with the global goal, but in Africa's case, without diverting from the urgent objective of achieving socio-economic development.

The ETSAP aligns with the objectives of the Africa Energy Transition Programme (AFRETRAP) which reflects the African Union (AU)'s **vision for a low-carbon energy future**. To that end, the ETSAP acknowledges the African Common Position on Energy Access and Just Transition¹, which underscores the importance of **achieving universal energy access alongside sustainable, low-carbon development**. It emphasises the need to harness Africa's abundant renewable and non-renewable energy resources to meet the continent's growing energy demand.

The ETSAP also takes into account the African Union's Agenda 2063 and the principles of the United Nations (UN) 2030 Agenda for Sustainable Development - particularly Sustainable Development Goal (SDG) 7 - as well as the 2015 Paris Agreement, and relevant AU, regional, and national energy transition initiatives. Furthermore, the ETSAP builds on other key AU efforts in energy transition, notably the Continental Power Master Plan (CMP) and the Africa Energy Efficiency Strategy (AfeES), both of which offer projected scenarios for the deployment of clean energy sources (renewable energy and natural gas) and the application of energy efficiency measures across the demand sectors of industry, transport, buildings, and agriculture.

The benefits to be derived from the ETSAP are as follows:

- **Ensuring the utilisation of the continent's abundant clean energy resources** to achieve a sustainable energy supply, while acknowledging that these resources are not evenly distributed across Africa. Some are renewable, others non-renewable, but the priority is to meet energy demand in a sustainable way without hindering socio-economic growth.
- **Enhancing regional and continental integration** to promote trade in energy, goods, and services.



¹ <https://au-afrec.org/energy-transition-programme>

EXECUTIVE SUMMARY

- **Addressing low access to modern and sustainable energy.** Despite its abundant energy resources, Africa has the lowest global rates of electrification and access to clean cooking. This is largely due to inadequate infrastructure to reach demand centres, and the high cost of appliances and facilities needed to access available energy services and supplies.
- **Shifting from widespread use of traditional biomass** to modern and sustainable energy sources to improve health outcomes, protect the environment, and alleviate poverty.
- **Achieving energy security** to support industrialisation in a continent still lagging in meeting socio-economic goals such as job creation for its youthful population and overall economic growth - despite being home to some of the world's rarest strategic minerals, which can be processed locally.
- **Aligning with global, continental, regional, and national development and policy agendas**, including the SDGs and the Paris Agreement. AU Member States are expected to honour their national commitments as outlined in their Nationally Determined Contributions (NDCs).
- **Advancing the continent's socio-economic development** without compromising environmental integrity, while also enhancing climate preparedness and resilience.
- **Tapping into existing and emerging local and global financial and investment flows** that support clean energy opportunities.
- **Taking advantage of technological advancements** in clean energy, noting that some renewable energy technologies are now cost-competitive - or even cheaper - than certain fossil fuels.
- **Building internal capacity to drive the energy transition**, including the creation of supportive policy, legal, regulatory, institutional, and financial frameworks necessary to implement Africa's Energy Transition agenda.
- **Leveraging Africa's critical mineral resources** for the energy transition. The continent holds a significant share of the world's critical minerals essential for renewable energy technologies and storage solutions. Strategically exploiting resources such as cobalt, lithium, and rare earth elements is pivotal for developing local value chains, fostering technological innovation, and supporting manufacturing within Africa. This approach contributes to sustainable job creation, economic diversification, and energy independence, while also ensuring environmental responsibility and alignment with international standards for responsible mining practices.

The ETSAP has been developed building on other relevant AU energy transition initiatives, including, the African Single Electricity Market (AfSEM), the CMP and the AfEES. All publicly available sources of global, continental, regional and national data and modelling were used in developing the ETSAP. This was complemented by an analysis of NDC measures presented by AU Member States. Ongoing continental, regional and national energy transition initiatives have also informed the development of the ETSAP.

AU Member States can use the ETSAP as a guide to develop their own national energy transition strategies. For those that already have ongoing initiatives, the ETSAP provides tools to support alignment and promote regional and continental harmonisation. Each country can therefore map its own priorities when adapting the ETSAP to its context, contributing to broader harmonisation across the continent.

The ETSAP's timeframe extends to 2063, coinciding with the conclusion of Agenda 2063. Other emerging economies, such as China (2060), have set similarly distant net zero emission targets, so it is expected that by 2063 all AU Member States will have had the opportunity to meet their clean energy goals.

The ETSAP covers the following energy subsectors:

- Electricity
- Transport
- Buildings
- Industry
- Oil and Gas
- Agriculture
- Clean Cooking

These are fully aligned with the energy subsectors contained in the AFRETRAP strategic objectives and programme.

It is important to highlight that the development of the ETSAP has followed a 'theory of change' approach in identifying and addressing the critical barriers to Africa's energy transition. This approach ensures a logical progression from challenges to strategic interventions and desired outcomes, enabling actionable solutions aligned with the continent's long-term sustainable development goals. As a first step, a comprehensive stocktaking report was produced, including background research such as an assessment of the current status and gaps. This report is annexed to the Strategy.

EXECUTIVE SUMMARY

Based on AFRETRAP, other AU initiatives, and inputs from continental, regional and national stakeholders through inclusive consultations, the Vision, Mission, Timeframe and High-Level Target developed for the ET-SAP are as follows:

Vision: *A just and inclusive transition to a sustainable and low-carbon energy system in Africa by 2063.*

Mission: *To explore and develop low-carbon energy systems, utilising Africa's natural resources to achieve universal energy access and support sustainable socio-economic transformation.*

Timeframe: The ETSAP is structured to span from 2025 to 2063, segmented into three implementation phases: Short Term (2025–2030), Medium Term (2031–2040), and Long Term (2041–2063). While the end dates for each phase set clear deadlines by which all AU Member States should complete specific actions, countries are encouraged to begin implementation as soon as they are ready, based on their specific contexts. This flexible approach ensures that the strategy can adapt to the dynamic global energy landscape, incorporating new data and technological breakthroughs, especially during the critical period from 2041 onwards. Regular assessments and revisions will be essential to maintaining the strategy's relevance and effectiveness in achieving its long-term goals.

High-level target: To achieve a **net zero greenhouse gas emissions economy by 2063**. This target reflects Africa's commitment to a sustainable future that promotes development, enhances energy security, and strengthens climate resilience, while ensuring universal access to clean energy services. It serves as the unifying vision for the continent's energy transition.

enterprise, and social service. Universal access now encompasses reliability targets (e.g., SAIDI/SAIFI reductions), climate-resilient grid expansion, and diversified cross-border interconnections that reduce vulnerability to local shocks. Off-grid and mini-grid systems are designed with storage and islanding capabilities, while clean cooking initiatives incorporate sustainable biofuel supply chains to stabilise fuel availability. By integrating access ambitions with robust energy security protocols, this pillar ensures that the continent's march towards 100% electrification and modern energy services is underpinned by a system that is dependable, affordable, and resilient to climatic, geopolitical, and market disruptions.

Pillar 2: Energy Efficiency

Efficiency is fundamental to achieving a sustainable energy transition. This pillar emphasises improving energy productivity across sectors such as industry, transport, buildings, and agriculture by 70% by 2063. By promoting advanced technologies, enforceable standards, and best practices, energy efficiency reduces waste, lowers costs, and supports economic growth while minimising environmental impacts.

Pillar 3: Carbon Management for Fossil Derived Energy

Managing fossil-derived energy is essential for a balanced transition. This pillar addresses aspects such as methane emissions, gas flaring, and the responsible use of fossil fuels through policies and technologies that reduce their environmental impact. It promotes carbon capture, utilisation and storage (CCUS), alongside targeted decarbonisation efforts in the oil and gas sector. These strategies ensure the continued viability of necessary fossil energy resources during the transition, while supporting Africa's long-term low-carbon trajectory and climate commitments.

Pillar 4: Policy and Regulatory Harmonisation

A cohesive energy strategy requires aligned policies and regulations across the continent. This pillar emphasises the integration of national energy policies with regional frameworks developed by the RECs, and broader continental strategies. A combined top-down and bottom-up approach will guide Member States in adopting and tailoring continental strategies, while regional frameworks facilitate coordination and harmonisation among neighbouring countries. This ensures efficient energy transitions that reflect both local priorities and regional synergies under the common continental pursuits.

PILLARS OF THE STRATEGY

Pillar 1: Universal and Secure Access to Clean Energy

Africa's energy future must be built on solutions that are simultaneously clean, inclusive, and secure. This pillar therefore combines the accelerated deployment of renewable resources - solar, wind, hydro, geothermal - and other low-carbon fuels such as natural gas, with explicit security-of-supply measures to guarantee universal, uninterrupted, and affordable power for every household,

EXECUTIVE SUMMARY

Pillar 5: Innovation, Technology and Human Capacity

This pillar focuses on fostering innovation, technology development, and capacity building to drive Africa's sustainable energy transition. It emphasises the development and transfer of clean energy technologies, the establishment of local manufacturing industries for energy solutions, and skills development programmes to build a skilled workforce. By investing in research, innovation ecosystems, and human capital, this pillar ensures long-term sustainability, economic growth, and Africa's leadership in the global energy transition.

Pillar 6: Sustainable Economic Development, Industrialisation & Prosperity

Achieving a just and inclusive energy transition requires targeted efforts to maximise economic opportunities throughout the continent. This pillar focuses on leveraging Africa's extensive natural resources, innovative energy solutions, and expanding markets to foster robust growth in key industries - particularly those that benefit from expanded energy access and energy security - such as heavy industry, mining, manufacturing, agriculture, and services bridging traditional industry sectors with industries without smokestacks.

Central to this approach is ensuring that newly created value chains remain equitable, transparent, and capable of stimulating local economies in ways that uplift communities and build regional resilience. Under this pillar, strategic investments in infrastructure, job creation, and value addition will be closely linked with energy development to promote shared prosperity.

By prioritising local content, workforce training, and the establishment of vibrant SMEs, the continent can accelerate the emergence of new industries while maintaining the competitiveness of existing sectors. Beyond direct economic gains, the pillar also encourages collaboration with financial institutions, leveraging innovative financing mechanisms to spur entrepreneur-driven solutions and attract private-sector participation. By aligning industrial policy with sustainable energy deployment, the pillar maximises job creation, enhances export potential, and embeds Africa more deeply in global clean-tech supply networks.

Working in synergy with the other pillars, this pillar ensures that Africa's transition to a low-carbon energy system delivers tangible benefits for households, businesses, and entire economies - ultimately enabling a more inclusive and sustainable socio-economic transformation, consistent with Africa's long-term vision for 2063.

The strategic objectives formulated for the subsectors, related strategic interventions, and summarised actions are presented in Table ES1 below. Action plans were developed for each strategic intervention, depending on the issues, gaps/challenges, and opportunities identified for these subsectors. The action plans indicating the proposed actions for each subsector are presented in Chapter 4. The full roadmap, showing the actions for each subsector, strategic objective and strategic intervention, level of implementation, and time frames for their implementation, is also presented in the Annexes

EXECUTIVE SUMMARY

Table ES 1. Summary of ETSAP Strategic objectives, strategic interventions and Proposed Actions for each subsector

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	SUMMARISED ACTIONS ²
				Implementation level of actions: C - Continental, R - Regional, N - National Time frame of actions: S - Short term, M - Medium term, L - Long term (S-L - Short to long term; S-M - Short to medium term; M-L - Medium to long term)
1	Electricity subsector	Strengthen and Modernise Energy Infrastructure and Systems in the Electricity Supply Industry	Strategic Intervention 1.1: Accelerate the deployment of RE	- Monitoring and evaluation (M&E) RE/NG plant decarbonisation impact C/S - Grid scale and rural electrification Energy Storage Systems (ESS) promotion C/S - Mini grids policy/legal/regulatory dissemination C/S - RE based Small-Scale Distributed Generation (SSDG) demonstration N/S-M - Research and Development (R&D) of new and emerging clean /RE technologies C/S-L - Support the development of the Off-grid Sector in Africa (mini grids/ microgrids and solar home systems)
			Strategic Intervention 1.2: Foster and Accelerate development of resilient Transmission and Distribution networks to support deployment and trade of clean and RE power	- M&E for network expansion and loss reduction C/S-L - Support MS for Transmission and Distribution (T&D) loss quick wins adoption and reporting C/S-L - Develop and disseminate smart grids standards N/S-L - Cross border network standards and pricing R/S - R&D for new and emerging network efficient technologies C/S-L
2	Transport	Advance Sustainable Transport Solutions	Strategic Intervention 2.1: Promoting introduction of various New Energy Vehicles (NEVs) and clean fuels in various sub sectors of the transport sector	- Scoping, pilot/proof of concept, and potential roll-out of NEVs N/S-M - Introduction of harmonised standards and related regulations for NEVs to guide importation and production C/S-M - Promote use of NEVs through incentives and subsidies N/S-M - Align Transport and Energy policies and infrastructure development to accommodate the NEV market N/M-L - Decarbonise maritime transport, focusing on green methanol and emerging alternative fuels R/S-M - Promote SAF C/M-L - Modernize rail networks with emphasis on hydrogen locomotives N/M-L
			Strategic Intervention 2.2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction	- Promote integrated land-use, energy, and transport planning to reduce travel demand and plan for energy infrastructure and services N/S-M - Introduction of smart transportation systems and technologies N/S-M - Regulated vehicle importation and informal transport sector N/S-L - Harmonise standards, regulations and policies across AU Member States to accelerate adoption of clean transportation technologies N/S-L - Develop technical and institutional capacity to deliver net-zero commitments C/S-L - Align infrastructure and energy policies to accommodate and stimulate decarbonisation N/S-L - Development of Multi-Modal Transport Systems N/S-L - Development and Harmonisation of Energy Efficiency Standards for Transport Systems R/S-M

² Activities, implementation level, leading and collaborating organisations, time frames and expected outcomes are presented in Chapter 3 for each subsector.

EXECUTIVE SUMMARY

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	SUMMARISED ACTIONS ²
				Implementation level of actions: C - Continental, R - Regional, N - National Time frame of actions: S - Short term, M - Medium term, L - Long term (S-L - Short to long term; S-M - Short to medium term; M-L - Medium to long term)
3	Buildings	Elevate Building Standards for Energy	Strategic Intervention 3.1: Strengthen and adopt compliance with building energy codes	- Support dissemination and implementation of harmonised minimum energy efficiency and thermal performance standards for buildings C/S-M - Develop comprehensive national guidelines for energy performance in buildings (based on building audits) to establish consumption baselines N/S - Conduct national building energy audits to establish consumption baselines N/S-M - Build capacities of building authorities and practitioners N/S-M - Create a regional database for building stocks, energy consumption, and related carbon emission levels R/M-L - Create national building compliance bodies with associations at regional and continental level N/S - Launch energy efficiency awareness campaigns for the public C/S-L - Promote large-scale building retrofit programmes for existing stock N/S-M
			Strategic Intervention 3.2: Boost market demand for Energy Efficient buildings	- Develop minimum energy efficiency labels for building materials and products C/S-L - Introduce national building certification tools and systems (standardizable at regional or continental level) N/S - Create a funding mechanism/window to support energy efficiency (EE) in buildings R/M - Implement demonstration programmes for energy-efficient buildings N/S-M - Create national building compliance bodies N/S
			Strategic Intervention 3.3: Boost capacity for delivering energy efficient buildings	- Support Energy Service Companies (ESCOs) N/S-L - Capacitate local manufacturers of building materials and energy equipment/appliances N/M-L - Create an accreditation system for building and energy professionals R/S - Create regional training programmes and knowledge-sharing platforms R/S-M - Develop local and regional awards for buildings that excel in energy efficiency N/S - Support research and development of energy-efficient technologies and building materials N/S-L - Launch regional and continental fund for ESCOs R/S-M
4	Industry	Foster Sustainable and transformative Industrial Development	Strategic Intervention 4.1: Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices	- Develop and implement a carbon benchmark for traded goods manufactured in Africa under the African Continental Free Trade Area (AfCFTA) C/S-L - Determine RE/EE market potential in national industries to inform scope of needed manufacturing N/S-L - Introduce and enforce an EE regulatory framework for industrial decarbonisation performance N/S-L - Create an incentive and financing scheme for adoption of RE and EE technologies/practices C/S-M - Create awareness campaign for industry energy efficiency (IEE) and renewable energy substitution C/S-L - Develop skills and accreditation schemes for EE and RE service providers for the industry sector C/S-L

EXECUTIVE SUMMARY

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	SUMMARISED ACTIONS ²
				Implementation level of actions: C - Continental, R - Regional, N - National Time frame of actions: S - Short term, M - Medium term, L - Long term (S-L - Short to long term; S-M - Short to medium term; M-L - Medium to long term)
4	Industry	Foster Sustainable and transformative Industrial Development	Strategic Intervention 4.2: Transformative industrialisation to leverage Africa's comparative advantage	- Establish regional production potential for advanced battery energy storage solutions R/S - Develop a Battery Energy Storage Systems (BESS) and alternative storage strategy/ programme for Africa C/S - Domesticate the continent-wide hydrogen strategy at national levels N/S - Support enhancement of green hydrogen development and utilisation in industry and transport C/S-M - Promote local manufacturing of RE/EE equipment R/S - Incentive scheme to attract technology transfer and build local manufacturing capacity - Institute R&D for value addition of strategic minerals and innovative clean energy technologies/fuels R/S-L - Expand industries without smokestacks through green technology adoption (e.g., Information and Communication Technology (ICT), digital services, agro-processing) N/S-M - Facilitate green data centres and digital infrastructure for regional connectivity R/M - Advancing Sustainable NEV Manufacturing in Africa C/M-L
5	Oil and gas	Optimize Oil and Gas Sector Transition	Strategic Intervention 5.1: Sustainable supply and utilisation of natural gas on the continent	- Promote the supply and utilisation of NG across the continent C/S-M - Develop a Continental Gas Master Plan and cross-border NG network codes/standards C/S - Develop continental refined products (including synthetic fuels) standards and pricing mechanisms C/S - Harmonise gas regulations for trade (fuel standards, pricing) C/S - Establish harmonised regulatory and institutional framework N/S - Build capacity for negotiations and regulation N/S-L - Plan for hydrogen-ready gas infrastructure C/S-M
			Strategic Intervention 5.2: Promote economic and technical efficiency in the production, transport, and use of oil and gas	- Conduct NG energy price affordability analysis and adoption C/S-L - Ensure better financial stability for public companies (National Oil Companies (NOCs) and other state-owned enterprises) N/S-L - Promote private sector involvement and public-private partnerships (PPPs) in oil and gas N/S-L - Ensure wide access to clean NG energy through targeted subsidies and network expansion N/M-L - Enhance operational efficiency across Oil and Gas (O&G) supply chains R/S-M
			Strategic Intervention 5.3: Environmental, Social and Governance (ESG) sustainability enhanced	- Establish ESG minimum guidelines for both International Oil Companies (IOCs) and NOCs C/S - Develop ESG model regulations for the oil and gas industry, including a reporting platform C/S - Raise awareness on ESG responsibilities and benefits for NOCs and IOCs N/S-L - Build capacity for ESG regulation and negotiations N/S-L - Promote decarbonisation of the O&G value chain C/S-M

EXECUTIVE SUMMARY

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	SUMMARISED ACTIONS ²
				Implementation level of actions: C - Continental, R - Regional, N - National Time frame of actions: S - Short term, M - Medium term, L - Long term (S-L - Short to long term; S-M - Short to medium term; M-L - Medium to long term)
6	Agriculture	Increase the Use of Modern and Efficient Energy Technologies in Agriculture	Strategic Intervention 6.1: Modernisation of Agricultural Equipment	• Subsidy Programme for Energy-Efficient Farm Equipment N/S • Pan-African Equipment Modernisation Fund C/M • Regional Demonstrations of Advanced Farming Equipment R/M • Harmonisation of Farm Equipment Standards C/M-L • Electric and Renewable Fuels Powered Machinery Deployment Guidelines R/M-L • Mobile Training Units for Rural Areas N/S-M • Nationwide Awareness Campaigns for Equipment Modernisation N/S-M • Equipment Leasing Programmes C/M
			Strategic Intervention 6.2: Promotion of Renewable Energy in Agriculture	• Training Programmes on Renewable Energy Technologies N/S-L • Development of Biomass Energy Supply Chains N/M • Renewable Energy Mini/Micro-grids for Irrigation and Post-processing Equipment N/M • Renewable Energy Driven Fertiliser Production R/L • Expansion of Biogas Programmes N/M • Renewable Energy Certifications for Agri-businesses N/S-L • Online Marketplace for Renewable Energy Solutions C/M • Public Awareness Campaigns on the Benefits of Renewables in Agriculture N/S-L • Regulatory Frameworks for On-farm Renewable Energy N/S
			Strategic Intervention 6.3: Enhancement of Agricultural Extension Services	• Build Capacity of Extension Workers in Energy Applications in Agriculture N/S • Deploy Digital Tools for Extension Services N/M • Establish Continental Extension Service Network C/M • Implement Mobile Extension Services N/S • Develop Online Training Modules for Farmers C/M • Standardise Extension Service Protocols R/M • Launch Public Awareness Campaigns on Modern Farming N/S • Develop Partnerships with Agribusiness for Training N/M
7	Clean cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 7.1: Development and Deployment of Advanced Cooking Technologies	• Promote various Clean Cooking Technologies (CCT). N/S • Roll out Successful Pilot Projects N/M • Establish Quality Control and Standards for Clean Cooking Equipment C/S • Implement Tax Incentives for Clean Cooking Technologies N/S • Launch Awareness Campaigns for New Technologies N/S • Create a Clean Cooking Technology Certification Programme R/M • Implement Consumer Financing Programmes for Innovative Clean Cooking Technologies N/M • Develop Cookbooks for Traditional Recipes Using Advanced Cooking Technologies N/S • Deployment of Clean Cooking Solutions in Institutional Kitchens N/S

EXECUTIVE SUMMARY

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	SUMMARISED ACTIONS ²
				Implementation level of actions: C - Continental, R - Regional, N - National Time frame of actions: S - Short term, M - Medium term, L - Long term (S-L - Short to long term; S-M - Short to medium term; M-L - Medium to long term)
7	Clean cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 7.2: Enhancing Market Structures and Supply Chains:	• Implement Policy Frameworks to Support Local Manufacturing N/S • Facilitate Cross-border Clean Cooking Equipment Trade Agreements under AfCFTA C/S • Create Incentive Schemes for Local Production N/M • Enhance Electricity Distribution Networks for Rural Access N/S • Subsidize Transportation Costs for Clean Cooking Solutions to Remote Areas N/S • Coordinate Continental Clean Cooking Exhibitions and Trade Shows C/M • Develop Online Platforms for Clean Cooking Technologies N/S • Promote Investment in Clean Cooking Technology Startups N/M • Implement Targeted Subsidies for Critical Supply Chain Components N/S • Establish Sustainable Supply Chains for Communal Cooking Technologies R/M
			Strategic Intervention 7.3: Policy Development and Regulatory Support	• Development of a National Strategy on Clean Cooking N/S • Development of Guidelines on Clean Cooking Strategy Development and Link with Available Financing C/S • Implement Tax Breaks and Subsidies for Clean Cooking Equipment N/M • Coordinate with International Bodies for Policy Alignment C/S-L • Facilitate Access to International Clean Cooking Funds N/S • Develop Impact Assessment Studies for Clean Cooking Policies N/M • Establish Clean Cooking Advocacy Groups R/S • Strengthen Legal Frameworks for Clean Cooking Implementations N/M • Foster Inter-regional Collaboration on Clean Cooking Initiatives C/M
			Strategic Intervention 7.4: Public Awareness Campaigns and Education	• Launch Continental Clean Cooking Awareness Campaign C/S • Develop Educational Programmes for Schools and Universities N/M • Organise Community Workshops on the Benefits of Clean Cooking N/S • Create a Digital Campaign for Clean Cooking Adoption N/S • Implement Regional Exhibitions and Clean Cooking Fairs R/S-M • Facilitate Training Programmes for Artisans and Local Manufacturers N/S-L • Coordinate with Religious and Traditional Leaders R/S-L • Produce and Distribute Clean Cooking Educational Material N/S-L • Organise Roadshows in Rural and Urban Areas N/S

Source: Authors' own creation

EXECUTIVE SUMMARY

The ETSAP is a continental framework that outlines energy transition actions to be implemented at national, regional, and continental levels. It has an implementation timeframe from 2025 to 2063, with the short-term covering 2025–2030, the medium term 2031–2040, and the long term 2041–2063.

The strategic actions included are of a “soft” nature, designed to pave the way for technical measures that can be implemented to decarbonise the energy sector. These actions largely consist of tracking investments and decarbonisation progress, reducing losses, developing master plans and strategies, conducting market assessments, building capacity and awareness, and establishing regulatory frameworks. It is therefore not feasible to

determine the decarbonisation impact of each individual action of this kind. However, tracking the implementation of technical measures, such as investments in RE and EE, will reflect the response of markets and industries to these ‘soft’ interventions.

Relevant cross-cutting issues (e.g. standardisation, inclusivity - gender, youth, and policies) and cross-sectoral issues (across the subsectors mentioned) linked to the implementation of the ETSAP are also addressed. Some of these will require joint planning and resource mobilisation across different sectors.

A summary of the horizontal planning actions, cross-cutting, and cross-sectoral actions is presented in Table ES2 below.

Table ES 2. Summary of Horizontal Planning, Cross Cutting and Cross sectoral Actions.

HORIZONTAL PLANNING	STRATEGIC INTERVENTION	ACTIONS
	Supporting AU-MS to develop their national Deep Decarbonisation Pathways (DDPs)	Train MS on designing development of DDP and related data collection
		Train MS on Scenario modelling
	Energy Transition Information system and Planning	Develop a check list of data sets used for Energy Transition (ET)
		Create a database for ET information
		Establish a Data collection and processing system
	Capacity Building	Capacity Building of continental agencies
		Capacity building of regional bodies
		National Capacity building
CROSS CUTTING	STRATEGIC INTERVENTION	ACTION
	Gender- equitable distribution of energy benefits and the promotion of inclusive development	Integrating gender perspectives and emphasising the involvement of women at all stages of energy policies, programmes, and projects,
		Youth Engagement and Empowerment
		Inclusivity and Standardisation
CROSS SECTORAL ISSUES	Integrated sub-sectoral planning	Assessment of subsector cross-sectoral issues and synergy including other relevant sectors such as water, ICT, industrialisation

Source: Authors' own creation

The implementation **plan** of the ETSAP presents the following elements:

- **Guiding principles** for prioritising the implementation of actions.
- **Institutional roles** for overall coordination and participation in ETSAP implementation.
- **Resource mobilisation** strategies, taking into account the suitability of various financing sources.

- **A monitoring and evaluation (M&E) framework** to track progress towards ETSAP's strategic objectives and interventions, using only high-level indicators.
- **A communication plan** to support the dissemination of the ETSAP to various stakeholders, including decision-makers, implementers, consumers, funders, and investors.

EXECUTIVE SUMMARY

ETSAP Budget

The total short-term budget to implement continental actions from 2025 to 2030 is approximately USD 12.35 million, as summarised in Table ES3 below. A full and detailed budget covering ETSAP subsectors, horizontal planning, cross-cutting and cross-sectoral actions is presented in Chapter 5.

Table ES 3. Summarised budget for all short term ETSAP actions by category

BUDGET ITEM	TOTAL AMOUNT (2025-2030) USD
Subsectors³	11,102,000
Horizontal Planning	900,000
Cross cutting	220,000
Cross sectoral	126,000
Grand Total	12,348,000

Source: Authors' own creation

An M&E framework is included in the implementation plan. It outlines what should be measured, along with high-level indicators for each subsector, strategic objective, and strategic intervention. Similar indicators are also provided for the horizontal planning, cross-cutting, and cross-sectoral components of the ETSAP, as summarised in Table ES4 below. Further details on the structure and operationalisation of ETSAP's monitoring and evaluation are provided in Chapter 5.

In addition to the Stocktaking Report, which compiles the information used to inform the development of the ETSAP, a separate Guidelines document accompanies this Strategy. It presents 'quick wins' or low-hanging fruit actions and is intended to support and facilitate AU Member States in developing their own national DDPs.

3 Setting up R&D facilities will be additional.

EXECUTIVE SUMMARY

Table ES 4. M&E Framework for the ETSAP

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH LEVEL INDICATORS
Electricity sector	Strengthen and modernise energy infrastructure and systems within the electricity supply industry	Strategic Intervention 1: Accelerate the deployment of RE	Additional supply capacity by clean energy sources Innovation on clean energy systems	Additional capacity Megawatt (MW) by RE, NG ESS Mini grids/microgrids; SSDG New Battery and RE technologies and applications
		Strategic Intervention 2: Foster and Accelerate development of resilient Transmission and Distribution networks to support deployment and trade of clean and RE power	Connectivity across continent Performance of the continental network Innovation on efficient network systems	Connected power pools T&D losses % Traded electricity Gigawatt hour (GWh) New Smart network systems
Transport subsector	Advance Sustainable Transport Solutions	Strategic Intervention 1: Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector.	Population/fleet of NEVs Clean fuels/ used in transport	Number of NEV by type Quantity of clean fuels supplied to transport sector Estimated GHG reductions by NEVs and Clean fuels
		Strategic Intervention 2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.	Services accessibility and mobility	Passenger/tonne km per year/capita Estimated GHG per passenger-kilometres (p-km) for passenger transport and tonne-kilometres (t-km) for freight or goods transport.
Buildings	Elevate Building Standards for Energy	Strategic Intervention 1: Strengthen and adopt compliance with building energy codes	Adoption of building codes by buildings	No of AU MS with harmonised building codes
		Strategic Intervention 2: Boost market demand for Energy Efficient buildings	Building on EE	By Floor size (m ²)
		Strategic Intervention 3: Boost capacity for delivering Energy Efficient buildings	Experts Accreditation Scheme and accreditation of Trained experts for EE in buildings	No and types of skills

EXECUTIVE SUMMARY

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH LEVEL INDICATORS
Industry	Foster Sustainable and transformative Industrial Development:	Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices	Fossil fuel consumption in industry RE deployed in the sector	% of fossil fuels used in industry subsector %RE
		Strategic Intervention 2. Transformative industrialisation to leverage Africa's comparative advantage	Battery and hydrogen manufacturing capacity on the continent Investment in industry Innovative battery and hydrogen technologies and fuels	Battery MW Hydrogen Quantity (MT-H ₂ /year) US\$ New battery and hydrogen technologies and fuels
Oil and Gas	Optimize Oil and Gas Sector Transition	Strategic Intervention 1: Sustainable supply of natural gas on the continent	Existing and planned natural gas network coverage leading to increased Supplied NG on the continent Share of Natural Gas in the energy Mix Share of Natural as in power generation	Additional NG supplied Trillion Cubic Feet ((TCF)) % in the energy mix
		Strategic Intervention 2: Promote economic and technical efficiency in the production, transport, and use of oil and gas	Investment into Natural gas IOC/NOC Financial stability (profit/debts) of public energy companies Sustained subsidies	US\$
		Strategic Intervention 3: ESG sustainability	Participation of IOC/NOC in Corporate Social Responsibility (CSR) activities Job creation	US\$ Number of additional jobs created IOC/NOC with ESG strategies
Agriculture	Increase the Use of Modern and Efficient Energy Technologies in Agriculture	Strategic Intervention 1: Modernisation of Agricultural Equipment	Modern and clean energy use in Agriculture Labour statistics	% of clean energy used in Agriculture % of agriculture employment per hectare
		Strategic Intervention 2: Promotion of Renewable Energy in Agriculture		
		Strategic Intervention 3: Enhancement of Agricultural Extension Services	Productivity of the agricultural sector	tonne/hectare
Clean Cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 1: Development and Deployment of Advanced Cooking Technologies	Population with clean cooking on the continent	% of population with clean cooking
		Strategic Intervention 2: Enhancing Market Structures and Supply Chains		

EXECUTIVE SUMMARY

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH LEVEL INDICATORS
Clean Cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 3: Policy Development and Regulatory Support	Traded clean cooking appliances	Volume of trade of clean cooking appliances at AfCFTA and by country
		Strategic Intervention 4: Public Awareness Campaigns and Education		
Horizontal Planning	Support AU MS to develop their DDPs	Train MS on designing development of DDP and related data collection Train MS on Scenario modelling	AU MS supported to develop their DDPs	Number of AU-MS supported, and collective estimated Carbon offsets achieved after DDP (MtCO ₂) introduction
	Energy Information System that can support Energy Transition	Creating a functional ET compatible energy system to support continental, regional and national ET Strategies	Energy Information System that can support Energy Transition	Energy Transition compatible data sets in AFREC database for all ETSAP energy subsectors
	Capacitated continental, regional and national ET agencies	Capacity Building of continental agencies Regional and National bodies For development ET strategies	Capacitated continental, regional and national ET agencies	Agencies capability to support ET strategies at continental, regional and national level
Cross Cutting	Gender- equitable distribution of energy benefits and the promotion of inclusive development	Integrating gender perspectives and emphasising the involvement of women at all stages of energy policies, programmes, and projects	Gender mainstreaming in policies, plans, budgets	US\$ for gender budgets
		Promote gender participation in decision making roles	Women participation	% of women participation in ETSAP implementation
		Gender Balanced Skills development		
Cross Sectoral	Cross sectoral planning	Assessment of subsector cross-sectoral issues and synergy including other relevant sectors such as water, ICT, Industrialisation	Multisectoral Investment projects in ETSAP	US\$ compared to all investment of ETSAP
		Aggregation of costs of implementation and impact		
		Sub sector Stakeholder engagements		
		Collective Resource mobilisation		

Source: Authors' own creation

SECTION 1

INTRODUCTION AND CONTEXT



INTRODUCTION AND CONTEXT

1. INTRODUCTION AND CONTEXT

1.1 BACKGROUND

As the global community accelerates towards a sustainable energy future, Africa cannot be left behind. The continent is among the most vulnerable to the impacts of climate change, while its energy supply system holds significant potential for decarbonisation. Africa's vulnerability stems from its high dependence on rain-fed agriculture, limited adaptive capacity, and increasing exposure to extreme weather events, all of which threaten food security, water availability, and economic stability. Rising temperatures and shifting precipitation patterns are intensifying desertification, coastal erosion, and biodiversity loss, disproportionately affecting already marginalised communities and deepening socio-economic inequalities⁴.

Fossil fuels currently account for a significant share of Africa's energy use, 52% of TPES and 38% of FEC, with the continent's development still lagging behind other developing regions such as Asia and Latin America⁵. The global energy transition paradigm must therefore advance Africa's development agenda while also guiding the continent towards sustainable energy.

The ETSAP has been developed as part of AFRETRAP, which reflects the AU's **vision for a low-carbon energy future**. It is guided by the African Common Position on Energy Access and Just Transition, which underscores the urgent need to achieve **universal energy access**, paired with **sustainable and low-carbon development**. **This includes harnessing Africa's abundant renewable and non-renewable energy resources** to meet its growing energy demand. The ETSAP is aligned with Agenda 2063 of the African Union, the principles of the UN's 2030 Agenda for Sustainable Development - particularly Sustainable Development Goal (SDG) 7 - the 2015 Paris Agreement, and relevant AU, regional, and national energy sector initiatives.

The energy transition agenda therefore calls for **African leadership and ownership**, with a focus on exploiting and utilising the continent's **clean energy and critical mineral resources to support the transition**. **This must be accompanied by capacity building, raising awareness among decision-makers of the investment needs** for energy transition, and cultivating a

knowledge-sharing community to promote **mutual learning** across African nations.

The ETSAP is a framework designed to guide the energy transition at the continental level, based on which AU Member States (MS) will domesticate and generate their own Energy Transition Pathways depending on their national priorities and economic status.

The ETSAP aims to address the following issues of critical importance to Africa's development agenda:

- **Supporting the exploitation of Africa's abundant clean energy resources** to ensure sustainable energy supply and socio-economic development, while recognising that these resources are unevenly distributed. Some are renewable and others non-renewable, but the priority is to meet energy demand sustainably without hindering growth.
- **Exploiting and adding value to Africa's critical minerals**, which are essential for producing energy transition technologies, creating new industries, and enhancing innovation and technology transfer.
- **Enhancing continental integration** to facilitate trade in energy, goods, and services.
- **Expanding access to modern energy services**, including electrification and clean cooking solutions.
- **Shifting away from the prevalent use of traditional biomass** towards modern and sustainable energy sources, thereby improving public health, environmental quality, and poverty reduction.
- **Achieving energy security** to support industrialisation in a continent still striving to meet key socio-economic goals, such as job creation for its youthful population and broad-based economic growth - while being home to some of the world's rarest strategic minerals.
- **Aligning with global, continental, regional, and national development and policy agendas**, including the SDGs and the Paris Agreement, which require AU Member States to honour their Nationally Determined Contributions (NDCs).
- **Promoting socio-economic development** without compromising environmental integrity, while also strengthening climate preparedness and resilience.
- **Mobilising existing and emerging local and global financial and investment flows** for clean energy opportunities.
- **Leveraging technological advancements in clean energy**, recognising that some renewable energy tech-

⁴ <https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-9/>

⁵ [List of countries by GDP \(Purchasing power parity\) per capita](#) USD 6341 for Africa, USD 18046 for Asia and Oceania and USD19506 for Latin America in 2023 IMF statistics.

INTRODUCTION AND CONTEXT

nologies are now cost-competitive - or even cheaper - than fossil fuels.

- **Strengthening Africa's own capacity to lead the energy transition**, including the creation of enabling policy, legal, regulatory, institutional, and financial frameworks to support the implementation of the continent's energy transition agenda.

1.2 RATIONALE

Africa faces a paradox of energy poverty despite its resource abundance. Although the continent possesses immense renewable energy potential and significant fossil fuel reserves, it remains the most energy-deprived region globally. The rationale for the ETSAP is grounded in the recognition that achieving Africa's development aspirations requires a transformative energy transition. Rooted in the principles of the **Theory of Change (ToC)**, *ETSAP provides a pathway to move to the continent's long-term energy vision. By identifying gaps, aligning opportunities, and fostering actionable interventions, the ETSAP supports Africa's goal to achieve a sustainable, just, and inclusive energy system.*

The rationale builds on three critical questions:

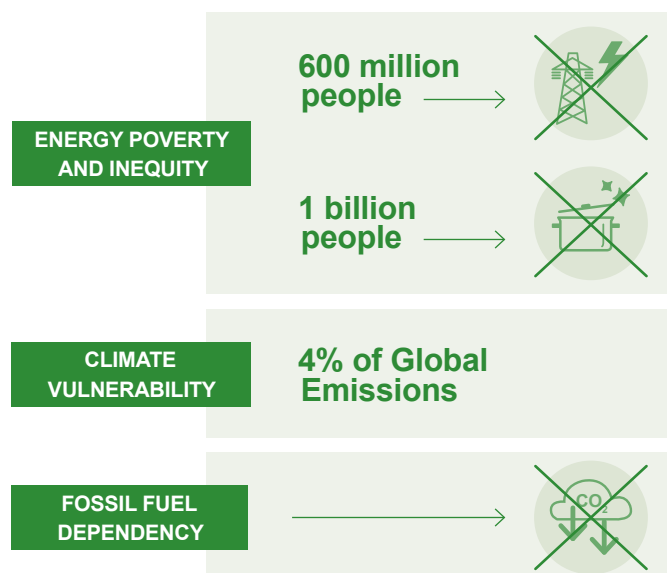
- **What is the problem?** Current gaps in energy access, energy security, resilience, and sustainability.
- **Why does it matter?** The role of energy in Africa's socio-economic and environmental future.
- **How does the ETSAP address it?** ETSAP as the bridge to a sustainable energy system.

1.2.1 WHAT IS THE PROBLEM? ADDRESSING AFRICA'S ENERGY AND CLIMATE GAPS

Despite its wealth of resources, Africa faces several systemic challenges:

1. **Energy poverty and inequity:** About **600 million people** remain without access to electricity⁶, and about **1 billion** lack clean cooking solutions⁷. Rural and peri-urban communities are disproportionately affected, limiting their opportunities for economic and social advancement.
2. **Climate vulnerability:** Although contributing less than **4% of global emissions**⁸, Africa is among the regions most affected by climate change. Extreme weather events, rising temperatures, and resource degradation threaten agriculture, water security, and livelihoods.

3. **Fossil fuel dependency:** While fossil fuels continue to play a role, reliance on carbon-intensive energy systems undermines Africa's ability to align with global decarbonisation goals and related resource flows.



1.2.2 WHY DOES IT MATTER? ENERGY AS THE ENGINE OF TRANSFORMATION

Energy access and sustainability are fundamental to Africa's ability to meet its development goals.

1. **Achieving universal energy access:** Modern energy services are essential for achieving the SDGs and improving education, health, and energy productivity.
2. **Driving industrialisation and job creation:** Energy is the backbone of industrial growth. Scaling up clean energy systems will empower sectors such as manufacturing, agriculture, and transport.
3. **Reducing climate vulnerability:** Transitioning to sustainable energy systems enhances resilience while reducing deforestation and health risks from traditional biomass use.
4. **Leveraging Africa's resources:** Africa's renewable energy potential and critical minerals offer a unique opportunity to contribute to the global energy transformation while boosting local economies.

1.2.3 HOW WILL WE ADDRESS IT? THE ROLE OF ETSAP

The ETSAP provides a strategic roadmap for addressing these challenges and achieving transformative out-

⁶ <https://unctad.org/publication/commodities-glance-special-issue-access-energy-sub-saharan-africa>

⁷ <https://www.afdb.org/en/news-and-events/press-releases/cop29-lack-clean-cooking-access-poses-deadly-risks-millions-africa-leaders-urge-action-78534>

⁸ <https://ourworldindata.org/co2-and-greenhouse-gas-emissions>

INTRODUCTION AND CONTEXT

comes. By fostering regional collaboration, institutional capacity-building, and financing mechanisms, the ET-SAP operationalises Africa's energy transition ambitions. These are supported by:

- Existing continental frameworks such as **AfSEM**, **CMP** and **AfEES**
- Strategic interventions to improve energy access, efficiency, and sustainability across key sectors, including electricity, transport, buildings, industry, agriculture, and clean cooking
- A strong focus on inclusivity, ensuring that women, youth, and vulnerable communities benefit from the transition.

The rationale behind ETSAP is that **Africa's energy transition** is both an **imperative** and an **opportunity**. It addresses pressing energy and climate challenges while unlocking economic potential and improving livelihoods.

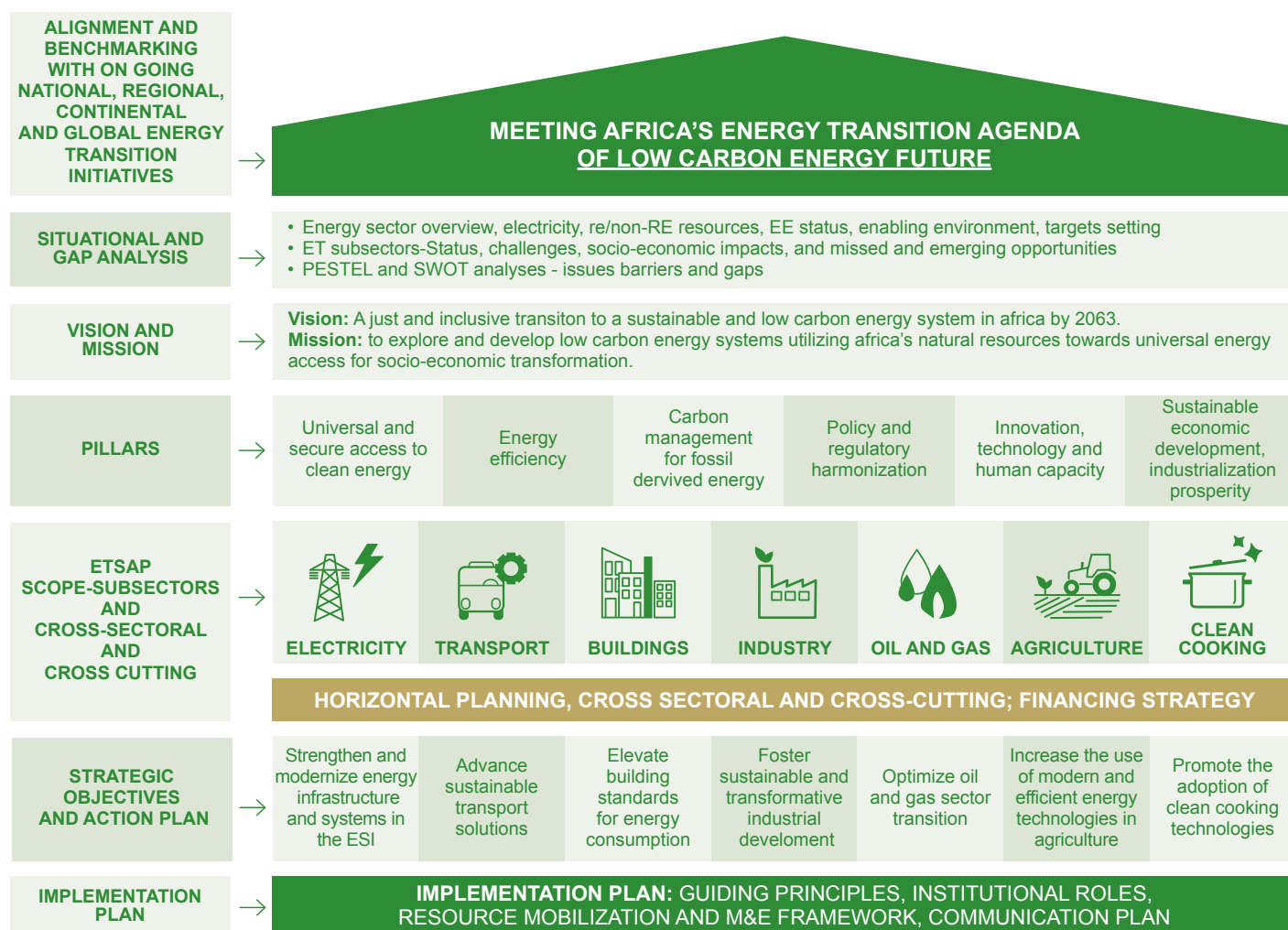
By aligning existing frameworks and prioritising inclusive, transformative action, the ETSAP provides the strategic foundation for achieving a sustainable energy future.

1.3 ETSAP DESIGN FRAMEWORK

The development of the ETSAP is guided by a structured and holistic design framework. This framework ensures that the strategy is comprehensive, actionable, and aligned with Africa's development aspirations, while integrating global sustainability goals and regional priorities.

The design framework, as depicted in Figure 1, reflects a systematic approach to addressing Africa's energy transition challenges by applying ToC logic. It highlights the critical pathways, enablers, and milestones required to achieve a sustainable and inclusive energy system by 2063.

Figure 1. Depicts the design Framework that was adopted in framing the ETSAP



Source: Original design

INTRODUCTION AND CONTEXT

1.4 ETSAP OUTLINE

The ETSAP is structured into five (5) chapters, with annexes providing additional detail on key elements of the document.

- **Chapter 1** provides the background to the ETSAP, its rationale, and the design framework.
- **Chapter 2** analyses the current energy situation, including gaps and subsector challenges. It also presents relevant AU initiatives such as AfSEM, CMP, and AfEES, along with a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis and a Political, Economic, Social, Technological, Environmental, and Legal (PESTEL) analysis.
- **Chapter 3** outlines the vision, mission, and strategic pillars of the ETSAP, along with intermediate milestones, enabling factors, anticipated risks, and mitigation strategies.
- **Chapter 4** translates the strategy into actionable plans for electricity, transport, buildings, industry, oil and gas, agriculture, and clean cooking. It also addresses horizontal, cross-cutting, and cross-sectoral issues.
- **Chapter 5** sets out the implementation plan, institutional roles, financing mechanisms and resource mobilisation, estimated budget, M&E framework, and a communication plan.

CHAPTER 1

Rationale, and the design framework

CHAPTER 2

Analyses the current energy situation, including gaps and subsector challenges

CHAPTER 3

Outlines the vision, mission, and strategic pillars of the ETSAP

CHAPTER 4

Strategy into actionable plans

CHAPTER 5

Details on the implementation plan

SECTION 2

**CURRENT
SITUATION,
PROJECTION,
GAPS AND
BARRIERS**



CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2. CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.1 INTRODUCTION

The following sections provide an overview of the current situation in the subsectors analysed in the strategy, largely drawing on statistical data published by AFREC⁹ where applicable. This is followed by a description of the status of energy transition initiatives and projections, including a review of NDCs and the identification of gaps, SWOT, and PESTEL analyses.

The development of the ETSAP was preceded by a comprehensive stocktaking exercise. This process included a detailed assessment of the continent's current energy landscape, covering the status of various sectors, technological progress, and best practices from Africa and beyond. Lessons learned were also integrated to highlight opportunities and address ongoing challenges. A full account of this stocktaking exercise is provided in Annex 6.2, offering deeper insights into the findings and methodologies applied.

The following subsections provide a synthesised summary of the stocktaking results, following a consistent structure across all ETSAP subsectors. Each analysis outlines the current status, identifies key challenges, explores socio-economic impacts, and highlights missed opportunities and emerging perspectives. This format ensures clarity, coherence, and a strong foundation for the actionable interventions set out in later chapters.

2.2 SUBSECTOR SITUATION ANALYSIS

This section presents a summary of the status, challenges, expected socio-economic impacts of the energy transition, and new opportunities and perspectives for each sector, based on the findings of the stocktaking exercise (Tables 1 to 7). The detailed stocktaking report is available in Annex 6.2.

2.2.1 ELECTRICITY

Table 1. Summary of Africa's electricity sector

ASPECT	OVERVIEW
Status	Africa's electricity generation mix remains dominated by fossil fuels, accounting for 79% of generation in 2021. Natural gas contributed 42%, followed by coal at 28%¹⁰. Renewable energy sources (RES), including solar, wind, hydro, geothermal, and waste, accounted for just 20% of electricity generation - despite the continent's vast renewable energy potential. Significant regional disparities exist, with South Africa and Egypt producing over half of the continent's electricity, predominantly from coal and natural gas, respectively. In general, electricity in Southern Africa is dominated by coal, and in North Africa by natural gas. East, Central, and West Africa rely more heavily on hydro, but face limitations in scaling other renewables due to infrastructure deficits. The transmission and distribution networks across Africa are insufficient to meet growing demand, integrate renewable energy, and support cross-border electricity trade. Network losses average 20%¹¹, significantly higher than the 5–10% observed in developed economies. Integration efforts through regional power pools, such as the Southern African Power Pool (SAPP) and the West African Power Pool (WAPP), are promising. However, full continental interconnection is only expected post-2040, limiting near-term benefits from electricity trade. Rural electrification and access to reliable grid electricity remain major challenges. According to the latest World Bank report (2024), the number of people without access to electricity increased for the first time in over a decade, with approximately 685 million people lacking electricity access in 2022¹². Despite these challenges, declining renewable energy costs and political commitments to energy transition offer a strong opportunity to scale renewables to 65% of the generation mix by 2040, while maintaining a role for natural gas to ensure grid stability during the transition.

⁹ To ensure consistency 2021 is used as a base year since it is the latest year for which complete statistical information is available across the continent.

¹⁰ Derived from AfREC Key Africa Energy Statistics 2023

¹¹ <https://african.business/2023/05/energy-resources/africas-race-for-transmission-investment>

¹² World Bank. 2024b. "World Bank Global Electrification Database." Washington, DC: World Bank. <https://electrifynow.energydata.info/>.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

ASPECT	OVERVIEW
Challenges	The electricity sector faces numerous challenges: 1. Infrastructure Deficits: Limited capacity and ageing electricity infrastructure constrain grid expansion, transmission, and distribution. Technical losses are compounded by inefficiencies in both physical systems and regulatory frameworks, leading to significant energy waste¹³. 2. Financial barriers: High investment needs, coupled with limited access to affordable financing, hinder large-scale renewable energy deployment. Macroeconomic instability, non-cost-reflective tariffs, and currency volatility contribute to perceived investment risks. 3. Grid stability and resilience: Weak grids prevent the integration of intermittent renewable sources such as wind and solar, limiting progress towards clean energy adoption. 4. Energy resource distribution and interconnections: Renewable resources are unevenly distributed, requiring substantial investment in transmission infrastructure to connect generation centres with demand hubs and enable regional trade. 5. Low demand from anchor sectors: Industrial and transport sectors remain under-electrified due to low industrialisation, limited uptake of electrified technologies, and unreliable electricity access, reducing demand predictability and utility revenues. 6. Market and utility constraints: Many African utilities struggle financially; only one in three can cover operational and debt service costs. This limits their capacity to invest in grid expansion and renewable energy projects. 7. Decentralised energy solutions: Mini-grids and off-grid systems are critical for achieving universal access, yet face regulatory and financing barriers that slow deployment and impact. 8. Policy and regulatory gaps: Weak or fragmented regulatory frameworks hinder investment, project development, and cross-border collaboration. Private sector participation through PPP and IPP models remains underdeveloped. 9. Social and economic disparities: Expanding electricity access while maintaining affordability presents a challenge for utilities, which must balance connecting low-income households with financial sustainability.
Socio-economic Impacts	The energy transition in the electricity sector is expected to generate multiple socio-economic benefits: • Reliable, secure electricity supply based on increased deployment of sustainable sources, such as RES. • Reduction in GHG emissions by displacing fossil fuels, initially with less-polluting natural gas and renewable energy. • Additional benefits from using RES to produce green hydrogen for use in other sectors such as industry and transport. • Social, economic, and environmental co-benefits, including job creation, GDP growth, and improved air and water quality. • Renewable energy creates more jobs per unit of energy than conventional sources. However, job losses and stranded assets may arise from the phase-out of fossil-fuel-based systems.
Missed and New Opportunities and Perspectives	1. The declining cost of renewable technologies, particularly solar PV and wind offers an opportunity to accelerate renewable deployment. Between 2010 and 2023, there was a 90% drop in the Levelised Cost of Electricity (LCOE) for solar PV and a 63% drop for wind¹⁴. RE supply offer more stable long-term supply options, helping to offset oil price volatility and fossil fuel cost risks. 2. Innovations in grid-scale and off-grid battery storage technologies can help address the intermittency of renewable sources and serve as a direct electricity supply. 3. Several “quick wins” have been identified to reduce T&D losses, especially at the national level. These include network densification, smart grids (e.g., grid digitalisation and advanced metering), reactive power compensation systems, and deployment of efficient grid technologies such as high-efficiency transformers. 4. Distributed generation through mini-grids and off-grid systems, such as Small-Scale Distributed Generation (SSDG), is expected to play a key role in achieving universal access by 2030. 5. Market reforms could accelerate renewable energy investment by strengthening regulatory frameworks and creating space for aggregators, IPPs, PPPs, and mergers to achieve economies of scale.

Source: Authors' own creation

¹³ AFREC, Energy Balance and Indicators 2022, 2023

¹⁴ IRENA. Renewable Power Generation Costs in 2023, 2024

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.2.2 TRANSPORTATION

Table 2. Summarised assessment of the transportation sector in the context of ET in Africa.

ASPECT	OVERVIEW
Status	Africa's transportation sector is heavily dependent on oil products, with diesel and petrol constituting 98.6% of energy use. The growth rate in fuel demand between 2008 and 2018 reached 5.3%. Refined products used in the subsector are largely imported, exposing the majority of AU MS to price volatility. Initiatives such as the African Continental Free Trade Area and the UNEP-led clean vehicle import programmes are supporting some level of sustainability. Railroads and maritime systems, though underutilised, hold potential for energy transition measures. Electricity accounts for just 0.4% of transport energy use, presenting both a challenge and an opportunity for clean energy integration. The air transport sector is expanding rapidly but remains a minor player in the global aviation biofuels space. The transition to sustainable energy, particularly in road transport, is hindered by infrastructure deficits and policy gaps.
Challenges	• Africa's transportation sector faces a number of persistent challenges: • Inadequate infrastructure, especially in rural areas. • Financial constraints that limit modernisation efforts. • Fragmented policy frameworks with weak alignment to energy transition goals. • Heavy reliance on imported fossil fuels, making AU MS economies vulnerable to price fluctuations. • High importation of second-hand vehicles that are no longer considered efficient in their countries of origin, leading to increased fuel demand and pollution. • Urban traffic congestion and inefficient public transport systems, which worsen pollution and energy consumption. • Limited adoption of electric vehicles (EVs), constrained by high costs, lack of charging infrastructure, and unreliable electricity supply. • An underprepared workforce facing challenges in adapting to new technologies. • Environmental degradation and institutional weaknesses that obstruct sustainability efforts. • Transport inefficiencies that raise the cost of goods, reducing competitiveness and limiting market access.
Socio-economic Impacts	• Transportation inefficiencies restrict economic opportunities, particularly in rural areas where poor infrastructure limits access to markets and perpetuates poverty. Urban congestion increases costs and reduces competitiveness. Inadequate public transport disproportionately affects the urban poor, limiting mobility and access to services. Air pollution from outdated vehicles contributes to health problems, placing pressure on already strained healthcare systems. • The informal transport sector provides livelihoods for many but lacks regulation and support, leading to inefficiencies. While transitioning to cleaner energy may result in job losses in traditional transport sectors, it also presents new opportunities in EV and renewable energy industries. Effective urban planning and improved transport systems are essential for sustainable economic growth and equitable access to resources.
Missed and New Opportunities and Perspectives	• Africa has missed early opportunities to adopt low-emission transport policies and technologies, as well as to leverage its resources for developing energy-efficient systems. However, new prospects are emerging, including: • Development of NEV markets and green hydrogen for heavy-duty transport • Integration of mini-grids for rural electrification • Establishment of local NEV manufacturing and battery innovation hubs to stimulate job creation and reduce reliance on oil imports • These opportunities are especially relevant given the continent's rich reserves of green minerals, including lithium, copper, manganese, cobalt, and graphite. • Digital technologies also offer the potential to improve transport efficiency through smart systems. Integrating informal transport into formal planning frameworks, and fostering regional collaboration to harmonise policies, are key strategies. Coordinated urban planning can further reduce energy consumption, improve connectivity, and support broader economic and environmental goals. Africa thus has the potential to position itself as a key player in sustainable transportation innovation.

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.2.3 BUILDINGS

Table 3. Summarised assessment of the buildings sector in the context of ET in Africa.

ASPECT	OVERVIEW
Status	The buildings sector accounts for 40% of global energy use, with Africa's residential buildings heavily reliant on inefficient biomass, which makes up 93% of energy use. By 2060, Africa's building stock is projected to triple, largely driven by urban growth. This poses significant energy and emissions challenges, as construction materials such as steel and cement contribute to 38% of emissions. While several AU MS, including South Africa, Kenya, and Rwanda, have implemented energy-efficient building codes, adoption remains limited across much of the continent. Most buildings lack energy-efficient designs, resulting in considerable energy inefficiencies. Despite these challenges, Africa has vast potential to integrate renewable energy and bio-based construction materials, and to leverage indigenous building practices for more sustainable development.
Challenges	• Sparse adoption of energy-efficient building codes, particularly in sub-Saharan Africa. • Limited use of passive design features, which contributes to energy inefficiency and carbon emissions. • Rapid urbanisation and a booming construction sector placing stress on resources and infrastructure. • Heavy reliance on imported, fossil-fuel-intensive building materials, compounding environmental impacts. • Underutilisation of local, low-carbon materials that offer decarbonisation potential. • Limited awareness of building energy performance, weak regulatory frameworks, and a shortage of skilled labour and investment. • Socioeconomic inequalities, particularly in informal settlements, and fragmented construction practices hindering cohesive progress. • Insufficient integration of climate resilience in building practices, despite growing sustainability demands.
Socio-economic Impacts	• Energy-efficient buildings offer substantial health benefits through improved indoor air quality and thermal regulation, which reduce respiratory issues while also cutting energy consumption. They help alleviate energy poverty by lowering utility costs for low-income households. • Africa's growing construction sector is expected to be a major economic driver by 2060. Investments in green building technologies and practices can create jobs, enhance sustainability, and improve resilience to climate change. • Sustainable buildings also contribute to better public health, improved urban planning, and greater social equity. However, without coordinated infrastructure investments and regulatory oversight, rapid urbanisation risks deepening inequalities and environmental degradation.
Missed and New Opportunities and Perspectives	• Missed opportunities include the slow adoption of energy-efficient regulations and technologies, and the underuse of Africa's renewable energy potential and low-carbon building resources. • Emerging opportunities lie in implementing robust building energy codes, leveraging indigenous and locally available materials, and adopting whole-life systems approaches to construction. Programmes such as those led by UN-Habitat illustrate the potential for scaling sustainable practices. • The rise of green jobs in construction and retrofitting, coupled with advances in renewable energy integration, offers the chance to modernise the sector. A shift toward locally rooted, climate-resilient design, supported by multi-stakeholder collaboration and skills development, can transform Africa's building sector into a model of sustainability.

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.2.4 INDUSTRY

Table 4. Summarised assessment of the electricity sector in the context of ET in Africa.

ASPECT	OVERVIEW
Status	In 2021, industry accounted for 14.2% of Africa's Total Final Energy Consumption (TFEC), comprising electricity, coal, natural gas, oil, and bioenergy (fuelwood). Fossil fuels made up a significant share, with natural gas at 26%, coal at 42%, electricity at 23%, oil at 6%, and fuelwood at 3%. In the same year, CO₂ emissions from industry represented 10% of Africa's total, third behind electricity generation (56%) and transport (22%). Countries such as South Africa, Morocco, Tunisia, Egypt, Mauritius, Eswatini, Namibia, Nigeria, Côte d'Ivoire, Equatorial Guinea, and Senegal are among those with the largest industrial sectors in Africa¹⁵. While most African countries host relatively small-scale industries - apart from a few like South Africa and Egypt - their energy supply remains heavily reliant on fossil fuels. Electricity used in the sector is also largely generated from fossil-based sources. According to the International Energy Agency (IEA) Stated Policies Scenario (STEPS) and Announced Pledges Scenario (APS), industry final energy consumption is expected to grow by 17% and 21% respectively by 2030 compared to the 2021/22 baseline. By 2050, this growth is projected to reach 72% and 98%, respectively. Unless pledged policies are fully implemented, CO₂ emissions from the sector are likely to follow the same trajectory as energy demand. African industrialisation has been slow and, in some cases, regressing, as it faces strong competition from industrialised regions such as Asia. The continent is also often bypassed as a priority destination for industrial investment. Many AU Member States continue to export unprocessed strategic and critical minerals - such as lithium, cobalt, and nickel - that could otherwise be used to support domestic energy transition efforts.
Challenges	Key challenges include: • A low market share of African economies in global trade, compounded by deteriorating terms of trade for raw materials. • A short-term drive to generate revenue from unprocessed raw materials. • Intense competition from more industrialised Asian economies. • A lack of local infrastructure and targeted policy frameworks to support industrialisation. • Insufficient R&D, skills, and technology transfer to enable value addition and beneficiation of strategic minerals for energy transition.
Socio-economic Impacts	• Using Africa's natural resources to increase local content in industrial processes offers opportunities for value addition, skills development, and employment -especially for the continent's young population. It also supports economic diversification and reduces dependence on primary sector exports, particularly agriculture and mining. • Africa has a major opportunity to beneficiate its strategic minerals for applications such as battery technologies, solar equipment manufacturing, and green hydrogen production using abundant renewable energy sources like solar and wind. • As new industries emerge, the share of GDP and employment from industrial activities is expected to increase. • Several African countries are already investing in hydrogen production, leveraging abundant solar potential. The Africa Green Hydrogen Alliance (AGHA), which includes Egypt, Kenya, Mauritania, Morocco, Namibia, and South Africa, is projected to contribute between USD 66 billion and USD 126 billion to member countries' GDP by 2050 - equivalent to 6–12% of their current combined GDP. The initiative could also generate 2 to 4 million jobs by 2050. • Realising AGHA's green hydrogen potential could help member countries collectively abate around 6.5 gigatonnes (Gt) of CO₂ emissions globally by 2050, roughly equivalent to the combined emissions of the United States and Europe in 2021¹⁶.

15 https://www.afdb-org.kr/wp-content/uploads/2022/12/africa_industrialisation_index_2022_en-web.pdf

16 IEA global energy review 2021.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

ASPECT	OVERVIEW
Missed and New Opportunities and Perspectives	• <i>Technical opportunities under the energy transition</i> • Africa's abundant clean energy resources, critical minerals, and agricultural land offer major potential to advance industrialisation through local processing of raw materials. Opportunities exist to deploy decarbonisation measures, such as substituting fossil fuels with hydrogen in hard-to-abate sectors like chemicals (e.g. ammonia and methanol), steel production, cement, oil refining, and transportation¹⁷. Additional opportunities include improving energy efficiency, integrating local renewable energy sources, and promoting waste recycling for use within manufacturing value chains. • The energy transition also opens space for the creation of new industries linked to the production of RE and EE technologies, including battery manufacturing for energy storage and transport applications. • <i>'Soft' Solutions</i> • Infrastructure development, improved investment conditions, transparent legislation, streamlined administrative processes, anti-corruption measures, and conflict prevention are all critical to attracting industrial investments - especially those related to clean technologies and advanced manufacturing. • Regional integration can help address shared challenges by expanding markets for African-made product¹⁸. For decarbonisation, policy harmonisation at national, regional, and continental levels will be needed to support trade frameworks that recognise carbon mitigation in production. • Deliberate industrialisation strategies can support: • Special processing zones with incentives to foster industries focused on strategic mineral beneficiation, including for EV battery production • Localisation of manufacturing segments to improve global competitiveness • Technology transfer and patent acquisition • Targeted beneficiation policies for Africa's critical minerals • Integrated industrial planning in connection with mining and agricultural productivity,

Source: Authors' own creation

2.2.5 OIL AND GAS AND RELATED INFRASTRUCTURE

Table 5. Summarised assessment of the oil and gas sector in the context of ET in Africa.

ASPECT	OVERVIEW
Status	• Africa is a significant global player in oil and gas production, with major producers such as Nigeria, Angola, and Algeria leading exports. The continent currently produces around 7 million barrels of crude oil per day, with approximately 40% of this being exported. • Natural gas remains a developing sector, with reserves in several AU Member States, including Nigeria, Mozambique, and Senegal. However, infrastructure such as pipelines and Liquefied Natural Gas (LNG) facilities is still limited. Africa relies heavily on imports for refined products due to insufficient refining capacity, contributing to high fuel costs and supply inefficiencies. • Oil and gas infrastructure is fragmented, dominated by international oil companies (IOCs), while NOCs often lack the expertise and resources to compete effectively. Natural gas is increasingly considered a "transition fuel" in the energy mix, with demand projected to grow significantly, particularly in the industrial and power sectors. • Despite substantial reserves, the sector is constrained by political instability, underinvestment, and ageing infrastructure.
Challenges	The oil and gas sector faces several complex challenges: • Geographical and environmental obstacles, such as varied terrains, extreme weather conditions, and sensitive ecosystems. • Political instability and security issues, including theft and vandalism, affecting operations in some AU Member States. • Financial constraints, market volatility, and limited investment in infrastructure, which all exacerbate supply inefficiencies. • Ageing pipelines and facilities, many of which require advanced monitoring and maintenance. • High production costs and the carbon intensity of African oil and gas, which make the continent less competitive globally. • Regulatory hurdles, inadequate cross-border coordination, and the absence of harmonised standards. • Weak local industry capacity, limiting the development of domestic value chains and the implementation of decarbonisation measures. • Increasing pressure to balance fossil fuel dependency with environmental sustainability and international decarbonisation goals.

17 <https://www.fchea.org/hydrogen-in-industrial-applications>

18 https://link.springer.com/chapter/10.1007/978-3-030-41979-0_6

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

ASPECT	OVERVIEW
Socio-economic Impacts	- The oil and gas sector remains central to the economies of many African countries, contributing over 50% of export revenues in some, such as Nigeria. However, heavy reliance on fossil fuels makes these economies vulnerable to global price fluctuations and environmental challenges. - Decarbonisation efforts could help enhance fuel security, reduce costs, and extend the operational viability of the sector. Technologies such as carbon capture and renewable energy integration offer potential solutions. - Job creation remains a key priority, particularly within local oil and gas value chains. The shift towards renewable energy could help reduce import dependency, promote regional integration, and improve energy access. However, risks such as stranded assets and unequal transition outcomes need to be carefully managed.
Missed and New Opportunities and Perspectives	- Africa has missed opportunities to decarbonise its oil and gas sector and to fully integrate renewable energy into operations. Nevertheless, new opportunities are emerging, including: - Leveraging natural gas as a lower-emission alternative while renewable energy sources continue to be developed. - Expanding cross-border pipeline networks and scaling up LNG exports. - Fiscal reforms in some countries, such as Nigeria, to attract new investment in the sector. - Reducing flaring and using renewable energy in operations, which can generate both economic and environmental benefits. - Capacity building, regulatory reform, and local workforce development are essential components of a just transition. - Strategic investment in renewable energy, coupled with sustainable oil and gas practices, could position Africa as an influential player in the global energy landscape. Strong collaboration among stakeholders will be crucial to ensuring both energy security and economic growth in line with international decarbonisation objectives.

Source: Authors' own creation

2.2.6 AGRICULTURE

Table 6. Summarised assessment of the agriculture sector in the context of ET in Africa.

ASPECT	OVERVIEW
Status	African agriculture is in a transformative phase, embracing renewable energy to improve and promote sustainability and efficiency. While traditional bioenergy sources are widely used, there's an expanding interest in modern bioenergy systems such as biogas, solar-powered irrigation, and biofuel for machinery. The integration of these renewable energy sources is seen as a key strategy for reducing reliance on fossil fuels and improving agricultural productivity. However, the pace and scale of adoption vary significantly across regions, influenced by local policies, environmental conditions, and economic factors.
Challenges	Regulatory and financial barriers further hinder the wide-scale adoption of modern bioenergy solutions. There's also a pressing need for infrastructure development and technological advancement to support the deployment of renewable energy in remote and rural areas. Additionally, the lack of awareness and technical skills among farmers and stakeholders about the benefits and application of renewable energy technologies in agriculture presents a significant obstacle. Finally, affordability of the various solutions at the farm level is another major challenge.
Socio-economic Impacts	The integration of renewable energy into agriculture has profound socio-economic implications. Positively, it can lead to significant reductions in greenhouse gas emissions, lower operational costs for farmers, and create new employment opportunities in the renewable energy sector. Improved energy access can also lead to enhanced food security and quality of life for rural communities. However, the transition to renewable energy must be managed carefully to avoid widening existing socio-economic disparities, particularly between small-scale farmers and larger agricultural enterprises. Equitable access to renewable energy technologies and financial resources is crucial to ensure that the benefits of the energy transition are shared widely.
Missed and New Opportunities and Perspectives	Historically, the slow adoption of cutting-edge bioenergy technologies and comprehensive policies for sustainable energy use in agriculture has led to missed opportunities for enhancing energy efficiency and reducing environmental impacts. Looking forward, there are promising new opportunities for growth and innovation. Embracing solar energy for water pumping and irrigation, expanding biogas production from agricultural waste, and exploring the potential of biofuels present viable pathways for making African agriculture more sustainable and resilient. Furthermore, the integration of smart agricultural practices, such as precision farming powered by renewable energy, offers the potential to revolutionize food production systems, reduce waste, and improve water and energy use efficiency. These developments not only support climate change mitigation and adaptation efforts but also open new economic perspectives for farmers and communities across the continent.

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.2.7 CLEAN COOKING

Table 7. Summary of clean cooking sector.

ASPECT	OVERVIEW
Status	Across Africa, the transition to clean cooking technologies is progressing slowly, with a vast majority of the population still dependent on traditional cooking methods such as biomass, charcoal, and kerosene. Urban centres report better penetration of modern cooking solutions due to better infrastructure and availability of technologies. However, rural areas continue to struggle with access, hindered by a combination of logistical challenges, lack of adequate infrastructure, and limited awareness about the benefits of clean cooking solutions. This stark urban–rural divide underscores the critical need for targeted policies and programmes that specifically address the unique challenges faced by rural communities in accessing modern, clean cooking facilities.
Challenges	The path to widespread adoption of clean cooking solutions is fraught with substantial challenges. Key among these is the absence of a supportive policy environment that can stimulate investment and consumer adoption of modern technologies. Supply chains for clean cooking equipment are often underdeveloped, and financing mechanisms are insufficient, making it difficult for consumers to afford upfront costs. Cultural preferences for traditional cooking practices further complicate the adoption of new technologies. These issues are compounded by a general lack of awareness and education about the health and environmental benefits of clean cooking solutions, suggesting a strong need for comprehensive awareness campaigns and community engagement programmes.
Socio-economic Impacts	The socio-economic implications of inadequate clean cooking facilities are significant and multifaceted. Health issues predominantly stem from indoor air pollution caused by traditional cooking methods, which disproportionately affect women and children who spend more time in proximity to cooking activities. These health challenges are linked to higher medical expenses and reduced life expectancy. Economically, the dependency on traditional fuels not only incurs higher ongoing costs for households but also detracts from educational and economic opportunities due to the extensive time required for fuel collection. This scenario underscores the urgent need for interventions that can alleviate the financial and logistical burdens associated with transitioning to clean cooking solutions.
Missed and New Opportunities and Perspectives	Numerous opportunities have been missed in the realm of clean cooking, particularly in the slow adoption of existing technologies and the underutilisation of available international funding and support. Looking forward, new strategic perspectives suggest a more integrated approach by linking clean cooking initiatives with broader renewable energy policies, which could drive more comprehensive and sustainable solutions. Innovative financing models, such as pay-as-you-go systems and carbon finance, along with stronger public–private partnerships, are seen as vital to overcoming current barriers. These strategies aim to improve the affordability, accessibility, and attractiveness of clean cooking solutions, ultimately accelerating the shift towards sustainable and universally accessible cooking technologies.

Source: Authors' own creation



Legend: Solar kettle – clean cooking through renewable technologies

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.3 NATIONAL ENERGY TRANSITION FRAMEWORKS

An analysis of the AU Member States regarding their enabling environment for energy transition was carried out (See Annex 6.2 Stocktaking Report). Overall, 46 AU Member States have what can be considered national energy transition strategies, with the time frames indicated in Table 8 (details of the countries are included in Annex 6.1, Table 51).

Most energy transition targets have a time frame up to 2030, 2035, or 2040. Only seven AU Member States have targets extending to 2050, and these are the countries aiming for net zero by that year.

Table 8. Noted ET strategies across the Continent by AU region and the timeframe of the ET strategies

	CENTRAL	EASTERN	NORTHERN	SOUTHERN	WESTERN	ISLAND STATES
National ET Strategies/ Frameworks-Total	3	11	6	8	14	4
2030/2035	2	3		2	4	2
2040	1	7	2	5	9	2
2050		1	4	1	1	

Source: Authors' own creation

The analysis of the energy transition strategies of AU Member States led to the identification of several actions in the targeted sectors, which were then used to inform the development of the ETSAP actions. Table 9: presents these key initiatives.

Table 9. Initiatives identified in country ET strategies

SECTOR	INITIATIVE PROVIDING INPUT TO ETSAP
Electricity/demand sectors	Financing small and medium enterprises (SME) ET initiatives
Electricity sector	Repurposing and repowering of fossil fuel power plants
	RE expansion plans
	Hydro power expansion and grid capacity enhancement
	Small scale electricity supply and distribution systems
	RE enhancement-supply and network expansion
	RE projects and attracting private sector financing
	RE expansion plan and programmes
	RE and EE projects and attracting private sector financing
Electricity sector, Hydrogen	RE expansion for green hydrogen production Hydrogen strategy/roadmaps at national level
Hydrogen	Financing, investments of hydrogen projects
Electricity, transport, and Hydrogen	Defining ET investments opportunities and migration from one paradigm to new one for the sectors
Electricity/power industry, transport, agriculture, buildings	Collective sector approach to ET strategy and implementation
All ET sectors	Development of national ET plans
Clean cooking	Standards formulation for clean cookstoves and supply chain and alternative fuel infrastructure development
	ET roadmap development

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.4 NATIONALLY DETERMINED CONTRIBUTIONS

The analysis presented in the NDCs submitted by AU Member States provides projections for the period up to 2030. According to the Synthesis Report published by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat¹⁹, 92% of countries globally that have submitted an NDC have set an implementation period up to 2030, while only 8% have specified a period extending to 2040.

According to an analysis performed by PBL Netherlands Environmental Assessment Agency²⁰ on the updated NDCs, ten countries have submitted actions within their NDCs without specifying the actual level of emissions reduction. The majority of countries (23) have submitted a target to reduce emissions compared to a baseline projection to 2030.

Several gaps exist, as it was not possible to quantify the overall emissions reduction. Fifty-one countries have reported a conditional target, 38 countries presented only an unconditional target, and 23 presented both unconditional and conditional targets. It is therefore difficult to determine an overall estimate of the expected emissions reduction at continental level that could be achieved if all NDC actions were fully implemented.

However, 13 countries are projecting emissions reductions in 2030 compared to 2020 even under their unconditional pledges, while 25 countries pledge reductions under the conditional case. A more detailed table, presented in Annex 6.1, indicates the projected emissions levels in 2030 for countries where it was possible to quantify both unconditional and conditional scenarios.

According to the African Development Bank (AfDB) Gap Analysis Report²¹, the reviewed NDCs did not thoroughly address several key thematic issues, such as aligning **NDC strategies with national development plans and broader sustainable development goals, identifying opportunities to maximise co-benefits through well-coordinated, economy-wide activities, and detailing the processes for monitoring, reviewing, and reporting climate action.** AU Member States are making progress in accessing climate finance, although the funds obtained still fall short of their needs

Following a review of the submitted NDCs, decarbonisation measures related to the energy transition subsectors of interest (electricity, transport, buildings, industry, oil and gas supply, agriculture, and clean cooking) have been identified and analysed. A summary of the common approaches for carbon-reducing measures proposed by AU Member States in their NDCs for each targeted energy transition subsector is provided in Table 10²².

Table 10. Summary of the common approaches for Carbon Reducing Measures

 ELECTRICITY	In the electricity subsector, the most commonly proposed measures from African Union Member States are the expansion of wind energy (21 AU Member States) and solar energy (17 AU Member States). Hydropower is also mentioned by 14 AU Member States. In general, there is a trend toward renewable energy sources (12 AU Member States), with improvements in grid and energy storage capacity also included. Only a few Member States include increasing renewable energy integration and biomass utilisation as part of their NDC measures.
 INDUSTRY	For the industrial sector, a significant focus is placed on improving industrial energy efficiency, proposed by 14 AU Member States. Additionally, 12 AU Member States aim to enhance industrial processes. Implementing energy-efficient technologies and cleaner industrial technologies is suggested by 6 AU Member States each. Emission standards are mentioned less frequently, though still notably, by 4 AU Member States, indicating an overall effort to reduce industrial emissions through technology and process improvements.
 TRANSPORT	In the transport sector, common measures include improving public transport systems, proposed by 14 AU Member States, and promoting electric vehicles, proposed by 11. Measures for improving public transport and developing sustainable urban transport are suggested by 10 AU Member States each. These indicate a strong preference for making urban transportation more efficient and environmentally friendly, with less emphasis on individual-level measures, such as fuel efficiency standards and infrastructure for non-motorised transport.

¹⁹ Nationally determined contributions under the Paris Agreement, Synthesis report by the UNFCCC secretariat, Oct. 2022

²⁰ Infographics PBL NDC Tool March 2024, Published March 26, 2024 (<https://zenodo.org/records/10875617>)

²¹ AfDB, Gap Analysis Report: African NDCs, 2018

²² Table 5 is a summary of the detailed table presented in Annex 4 of the Stocktaking Report (See Annex 6.2).

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

 OIL AND GAS	In the oil and gas sector, the most frequently proposed measure is reducing gas flaring, cited by 17 AU Member States. Capturing methane follows, with 12 AU Member States including it as a priority. The need for Carbon Capture, Utilisation and Storage (CCUS) is noted by 6 AU Member States, while another 6 highlight reducing methane emissions. There is more emphasis on improving extraction efficiency than on promoting alternative fuels.
 BUILDINGS	The most commonly proposed measure from AU Member States is the adoption of energy-efficient building codes, cited by 12 Member States. Nine AU Member States suggest adhering to green building standards, 8 recommend retrofitting existing buildings, and 7 propose the use of energy-efficient appliances. Fewer countries mention green roofs and smart building technologies.
 AGRICULTURE	Agricultural measures prominently include agroforestry and sustainable agriculture, each proposed by 13 AU Member States. Other key measures include sustainable land management (7 AU Member States) and soil and water conservation (6 AU Member States).
 CLEAN COOKING	In the clean cooking sector, the distribution of improved cookstoves is the most widely proposed measure, cited by 20 AU Member States. Clean cookstoves are recommended by 18 AU Member States, while 5 propose biogas. Liquefied Petroleum Gas (LPG) is recommended less frequently, with only 2 AU Member States mentioning it. This indicates a primary focus on accessible and immediate solutions, such as cookstoves, while alternative fuels are emerging but less dominant in number.

Source: Authors' own creation

2.5 ET RELEVANT AU INITIATIVES

The key AU initiatives that have provided insights into the future of energy transition are the AfSEM, the CMP, and the AfEES. The African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032) provides an outline for harmonised and coordinated actions to tackle climate change issues and offers valuable insights to support planning for the continent's low-emission future, which are useful for the ETSAP.

2.5.1 AFRICAN UNION CLIMATE CHANGE AND RESILIENT DEVELOPMENT STRATEGY AND ACTION PLAN

The African Union's Agenda 2063 envisions a climate-resilient, integrated, prosperous, and peaceful Africa, shaped by its citizens and positioned as a global force. The **African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032)** is a framework designed to support this vision by advancing climate cooperation and promoting long-term climate-resilient development.

The Strategy provides a roadmap for harmonised actions to address climate change impacts while fostering low-emission futures across the continent. It emphasises building adaptive capacities, leveraging Africa's mitigation potential, and ensuring climate resilience as an integral part of sustainable development. Guided by Agenda 2063 and the United Nations' Agenda 2030, the Strategy aims to integrate climate risk management into national and regional planning.

Key priorities include:

- **Governance and Institutional Collaboration:** Engaging state and non-state actors for coordinated climate actions.
- **Policy Coherence:** Aligning strategies with national and international climate commitments.
- **Knowledge Systems and Planning:** Enhancing climate knowledge and anticipatory planning for effective responses.
- **Resource Mobilisation:** Securing financial and technological resources for climate adaptation and mitigation.

The Strategy underscores Africa's commitment to the UNFCCC and the Paris Agreement, emphasising equitable sustainable development, poverty eradication, and tailored national climate responses. By integrating green and circular economy principles, it aims to catalyse socio-economic transformation towards a resource-efficient, climate-resilient, and equitable society. Inclusion is a cornerstone, with a focus on supporting vulnerable communities, especially women and youth, as agents of change. The Strategy fosters partnerships with civil society, private sectors, and international organisations to drive climate action collaboratively.

2.5.2 AFSEM

The AfSEM stands as a visionary endeavour by the African Union, aiming to create a unified, continental electricity market. This ambitious project seeks to ensure energy security, enhance electricity access, and foster economic development across Africa. By integrating na-

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

tional and regional electricity markets into a single, harmonised market, AfSEM intends to stimulate investment in the energy sector, reduce energy costs, and increase the reliability and sustainability of energy supply.

The relevance of AfSEM to Africa's energy transition is that it provides a strategic framework for incorporating renewable energy sources into the continent's energy mix at a larger scale. The initiative facilitates cross-border energy trade, which is crucial for optimising the utilisation of renewable energy resources, given their variability and geographical distribution. Moreover, AfSEM promotes regulatory harmonisation, which is essential for attracting investment in renewable energy projects, thereby accelerating the shift towards a greener energy landscape.

Progress made to date includes the development of the CMP, which will guide investments in both generation and network systems needed to ensure adequate supply and trading of power across the continent. The AfEES was also developed to support the achievement of the AfSEM, particularly by capturing energy efficiency opportunities in various sectors of the economy.

2.5.3 CMP SCENARIO ANALYSIS

The CMP serves as a **strategic blueprint for enhancing interconnectivity across Africa through comprehensive infrastructure** development for generation and interconnection projects. It is considered the first step towards developing the AfSEM, having identified key priority centralised generation and transmission projects that are crucial for the attainment of the AfSEM.

The CMP is specific to the electricity sector and provides scenario projections for the development of generation and interconnection capacities between countries and regions up to 2040. The expected growth in total installed capacity projected by technology type for Africa's interconnected power system is provided for three scenarios (Baseline, Regional, and Continental)²³ and illustrated in Figure 2. The key power generation technologies expected to dominate capacity development over the next fifteen years include natural gas, wind, hydropower, and solar PV in all scenarios.

Overall, Africa's total installed capacity is projected to increase from 266 GW in 2023 to 775 GW, 1176 GW, and 1218 GW in 2040 under the Baseline, Regional, and Continental scenarios, respectively.

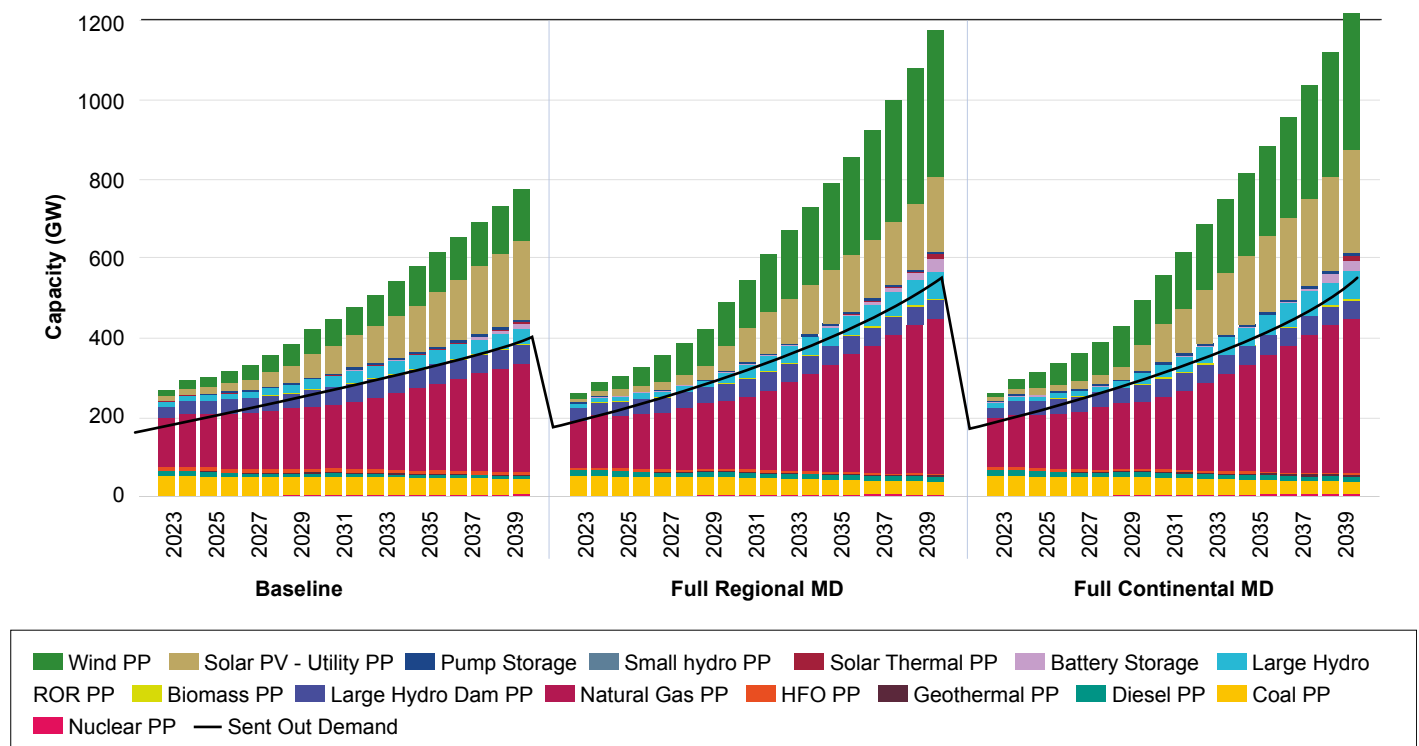
²³ The Baseline scenario used a reference demand projection, using as key drivers the increase of GDP per capita and electricity consumption per capita (which includes implicitly the increased access to electricity), but assuming that most countries remain in the lower-middle income level with low electricity per capita consumption and electricity access reaches 82% by 2040. Regional interconnections expansion and integration is included according to the existing power pool plans.

The Regional scenario considered the medium demand growth projection, assuming full electricity access by 2035 and allowing full regional level integration through the expansion of interconnections within power pools.

The Continental scenario considered the medium demand growth projection assuming full electricity access by 2035 and allowing full integration at a continental level through the expansion of interconnections at the level of the continent (i.e., within the power pools and between power pools).

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Figure 2. Continental Total Installed Generation Capacity



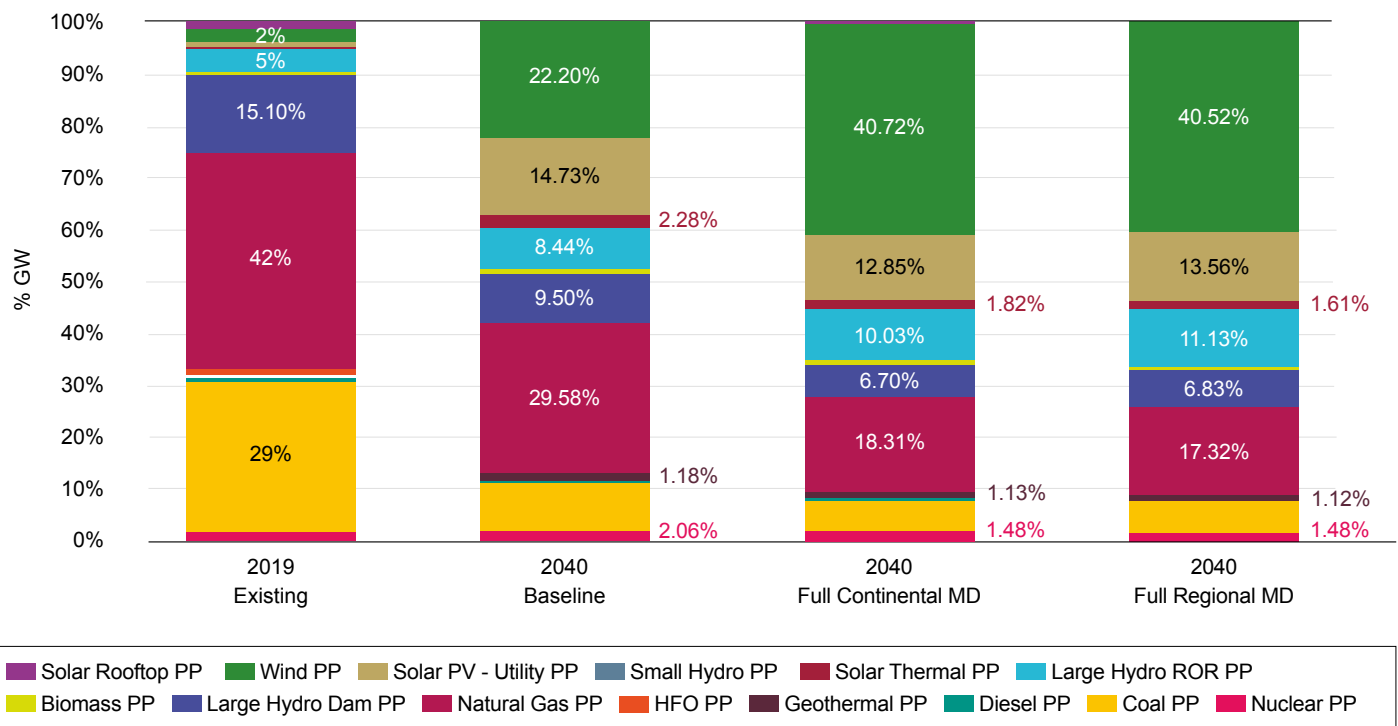
Source: Continental Master Plan 2024

The evolution of the installed capacity shares per technology in the continental power system from 2019 to 2030 and 2040 is illustrated in Figure 3. Renewable energy technology, that is hydro, geothermal, biomass, wind, and solar, comprises between 60% and 68% of the total installed capacity in 2040 under the three scenarios, significantly increased from 22% in 2019. About 30% of

the remaining capacity is from natural gas in all scenarios. Of the renewable capacity, the variable or intermittent renewable energy (VRE) contribution to the continental generation capacity increases from 5% in 2019 to about 45% in 2040 under both integration scenarios, and 40% in the baseline.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Figure 3. Continental evolution of technology shares in the Installed Capacity mix



Source: Continental Master Plan 2024



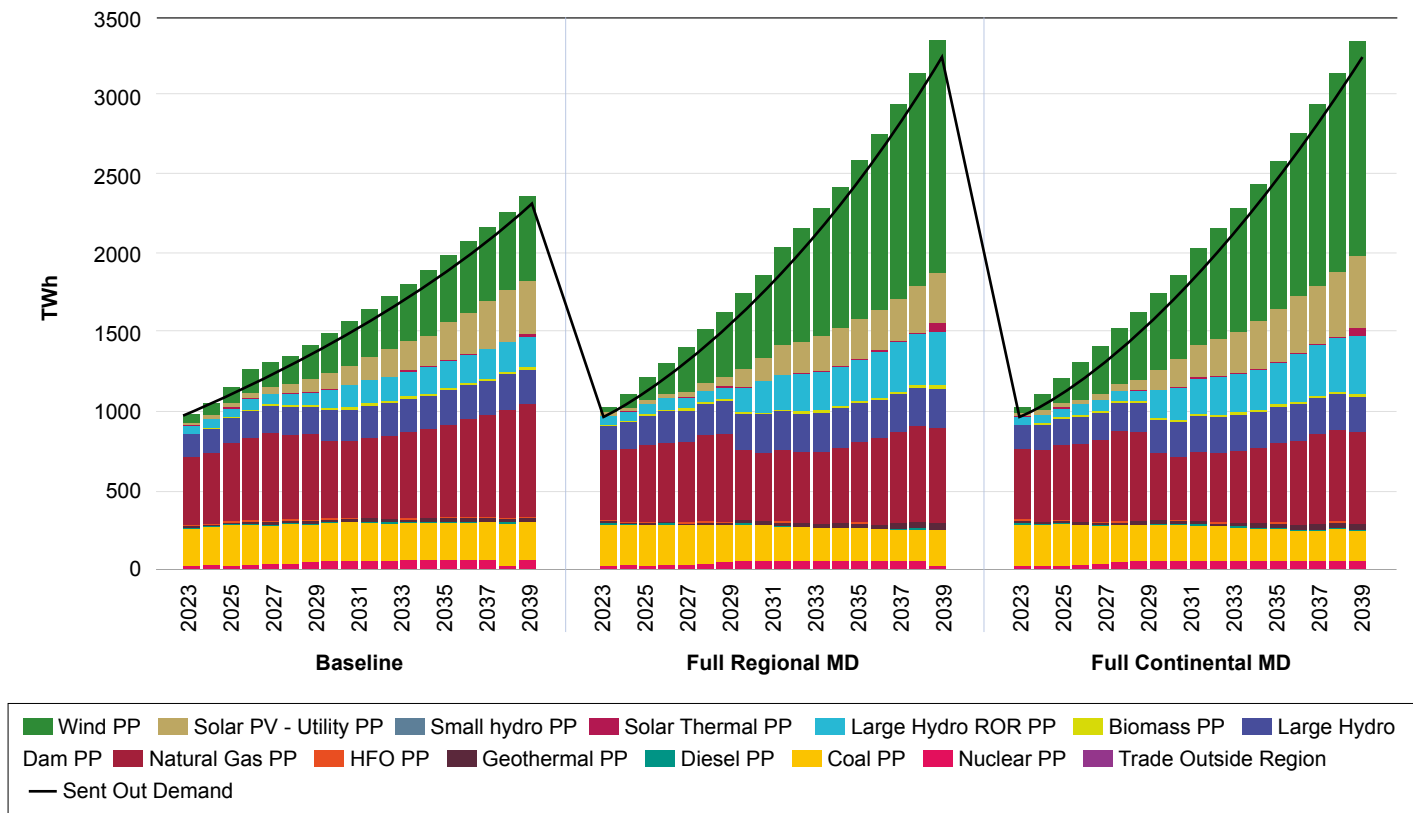
Legend: Transmission pylons in Namaqualand, South Africa – ensuring reliable electricity networks.

Overall, the total electricity generation is projected to increase by about 230%, from 1,022 Terawatt-hours (TWh) in 2023 to 2,375 TWh under the Baseline scenario by 2040. In comparison, total generation is estimated to in-

crease by about 330% by 2040, reaching 3,355 TWh in the Regional scenario and 3,352 TWh in the Continental scenario, in line with the higher demand to meet universal electricity access under these scenarios (Figure 4).

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Figure 4. Continental Electricity Production for Baseline, Regional and Continental CMP Scenarios



Source: Continental Master Plan 2024



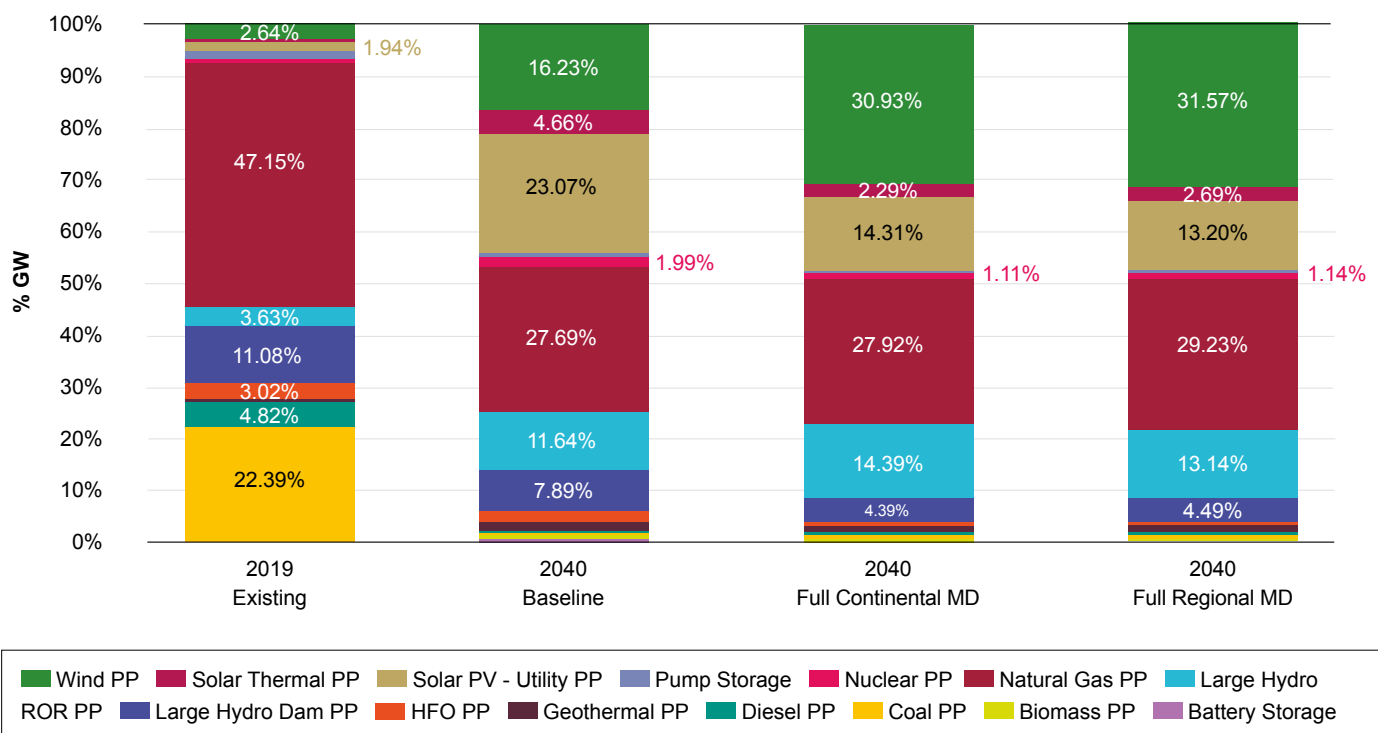
Legend: Engineers install high-voltage transmission lines to expand electricity access in rural areas.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Renewable energy contribution to electricity supply in Africa is expected to increase from the current levels of about 31% of the electricity generation mix to about 75% under the integration scenarios, and 60% under the

Baseline. This shows that the integration scenarios allow much higher penetration of renewables compared to the Baseline (Figure 5).

Figure 5. Continental Evolution of technology shares in electricity production mix



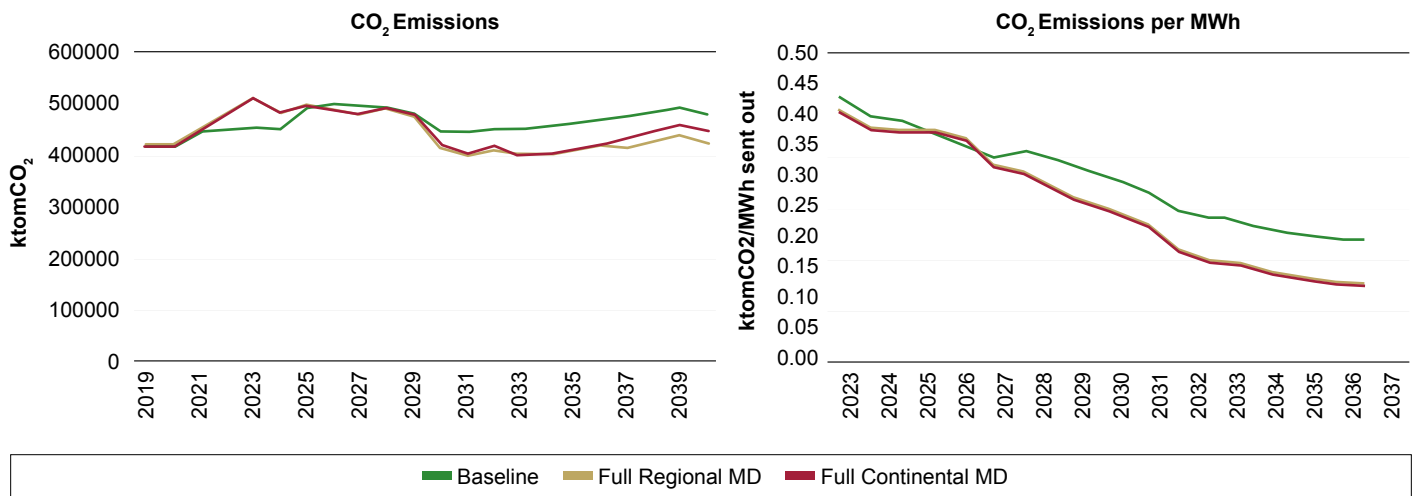
Source: Continental Master Plan 2024

Across the scenarios, CO₂ emissions generally decrease from 417 million tonnes (Mton) of CO₂ per year in 2019 to between 400 and 446 Mton of CO₂ in 2030. The least reduction in emissions is projected for the Baseline scenario at 446 Mton of CO₂, while the largest reduction is under the Continental scenario at 400 Mton of CO₂ in 2030. The decline in CO₂ emissions is mainly attributed to the planned shutdown of coal-fired plants in South Africa, reduction in natural gas generation, and the enhanced introduction of renewable energy sources.

CO₂ emissions, however, generally increase in value from 2030 to 2040 across all scenarios, reaching between 424 Mton (Continental) and 479 Mton (Baseline). This is consistent with the commissioning of new fossil fuel plants as demand increases considerably in the continent after 2030. The integration scenarios result in lower emissions than the Baseline, despite higher demand and corresponding generation in the former, due to the higher penetration of renewables (Figure 6).

All scenarios show a decline in CO₂ intensity of generation, **from 0.4 tonnes per Megawatt-hour (MWh) in 2019 to between 0.13 and 0.19 tonnes per MWh by 2040**, due to the decommissioning of older, carbon-intensive fossil power plants and the increasing penetration of renewable energy plants. The reduction in CO₂ emissions intensity is more pronounced in the Regional and Continental scenarios due to the higher renewable electricity share per unit of generated electricity.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Figure 6. Continental CO₂ Emissions by CMP Scenarios- Baseline, Regional and Continental Scenarios

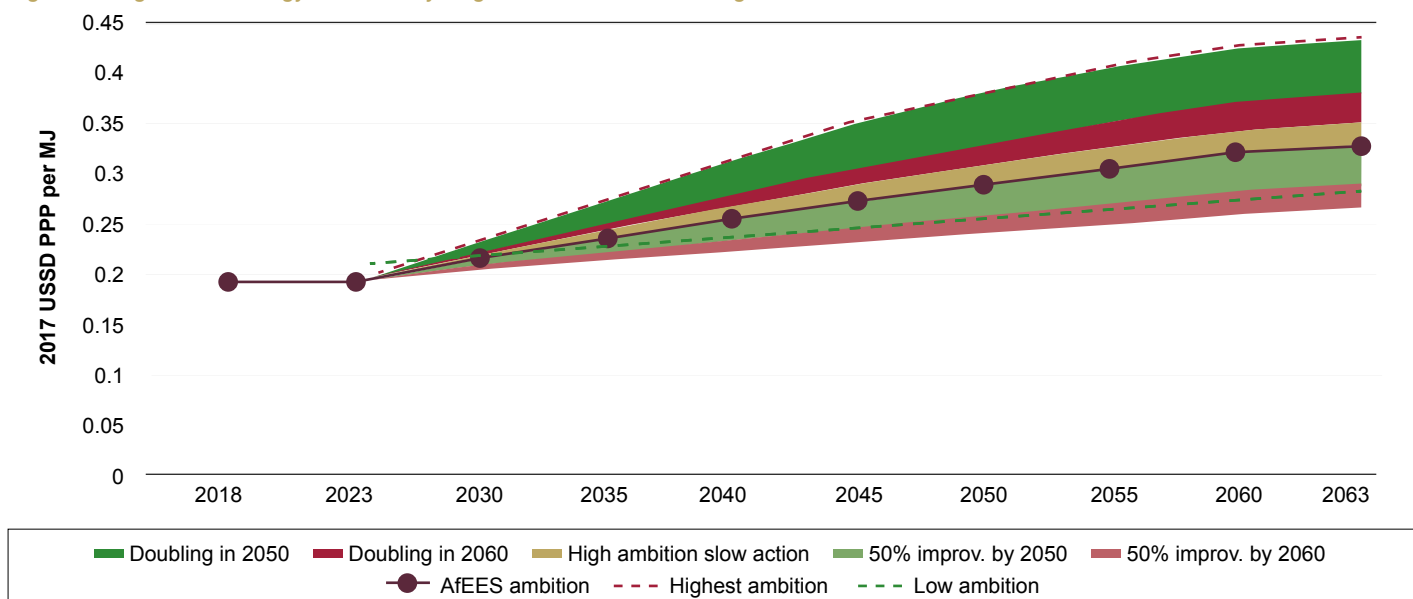
Source: Continental Master Plan 2024

The interconnection expansion scenarios, Regional and Continental, show that cross-border networks by 2030 will have connected the Maghreb Electricity Committee (COMELEC), Eastern Africa Power Pool (EAPP), Southern African Power Pool (SAPP), and Central Africa Power Pool (CAPP). The West African Power Pool (WAPP) will be connected to COMELEC, but CAPP will still not be connected to WAPP, and within the period until 2030, emphasis will be placed on in-country and intra-regional transmission lines. By 2040, the projected scenarios target to connect all five power pools to a common African grid and increase the capacity of the connections to Asia and Europe. This will create the infrastructure backbone on which the AfSEM will be based.

2.5.4 AFRICAN UNION ENERGY EFFICIENCY
STRATEGY AND ACTION PLAN SCENARIO ANALYSIS

AfEES is an integral component of the AU's energy strategic activities, including AfSEM and the CMP, whose objective is to establish a sustainable, efficient, and inclusive energy system that benefits both the environment and the economy, while ensuring universal access to energy. AfEES will facilitate the adoption of energy-efficient technologies and practices in the various economic sectors that comprise the industrial sector, electricity supply industry, appliances and devices including clean cooking solutions, buildings, transportation, and agriculture, up to 2063 (Figure 7).

Figure 7. High Level Energy Productivity target over the horizon of Agenda 2063



Source AfEES Report

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

The AfEES high-level target is a commitment to a resource-efficient economy that will steadily increase its energy productivity to reach \$0.33 per megajoule over the next 40 years. This clear shift from the stagnation observed over the past five years can be achieved with progressive changes leading to a 12% increase in efficiency by 2030, a 31% increase by 2040, a 50% increase by 2050, and a 70% increase by 2063, relative to 2018. It is considered that, since Africa has a vast untapped potential for energy efficiency improvements, the proposed trajectory is technically within reach, while being sufficiently ambitious in terms of timing for implementation.

2.5.5 AFRICAN CLEAN COOKING INITIATIVE

The AU is currently spearheading the African Clean Cooking Programme, aimed at addressing the clean cooking challenge in Africa. As part of the initiative, the AU recently published a report on the status of clean cooking in Africa, with concrete recommendations on how to address the challenge. The report *Sustainable Scaling: Meeting the Clean Cooking Challenge in Africa* provides a vital benchmark for understanding and addressing Africa's clean cooking challenge and has directly informed the development of the ETSAP. It emphasises the critical need to transition from traditional biomass-based cooking to modern and sustainable cooking technologies, which are essential for achieving both energy transition and socio-economic development goals across the continent.

Central to the report is the recognition that the adoption of clean cooking solutions offers significant benefits, not only in reducing greenhouse gas emissions but also in improving public health, gender equality, economic development, health, and climate resilience. Traditional cooking practices result in substantial negative externalities, including deforestation, indoor air pollution, and economic losses estimated at \$791.4 billion annually. Addressing these challenges is a priority to ensure that Africa's clean cooking transition contributes meaningfully to broader energy transition efforts.

The report underscores the importance of African leadership in driving the clean cooking agenda. It advocates for the establishment of an **AU-led Africa Clean Cooking Facility (AfCCF)**, which would serve as a continental platform to coordinate technical and financial support for Member States. This aligns with ETSAP's emphasis on building strong institutional frameworks and leveraging regional collaboration to address energy access challenges comprehensively.

A key insight from the report is the need for multi-fuel strategies tailored to Africa's diverse socio-cultural and economic contexts. It highlights the potential of renewable energy sources, such as solar, biogas, and electricity, alongside clean fuels like LPG, to meet varying cooking needs across urban, peri-urban, and rural areas. These strategies reflect the importance of balancing **affordability, resource availability, and cultural preferences**, principles that are also embedded in ETSAP's approach to energy transitions.

The report identifies critical barriers to progress, including fragmented policies, insufficient financing, and underdeveloped supply chains for clean cooking technologies. It highlights the need to integrate clean cooking into national energy planning, ensuring that it is not treated as a siloed issue but rather as a strategic component of comprehensive energy and economic strategies. This integration is echoed in ETSAP's holistic approach, which prioritises inclusive planning and cross-sectoral synergies to maximise impact.



Legend: Blue flame from a household biogas stove in a kitchen.

Financing mechanisms are another key focus of the report, emphasising the importance of leveraging diverse funding streams, such as carbon finance, green climate funds, and public-private partnerships, to support clean cooking transitions. These recommendations align with ETSAP's goal of mobilising innovative financing solutions to address the high upfront costs associated with clean energy technologies.

The report also stresses the role of infrastructure and technological innovation in accelerating clean cooking adoption. It highlights how improvements in electricity networks, digital infrastructure, and financial services can be leveraged to promote clean cooking solutions,

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

particularly in urban areas where electrification rates are higher. ETSAP integrates this perspective by emphasising the need to harness existing infrastructure developments to support energy transitions more broadly.

Inclusivity is a central theme of the report, which calls for targeted efforts to ensure that clean cooking transitions are equitable and just. This includes addressing gender disparities, prioritising vulnerable groups, and responding to socio-economic and cultural dynamics. These principles are deeply aligned with ETSAP's cross-cutting focus on social inclusion, gender equity, and poverty alleviation as key pillars of Africa's energy transition.

2.5.6 OTHER PROJECTIONS FOR THE DEVELOPMENT OF THE ENERGY SECTOR AND RELATED EMISSIONS

The IEA has developed two scenarios in the *Africa Energy Outlook (2022)*, presenting energy demand and carbon emissions projections in the STEPS and the APS²⁴. Table 11 presents the projected fuel demand, electricity generation, and CO₂ emissions from 2010 to 2050 under these scenarios. The projected electricity demand in the Continental Masterplan integration scenarios (full regional and full continental integration, as discussed in Section

2.4.1) reaches 1.7 Petawatt hours (PWh) in 2030, which is higher than the 1.3 PWh in the IEA APS scenario, and 3.4 PWh in 2040, higher than the estimated 2.6 PWh in the IEA APS scenario.

The projections presented by the IEA show that by 2050, 66% of generated electricity under STEPS could come from RES, while in APS this share could increase to 89%. Solar PV is the dominant RES technology, providing 23% of generation in 2050 in STEPS and 48% in APS, while wind contributes 13% in STEPS and 15% in APS, respectively. In the APS, new natural gas power still comes online in sub-Saharan Africa, as the continent's growing energy needs mean there is a degree of reliance on fossil fuels before a full transition to clean energy takes place. Besides generating power, natural gas plants also help stabilise the grid and support regional power networks, such as the West African Power Pool.

In the same APS scenario, while new natural gas power plants continue to be built in sub-Saharan Africa, there is limited growth in North Africa, as the Member States of that region are increasingly migrating towards more renewables to meet their energy demand in line with their long-term climate goals.

Table 11. IEA projections for the STEPS and APS scenarios 2010 to 2050

	SCENARIO	2010	2022	2030	2050
Oil Demand mb/d	STEPS	3.3	4	4.7	7.7
	APS	3.3	4	4.5	5.4
Natural Gas Demand (Billion cubic metres (Bcm))	STEPS	106	170	202	277
	APS	106	170	182	182
Coal Demand (Megaton of Coal Equivalent (Mtce))	STEPS	155	146	130	110
	APS	155	146	109	27
Electricity Generation (TWh)	STEPS	686	890	1203	2294
	APS	686	890	1327	3859
of which RES electricity (TWh)	STEPS	116	210	486	1505
	APS	116	210	711	3453
CO ₂ Emissions (Gt CO ₂)	STEPS	1168	1385	1468	1991
	APS	1168	1385	1328	1171

STEPS includes current policies. APS includes the NDC pledges.

Source: IEA World Energy Outlook 2023

²⁴ The STEPS provides an outlook for the development of the energy system based on the latest existing policies, including energy, climate and related industrial policies. The APS provides an outlook of the future of the energy system if all countries were to meet their announced targets, including the pledges in their latest Nationally Determined Contributions and national and regional net zero emissions pledges, on time and in full.

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

Outside the electricity sector, Africa's growing energy needs will continue to rely on fossil fuels for some time before fully switching to clean energy technologies. These fossil fuels include oil for transportation, LPG for cooking, and natural gas for industry.

In the STEPS scenario, the demand for oil in road transport is expected to increase by 15% by 2030 due to a growing number of vehicles. Except for two- and three-wheelers, the shift to electric vehicles is limited by **high upfront costs and unreliable electricity grids for charging infrastructure**. In the APS scenario, electric cars make up 5% of the market by 2030, helped by age limits imposed on imported vehicles that bring more second-hand electric cars into the African market.

LPG demand grows slowly without strong clean cooking policies and would need to double for the continent, and triple in sub-Saharan Africa, to achieve universal access to clean cooking by 2030.

African industries use various fuels but heavily depend on natural gas, especially for producing fertilisers, desalinating water, and in the steel and cement industries. While Africa's demand for oil and gas continues to grow, global trends are changing the outlook for new oil and gas projects, affecting both current and future producers. Africa currently produces 7 million barrels of crude oil per day, with about 40% of it being exported.

Oil production in Africa is expected to decline because there are few new oil discoveries, and these will not offset the decreasing output from existing fields. By the mid-2030s, Africa is projected to become a net importer of oil in the STEPS scenario, while in the APS scenario, oil production is anticipated to be 0.5 million barrels per day less than in STEPS by 2030. Many AU Member States depend on imports of refined oil products, but a new refinery in Nigeria, with a capacity of 650,000 barrels per day, will help meet the growing demand over the next decade.

At both continental and regional levels, it is opportune that oil and gas resources, both proven and potential, are available to AU Member States to satisfy local demands and markets, and to export any excess. The "clean fossil-based fuels" (natural gas and LPG) are needed for the next couple of decades as a transitional measure until renewable-based sources of energy are made widely available, reliable, and affordable.

There is significant potential for Africa in clean energy technologies and in the critical minerals needed for them. Some AU Member States are well-positioned to become major producers in this area. Currently, Africa accounts for 13% of global revenue from copper and battery metals, and this share could grow. Several countries are interested in attracting international investments to develop and process their mineral resources.

As the world prepares for a just and inclusive energy transition, African oil and gas producing nations have an opportunity to be proactive in a rapidly evolving global energy sector. Operating in higher-cost, higher-carbon emissions environments has become increasingly difficult in the face of mounting pressure from stakeholders and global institutions. Furthermore, as African economies look to industrialise to meet the needs of rapidly growing and urbanising populations in terms of locally fabricated goods and employment, a rise in energy demand could leave many countries facing energy supply challenges.

While these challenges are real, so are the opportunities. Specifically, African stakeholders have a significant opportunity to decarbonise existing production to maintain access to capital and customers. They also have the chance to leverage the energy transition to lead in the creation of renewable energy businesses that will help to meet the growing energy demand on the continent and create new revenue streams and jobs.

2.5.7 MISSION 300²⁵

Mission 300, spearheaded by the World Bank Group and the African Development Bank, aims to provide electricity access to 300 million people in Africa by 2030, addressing the continent's significant energy deficit. While primarily focused on electrification, this initiative intersects with the critical issue of clean cooking, a challenge affecting approximately 950 million Africans who rely on traditional biomass fuels such as firewood and charcoal.

2.5.8 AFRICAN GREEN HYDROGEN STRATEGY AND ACTION PLAN

The objective of the strategy is to ensure that all African Union Member States can proactively and actively participate in a green hydrogen economy as it develops globally. Its goals are to ensure that the continent is aware of the green hydrogen transition and can maximise its potential benefits for AU Member States, including the development of sustainable, resilient and secure energy systems that

25 <https://www.worldbank.org/en/news/feature/2024/09/19/five-ways-the-world-bank-will-achieve-mission-300>

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

reduce the environmental footprint and energy dependency on existing energy sources and carriers.

The strategy is based on six strategic pillars: green hydrogen financing, national and regional strategies, market formation, hydrogen infrastructure, technology absorption and transfer, and standards and regulations. These are complemented by two cross-cutting themes: human resource development, and regional and international cooperation. Together, these components support the growth of the sector, addressing all fundamental aspects from financing and infrastructure to capacity building and regulatory frameworks.

Overall, the African Green Hydrogen Strategy and Action Plan could leverage the power of cooperative policy and action to establish net zero economies on the continent. This step will be important in building universally accessible and resilient energy and manufacturing sectors.

2.5.9 THE AFRICAN GREEN MINERALS STRATEGY

The African Green Minerals Strategy (AGMS) represents a defining moment in the continent's journey toward sustainable industrialisation, energy security, inclusive growth and sustainable development. With Africa holding a significant share of the world's green minerals, including lithium, cobalt, nickel, rare earth elements, and platinum group metals, the continent stands at the crossroads of the global energy transition and digital transformation. This strategy provides a roadmap for harnessing Africa's mineral wealth to drive value addition at source, regional industrialisation, and climate resilience.

The AGMS recognises that Africa must move beyond raw mineral exports and build strong, integrated value chains that foster local beneficiation, job creation, and economic diversification. The strategy aligns with the Africa Mining Vision (AMV) by advocating for equitable and sustainable mineral resource management, ensuring that mineral wealth translates into broad-based socio-economic development.

2.6 GAP ANALYSIS

2.6.1 GAP ANALYSIS OVERVIEW

A comprehensive analysis using both PESTLE and SWOT frameworks was conducted to guide the development of the ETSAP and inform its high-level strategic

objectives and sector-specific interventions. These analyses address critical factors across continental, regional, national, and global levels, enabling ETSAP to align effectively with diverse external and internal dynamics.

The SWOT analysis provides a micro-level framework, evaluating ETSAP's internal strengths and weaknesses alongside external opportunities and threats. This dual focus helps to identify actionable insights specific to ETSAP's scope and execution, ensuring strategic alignment with internal capabilities and external realities.

The PESTLE analysis, on the other hand, focuses on macro-level factors, examining the political, economic, social, technological, legal, and environmental contexts that shape the broader landscape of Africa's energy transition. This external analysis identifies overarching trends, challenges, and opportunities that influence energy policies and market dynamics at a continental scale.

Using both PESTLE and SWOT analyses is critical for a holistic approach to strategy development. While the PESTLE analysis provides the macro-context to understand the external environment and trends shaping Africa's energy transition, the SWOT analysis dives deeper into the internal organisational factors and specific external conditions relevant to ETSAP's implementation. Together, these tools ensure a comprehensive understanding of the challenges and opportunities at both systemic and operational levels, enabling ETSAP to:

- Leverage strengths effectively to overcome weaknesses.
- Capitalise on opportunities while mitigating potential threats.
- Adapt to external macro-trends while addressing internal capacity and readiness.

This layered analysis, combining both external (PESTLE) and internal/external (SWOT) perspectives, ensures that ETSAP is not only responsive to the broader environment but also grounded in practical, actionable strategies. It should be highlighted that the full analyses are included in the Stocktaking Report (Annex 6.2) and a high-level summary is presented below.

2.6.2 SWOT ANALYSIS

The SWOT is analysed as it will influence the continental level directly with respect to the ETSAP and its implementation (Table 12).

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

	STRENGTHS	Abundant Natural Resources • Growing Regional Cooperation
	WEAKNESSES	Low Electrification • Weak Infrastructure • Financing Gaps
	OPPORTUNITIES	Renewable Potential • Green Minerals • Regional Markets
	THREATS	Climate Impacts • Political Instability • External Shocks

Table 12. SWOT Analysis

STRENGTHS	WEAKNESSES
- The continent is rich in abundant energy transition resources, including natural gas, solar, wind, hydro, geothermal, and biomass, as well as strategic minerals that can be used to manufacture green technologies. - There is already growing political will and initiatives aimed at transitioning to clean energy sources. - A drive to enhance regional integration is underway, starting at regional levels. - Continental and regional institutional arrangements exist and are aligned to support the integration agenda. - There is growing joint investment by regions in infrastructure projects that can deliver results. - Africa has a large market that can accommodate clean energy investments. - The large youthful population is a valuable resource for skills building and creating a knowledgeable market for adopting new technologies. - The AfCFTA has opened opportunities for energy, including electricity and appliance trade, across the continent.	- Infrastructure for sharing clean energy resources across the continent is limited and needs enhancement, especially for trade and renewable energy deployment. - Capacity and skills remain limited for the adoption of energy transition initiatives. - Securing financing is a major hindrance to adopting ET technologies and making the necessary investments. - The market remains locked into traditional and fossil fuels, and this inertia may hinder progress. - Energy transition may lead to job losses and mothballing of fossil fuel-based assets, delaying decisions to migrate to clean energy. - Policy convergence, regulatory frameworks, and standards are still fragmented across the continent and require harmonisation for efficient cross-border investments, markets, and trade. - Awareness of the costs and benefits of energy transition technologies and initiatives remains low. - Africa lacks strong data for effective planning to inform investment and budget allocation. - High poverty and lack of awareness regarding modern energy solutions, coupled with resistance to change among much of the rural population. - Low levels of technological know-how and limited access to modern technologies. - Administrative burden and slow decision-making processes hinder timely implementation.
THREATS	OPPORTUNITIES
- Political instability may prevent some Member States from participating meaningfully in energy transition initiatives. - Weak economic performance in many countries may limit their capacity to contribute to and benefit from energy transition efforts. - Dependence on imported clean energy technologies may lead to high landed costs and limit affordability. - Attracting meaningful participation from technology companies may require incentives and subsidies that many African countries have not yet implemented. - Budget allocations for energy transition initiatives remain low, affecting project viability. - Overdependence on foreign investors may result in externally dictated market dynamics, with investors choosing where and with whom to work. - High levels of corruption in some countries may deter investment and affect implementation	- The falling costs of renewable energy technologies, such as solar, wind, and battery storage, and their increasing applicability across energy subsectors. - New discoveries of natural gas reserves and emerging market opportunities. - Availability of targeted financing and investment flows for clean energy transition. - Global policy convergence around the need to accelerate energy transition. - Active participation of African Member States in the Paris Agreement offers opportunities to attract conditional financing. - Ongoing energy transition initiatives at national, regional, and continental levels provide valuable lessons and examples. - Established continental initiatives such as AfSEM, CMP, and AfEES are now well defined and positioned to deliver on energy transition goals. - Access to support from international resource organisations committed to helping Africa advance energy transition. - Dedicated financing from the AfDB for ETSAP and related initiatives

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.6.3 PESTEL ANALYSIS

A PESTEL analysis is a strategic tool used to evaluate the broad macro-environmental factors that influence a strategy. It includes Political, Economic, Sociocultural, Technological, Environmental, and Legal factors. Understanding these external influences is essential for strategic planning, as they often shape the opportunities and threats that determine the feasibility and success of a strategy.

The PESTEL analysis below considers both international and African perspectives relevant to the ETSAP context (Table 13).

P	POLITICAL
E	ECONOMIC
S	SOCIAL
T	TECHNOLOGICAL
E	ENVIRONMENTAL
L	LEGAL

Table 13. Overview of PESTEL Analysis

POLITICAL/POLICY	ECONOMIC
- Vulnerability of African Member States and widespread civil strife in certain nations and regions. - Absence of a collective approach to national resource development and exports. - National sovereignty in dealings with global partners and investors. - Tension between national and regional or continental political decision-making frameworks, limiting the African Union's influence on Member States to implement or prioritise AU strategies.	- Conflicting national versus regional or continental investment decisions. - Member States are affected by currency exchange rates and inflation, making foreign-sourced technologies and services less affordable. - Weak credibility of some Member States as investment destinations. - Local economies remain heavily dependent on fossil fuels for production, export, and consumption. - Fluctuations in global energy prices, especially oil and gas, significantly impact the performance of local economies. - Internationally dictated prices for African strategic minerals and natural resources. - High debt levels in some countries hinder their capacity to borrow for investment. - Economic disparities among AU Member States limit cooperation in joint investments.
TECHNOLOGY	SOCIAL
- Declining global costs of renewable energy technologies. - Lack of widespread comparative performance and cost-benefit analyses to support consumer decision-making. - Low national budget allocations for research and development related to energy transition technologies. - Limited modernisation of infrastructure. - Emerging cybersecurity threats that pose risks to modern infrastructure and electricity systems. - Weak infrastructure maintenance culture. - Limited use of indigenous or unconventional technologies. - Low public awareness of new technologies.	- Persistent gender disparities that restrict support to a key segment of the population. - Rapid population growth and urbanisation outpacing electrification, thereby limiting improvements in access rates. - A high proportion of the population lives in rural areas, where affordability and awareness are lower. - Limited cultural acceptance of new technologies.
ENVIRONMENTAL	LEGAL
- The need to address energy, water, and land nexus issues to avoid conflicts over natural resource use. - Integration of climate change, emissions, biodiversity, and waste management considerations for a holistic environmental approach.	- Enforcement of national, regional, continental, and international compliance frameworks. - Impacts of global trade agreements on pricing and tariffs for energy transition technologies. - Evolving environmental, social, and governance accountability, alongside labour legislation. - Implementation of international data protection and cybersecurity laws.

Source: Authors' own creation

CURRENT SITUATION, PROJECTION, GAPS AND BARRIERS

2.6.4 SUMMARY OF SWOT AND PESTEL ANALYSES

In summary, the following gaps are identified as areas of focus for the ETSAP:

- Lack of harmonised policy, legal, regulatory, and standards frameworks across the continent. While frameworks may exist at national and regional levels, these need to be extended and aligned at the continental level.
- National and regional infrastructure may support some degree of energy trade, but expansion is needed at continental level. Even where infrastructure exists, modernisation, efficiency, and harmonisation require enhancement.
- Awareness and capacity need to be strengthened to support understanding of energy transition and the ability to implement ETSAP. Capacity building can also benefit from partnerships with international organisations already supporting the continent.
- Cross-sectoral nexus and cross-cutting issues must be addressed.
- Partnerships and technology transfer challenges need

to be tackled across global, continental, regional, and public-private levels.

- Leveraging Africa's competitive advantage, particularly in natural resources, presents an opportunity for the continent to leapfrog its socio-economic development while achieving energy transition goals.
- Advancing with technological innovations and taking advantage of falling technology costs.
- Building on existing energy transition initiatives on the continent and globally.
- Emphasising integrated planning across sectors, and alignment with global agreements on energy, such as climate change and ESG principles, while ensuring compliance with international standards.

These gaps have informed the formulation of the Pillars that define the scope of the ETSAP. Based on this foundation, Strategic Objectives have been developed for each subsector, guiding the corresponding Action Plans.



Legend: Wind turbines in Djibouti – harnessing wind power for clean energy.

SECTION 3

**STRATEGY:
A PATHWAY
TO AFRICA'S
ENERGY
TRANSITION**



STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

3. STRATEGY: A PATHWAY TO AFRICA'S
ENERGY TRANSITION

3.1 INTRODUCTION

Achieving a sustainable energy future in Africa necessitates a transformative approach rooted in a clear, actionable, and logical framework. The “theory of change” underpinning the ETSAP serves as a strategic pathway that bridges the present realities of Africa’s energy sector with its long-term vision. This chapter provides a comprehensive roadmap that outlines the causal connections between targeted interventions, intermediate outcomes, and ultimate objectives, ensuring that each step of the energy transition is deliberate and impactful.

The theory of change framework applied here emphasises the interconnectedness of various sectors, stakeholders, and enabling factors, acknowledging that Africa’s energy transition is more than a technical challenge. It requires addressing deeply entrenched systemic barriers, including socio-economic inequalities, institutional capacity gaps, and limited access to financing. At the heart of this framework lies the understanding that a just and inclusive transition can simultaneously enhance energy access, drive economic growth, and build climate resilience across the continent.

By mapping out a series of intermediate milestones, such as the widespread adoption of renewable energy technologies, substantial reductions in greenhouse gas emissions, and the achievement of universal energy access, this chapter translates high-level aspirations into measurable steps. These milestones are aligned with the overarching goals of the African Union’s Agenda 2063, the United Nations Sustainable Development Goals, and the Paris Agreement. Importantly, the chapter also integrates assumptions and risks, ensuring that the pathway remains adaptive to evolving circumstances and challenges.

Through this structured and integrated approach, the ETSAP provides a robust framework for stakeholders to mobilise resources, align policies, and monitor progress. The ensuing sections detail these milestones, and the foundational enablers required to achieve them, creating a clear and actionable vision for Africa’s energy future.

3.2 VISION AND MISSION AND HIGH-LEVEL
TARGET

The Vision, Mission, ETSAP time frame and High-Level Target are specified below.

VISION 2063	A just, inclusive transition to a sustainable, low-carbon energy system in Africa.
MISSION	Harness Africa’s natural resources to develop low-carbon energy systems, ensuring universal energy access for socio-economic transformation.
TIMEFRAME 2025 – 2063	Short Term: 2025 – 2030
	Medium Term: 2031 – 2040
	Long Term: 2041 – 2063 Flexible, adaptive to new data and technologies; with regular review.
HIGH-LEVEL TARGET	Net-zero greenhouse gas emissions by 2063, supporting development, energy security, climate resilience, and universal clean energy access.

Vision: A just and inclusive transition to a sustainable and low-carbon energy system in Africa by 2063.

Mission: To explore and develop low-carbon energy systems, utilising Africa’s natural resources towards universal energy access for sustainable socio-economic transformation.

Timeframe: The ETSAP is structured to span from 2025 to 2063, segmented into three implementation phases: *Short Term (2025 to 2030)*, *Medium Term (2031 to 2040)*, and *Long Term (2041 to 2063)*. While the end dates for each phase set clear deadlines by which all AU Member States should complete specific actions, nations are encouraged to initiate activities as soon as they are ready, according to their unique circumstances. This flexible approach ensures that the strategy can adapt to the dynamic global energy landscape, incorporating new data and technological breakthroughs, especially during the critical period from 2041 onwards. Regular assessments and revisions will be integral to maintaining the strategy’s relevance and effectiveness in achieving its long-term goals.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

High-level target: To achieve a **net-zero green-house gas emissions economy by 2063**. This target reflects Africa's commitment to a sustainable future that drives development, enhances energy security, and strengthens climate resilience, while maintaining universal access to clean energy services. It serves as the unifying vision for the continent's energy transition.

3.3 PILLARS OF THE STRATEGY

PILLAR 1 UNIVERSAL & SECURE
ACCESS TO CLEAN ENERGY

100% electrification with reliable, affordable power

Renewables and low-carbon fuels

Climate-resilient grids, interconnections and off-grid systems

Clean cooking with sustainable fuel chains

Pillar 1: Universal and Secure Access to Clean Energy

Africa's energy future must be built on solutions that are simultaneously clean, inclusive, and secure. This pillar therefore combines the accelerated deployment of renewable resources, such as solar, wind, hydro, and geothermal, and other low-carbon fuels such as natural gas, with explicit security-of-supply measures to guarantee universal, uninterrupted, affordable power for every household, enterprise, and social service. Universal access now encompasses reliability targets, including SAIDI and SAIFI reductions, climate-resilient grid expansion, and diversified cross-border interconnections to lower vulnerability to local shocks. Off-grid and mini-grid systems are designed with storage and islanding capabilities, while clean-cooking initiatives incorporate sustainable biofuel supply chains to stabilise fuel availability. By integrating access ambitions with robust energy-security protocols, this pillar ensures that the continent's path towards 100% electrification and modern energy services is underpinned by a system that is dependable, affordable, and resilient to climatic, geopolitical, and market disruptions.

PILLAR 2 ENERGY EFFICIENCY

70% improvement in energy productivity by 2063

Efficiency in industry, transport, buildings, agriculture

Advanced technologies, enforceable standards, best practices

Pillar 2: Energy Efficiency

Efficiency is fundamental to achieving a sustainable energy transition. This pillar emphasises improving energy productivity across sectors such as industry, transport, buildings, and agriculture, aiming for a 70% improvement by 2063. By promoting advanced technologies, enforceable standards, and best practices, energy efficiency reduces waste, lowers costs, and supports economic growth while minimising environmental impacts.

PILLAR 3 CARBON MANAGEMENT
FOR FOSSIL ENERGY

Reduce methane emission and gas flaring

Deploy CCUS (carbon capture, utilisation and storage)

Responsible fossil use aligned with climate goals

Pillar 3: Carbon Management for Fossil Derived Energy

Managing fossil-derived energy is essential for a balanced transition. This pillar addresses aspects such as methane emissions, gas flaring, and the responsible use of fossil fuels through policies and technologies that reduce their environmental impact. It promotes carbon capture, utilisation and storage (CCUS), alongside targeted decarbonisation efforts in the oil and gas sector. These strategies ensure the continued viability of necessary fossil energy resources during the transition, while supporting Africa's long-term low-carbon trajectory and climate commitments.

PILLAR 4 POLICY &
REGULATORY HARMONISATION

Align national, regional and continental energy policies

Blend top-down continental goals with bottom-up local needs.

Facilitate coordination among neighbouring states

Pillar 4: Policy and Regulatory Harmonisation

A cohesive energy strategy requires aligned policies and regulations across the continent. This pillar emphasises the integration of national energy policies with regional frameworks developed by the RECs, and broader continental strategies. A combined top-down and bottom-up approach will guide Member States in adopting and tailoring continental strategies, while regional frameworks

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

facilitate coordination and harmonisation among neighbouring countries. This ensures efficient energy transitions that reflect both local priorities and regional synergies under common continental goals.

PILLAR 5 INNOVATION, TECHNOLOGY & HUMAN CAPACITY

Invest in clean energy R&D & local manufacturing

Build skills through education and training

Support innovation ecosystems for Africa's leadership

Pillar 5: Innovation, Technology and Human Capacity

This pillar focuses on fostering innovation, technology development, and capacity building to drive Africa's sustainable energy transition. It emphasises the development and transfer of clean energy technologies, the establishment of local manufacturing industries for energy solutions, and skills development programmes to build a skilled workforce. By investing in research, innovation ecosystems, and human capital, this pillar ensures long-term sustainability, economic growth, and Africa's leadership in the global energy transition.

PILLAR 6 SUSTAINABLE ECONOMIC DEVELOPMENT & PROSPERITY

Link energy access to industry and job creation

Grow mining, manufacturing, agriculture, services

Promote SMEs, local value chains and financing solutions

Drive inclusive, low-carbon economic growth

Pillar 6: Sustainable Economic Development, Industrialisation & Prosperity

Achieving a just and inclusive energy transition requires targeted efforts to maximise economic opportunities throughout the continent. This pillar focuses on leveraging Africa's extensive natural resources, innovative energy solutions, and expanding markets to foster robust growth in key industries, particularly those that benefit from expanded energy access, such as heavy industry, mining, manufacturing, agriculture, and services, bridging the traditional industrial sector with industries without smokestacks. Central to this approach is ensuring that newly created value chains remain equitable, transpar-

ent, and capable of stimulating local economies in ways that uplift communities and build regional resilience.

Under this pillar, strategic investments in infrastructure, job creation, and value addition will intertwine with energy development to promote shared prosperity. By prioritising local content, workforce training, and the establishment of vibrant SMEs, the continent can accelerate the emergence of new industries while maintaining the competitiveness of existing sectors. Beyond direct economic gains, the pillar also encourages collaboration with financial institutions, leveraging innovative financing mechanisms to spur entrepreneur-driven solutions and attract private-sector participation. By intertwining industrial policy with sustainable energy deployment, the pillar maximises job creation, enhances export potential, and embeds Africa more deeply in global clean-tech supply networks. In synergy with the other pillars, this approach ensures that Africa's transition to a low-carbon energy system delivers tangible benefits for households, businesses, and economies, ultimately enabling inclusive and sustainable socio-economic transformation consistent with Africa's long-term vision for 2063.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

3.4 ETSAP SCOPE

The scope outlines what is covered by the ETSAP in relation to the relevant subsectors, namely the following energy subsectors:

- Electricity sector.
- Transport sector.
- Buildings sector.
- Industry sector.
- Oil and Gas sector.
- Agriculture sector.
- Clean Cooking.

The strategic objectives in Table 14 were then formulated along these pre-determined subsectors, as shown in Figure 1.

Table 14. Subsector Strategic Objectives for the ETSAP

SUB SECTOR	STRATEGIC OBJECTIVE
 Electricity subsector	Strengthen and modernise energy infrastructure and systems in the electricity supply sector
 Transport	Advance Sustainable Transport Solutions
 Buildings	Elevate Building Standards for Energy
 Industry	Foster Sustainable and transformative Industrial Development
 Oil and Gas	Optimize Oil and Gas Sector Transition
 Agriculture	Increase the Use of Modern and Efficient Energy Technologies in Agriculture
 Clean Cooking	Promote the Adoption of Clean Cooking Technologies

Source: Authors' own creation

In the context of the strategic objectives, strategic interventions were derived and translated into Action Plans, based on the issues, gaps, challenges, and opportunities identified for each subsector. The Action Plans define what is to be implemented at continental, regional, and national levels in the context of the ETSAP.

Horizontal Action Plans are also included, encompassing activities such as collective support to AU Member States to develop their DDPs, creating a comprehensive data and information system for undertaking energy transition on the continent while avoiding dependence on international sources, and capacity building for relevant continental, regional, and national stakeholders to develop and implement energy transition strategies. Relevant cross-cutting and cross-sectoral issues related to the implementation of the ETSAP are included.

An Implementation Plan outlining guiding principles, institutional roles, and resource mobilisation²⁶ for implementation of ETSAP is provided. As part of this Implementation Plan, a monitoring and evaluation framework has been developed to track the achievement of the ETSAP's strategic objectives and interventions. A communication plan accompanies the ETSAP to support its dissemination to various stakeholders, including decision-makers, implementers, consumers, funders, and investors.

3.5 SYNERGIES WITH PAST-ADOPTED AU STRATEGIES

The ETSAP builds upon a solid foundation of existing AU strategies and frameworks. These strategies address critical components of Africa's energy sector, and the ETSAP leverages them to avoid duplication, ensure alignment, and provide a cohesive approach (Table 15). For detailed guidance on sector-specific interventions, stakeholders are encouraged to refer to the documents listed in Annex 6.3.

26 General details on financing sources and some opportunities for ET financing are included in D2.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

Table 15. Synergies with Past-adopted AU Strategies

NO	NAME OF STRATEGY / FRAMEWORK	SYNERGIES WITH ETSAP
1	AfSEM	- Facilitates regional power market integration towards a continental market. - Supports cross-border trade of energy, including clean energy. - Drives policy frameworks for electricity markets.
2	CMP	- Provides infrastructure planning for regional interconnections and centralised generation. - Identifies priority transmission projects. - Supports scaling up renewable energy deployment. - The Specific Support Studies of the CMP provide actionable insights for multiple technologies to be included in the electricity mix²⁷.
3	AfEES	- Establishes energy efficiency goals. - Promotes adoption of Minimum Energy Performance Standards (MEPS). - Outlines sector specific energy efficiency interventions in industry, buildings, agriculture and transport.
4	African Hydrogen Strategy	- Explores green hydrogen as a transitional and future fuel. - Supports industrial decarbonisation. - Promotes hydrogen for energy storage and clean transport.
5	Guidelines for MEPS, Labelling, and Eco-Design	- Provides a framework for setting benchmarks for energy-efficient appliances. - Promotes MEPS and Energy Labels adoption across Member States. - Monitoring and Evaluation Framework for adoption of MEPS in Africa.
6	Market Surveillance Strategy and Action Plan	- Ensures compliance with MEPS and energy labelling frameworks. - Protects consumers from low-efficiency products. - Strengthens regional market monitoring systems.
7	Report on Existing Test Laboratories, Procedures, and Facilities and Roadmap for Strategic Test Laboratories	- Identifies gaps in energy efficiency testing infrastructure. - Guides capacity building for testing compliance. - Presents a roadmap for the deployment of continental-level laboratory networks.
8	Strategy and Roadmap for Establishing a Market for Energy Efficient Appliances in Africa	- Facilitates market development for energy-efficient products under the AfCFTA. - Supports demand creation for efficient appliances. - Promotes regional manufacturing opportunities.
9	Guide for Policymakers on Developing Quality Assurance Frameworks for Off-Grid Appliances	- Ensures reliability of off-grid energy solutions. - Promotes the development and adoption of testing protocols for quality assurance. - Supports rural and peri-urban energy access.
10	Guidelines and Strategies for the Reduction of Technical Losses of Transmission and Distribution Lines	- Targets efficiency improvements in the transmission and distribution grids. - Provides specific guidelines for the reduction.
11	Strategy and Roadmap for Evolving Distribution Systems to Smart Distribution Grids	- Facilitates the integration of renewable energy and storage into modern grid systems. - Develops smart technologies for distribution grid optimisation. - Facilitates the integration of previously off-grid systems to the main grid.
12	AU Digital Agriculture Strategy (DAS) and Implementation Plan (2024–2030)	- Also promotes energy solutions for modernising agriculture. - Aligns with the energy-water-food nexus for rural development.
13	African Green Minerals Strategy	- Rich untapped critical mineral and clean energy resources. - Linkages of green minerals, abundant RE with aspired transformative industrialisation. - Balancing the social inclusivity dimension and governance.

Source: Authors' own creation

27 <https://cmpmwanga.nepad.org/SSS>

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

3.6 INTERMEDIATE OUTCOMES
(MILESTONES)

Intermediate outcomes serve as crucial waypoints on Africa's path towards achieving its energy transition goals, linking short- and medium-term actions with long-term aspirations. These milestones focus on sectoral transformation, socio-economic development, and environmental sustainability, emphasising qualitative progress over prescriptive quantitative measures where consensus is challenging. The outcomes align with existing frameworks, such as the CMP, AfSEM and AfEES, while supporting the overarching target of achieving a net zero greenhouse gas emissions economy by 2063.

3.6.1 TRANSITION TOWARD A CLEAN ENERGY
MIX WITH ACCELERATED INFRASTRUCTURE
DEVELOPMENT

TRANSITION TO A CLEAN ENERGY MIX

Renewables dominate new capacity

Reliable, climate-resilient electricity grids

Renewable energy in transport (biofuels, e-mobility)

Mini-grids for off-grid communities

Africa's energy transition requires both the expansion of renewable energy infrastructure and the gradual phase-out of high-carbon fuels to achieve a 100 percent clean energy mix by 2063. The intermediate outcome by 2030 is to ensure that renewable energy dominates new energy capacity additions, while simultaneously integrating clean energy into key sectors such as electricity, transport, industry and agriculture. Strengthening transmission and distribution infrastructure is critical to accommodate the rising share of renewable energy sources and ensure grid reliability.

Milestones:

- Renewable energy technologies widely adopted, guided by the CMP projections for installed capacity and technology mix.
- Enhanced resilience and reliability of electricity grids to support the growing share of variable renewable energy.
- Increased use of renewable energy in transport systems, including biofuels and electric mobility solutions.
- Expanded deployment of renewable energy-based mini-grids to serve off-grid communities.

3.6.2 ESTABLISHMENT OF A FUNCTIONING
CONTINENTAL ENERGY MARKET

FUNCTIONING CONTINENTAL ENERGY MARKET

Harmonised cross-border trade rules

Stronger regional interconnections and energy trade

Building on AfSEM, an intermediate outcome is the operationalisation of a harmonised, functioning continental energy market by 2030. This market will enhance cross-border trade, attract investment, and optimise resource use.

Milestones:

- Harmonised regulations and operational rules established for cross-border electricity trade.
- Enhanced regional interconnections and energy trade agreements to support AfSEM objectives.

3.6.3 INCREASED ENERGY EFFICIENCY ACROSS
ALL SECTORS

INCREASED ENERGY EFFICIENCY

Energy efficiency policies in all AU Member States

12% boost in energy productivity

Standards for appliances, buildings, transport, industry

Energy efficiency measures are integral to reducing demand growth and enhancing energy productivity. By 2030, all AU Member States should have implemented energy efficiency policies aligned with AfEES recommendations, driving sectoral transformations in electricity, transport, buildings, agriculture and industry, ultimately leading to a 12 percent increase in energy productivity.

Milestones:

- Implementation of energy efficiency standards and regulations, including MEPS for appliances and equipment.
- Adoption of energy-efficient practices and technologies in industrial, building and transport sectors.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

3.6.4 STRENGTHENED GOVERNANCE AND INSTITUTIONAL CAPACITY

STRENGTHENED GOVERNANCE AND INSTITUTIONS

National energy transition strategies
and DDPs in all AU states

Stronger regional power pools and regulators

Coordinated planning, R&D, and operations

A robust institutional and governance framework is essential to support Africa's energy transition. By 2030, AU Member States should have established national energy transition frameworks and DDPs aligned with the ETSAP, fostering coherence across regional and continental efforts.

Milestones:

- Development of national energy transition strategies or DDPs in all AU Member States.
- Institutional strengthening of regional power pools and regulatory bodies to support coordinated energy planning, energy transition strategies, research and development, and operations.

3.6.5 INCLUSIVE ECONOMIC AND SOCIAL DEVELOPMENT

INCLUSIVE ECONOMIC AND SOCIAL DEVELOPMENT

Gender equity in decision-making

Youth and community training in clean energy

Inclusive participation in energy transition

Energy transition must be inclusive, ensuring that no one is left behind. By 2030, the intermediate outcome is to mainstream gender equity, youth empowerment, and community participation in energy transition policies and programmes.

Milestones:

- Institutionalised mechanisms for gender equity in energy decision-making processes.
- Expanded training and capacity-building programmes to empower youth and local communities in clean energy technologies.

3.6.6 SUSTAINABLE DEVELOPMENT OF THE OIL AND GAS INDUSTRY

SUSTAINABLE OIL AND GAS DEVELOPMENT

Adoption of ESG standards in oil and gas

Gas strategies as a transitional fuel

Alignment with global decarbonisation goals

Africa's oil and gas sector will undergo a strategic transition, ensuring compliance with international ESG standards. By 2030, the sector will align with global decarbonisation goals while leveraging natural gas as a transitional fuel.

Milestones:

- Adoption of ESG frameworks by national oil companies and international oil companies operating in Africa.
- Development of regional strategies for natural gas utilisation to support the energy transition.

3.7 KEY ASSUMPTIONS

The ETSAP's design is based on several key assumptions that reflect the current and projected realities of Africa's energy transition. These assumptions highlight the conditions that must hold true to facilitate the desired outcomes:

1. Political Commitment and Policy Coherence

- Assumption: Member States remain committed to implementing energy transition policies and aligning them with regional and continental programmes and frameworks such as the **AfSEM**, the **CMP**, and the **AfEES**, along with relevant strategies like the Hydrogen and Bioenergy strategies, as well as programmes like the clean cooking programme.
- Justification: Political will is critical for harmonised energy policy implementation, enabling regional integration and resource mobilisation.
- Example: The success of regional power pools relies on Member States's cooperation and adherence to shared market rules.

2. Economic Growth and Investment Stability

- Assumption: Africa will experience relatively steady economic growth, supported by increasingly stable macroeconomic conditions and increasing private and public investments in clean energy infrastructure.
- Justification: Economic stability is essential to attract long-term financing and ensure a return on energy investments.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

- Example: Investments in renewable energy projects will depend on predictable economic policies and investor-friendly environments.

3. Technological Advancements and Affordability

- Assumption: Advances in clean energy technologies will continue to lower costs, making renewable energy solutions and energy-efficient systems more accessible and affordable.
- Justification: Falling technology costs are critical for enabling large-scale adoption of renewables, clean cooking solutions, and energy-efficient appliances.
- Example: Declining costs of solar PV and battery storage can drive rural electrification also.

4. Availability of Financing Mechanisms

- Assumption: Adequate financing, including international climate finance, public-private partnerships, and other innovative financing mechanisms, will be accessible to fund energy transition projects.
- Justification: The energy transition requires significant capital investments, particularly for infrastructure, technology deployment, and capacity building.
- Example: The operationalisation of green bonds, carbon markets, and blended finance platforms will support project financing.

5. Institutional Capacity and Governance

- Assumption: National and regional institutions will have the technical and administrative capacities to plan, implement, and monitor energy transition initiatives.
- Justification: Strong governance frameworks ensure accountability, transparency, and efficiency in delivering energy transition outcomes.
- Example: Capacity-building programmes and institutional reforms will address existing governance weaknesses and bottlenecks.

6. Social Acceptance and Inclusive Participation

- Assumption: Communities, businesses, and key stakeholders will support the energy transition, recognizing its socio-economic and environmental benefits.
- Justification: Successful transitions require public buy-in, particularly from vulnerable groups affected by energy access gaps or fossil fuel phaseouts.
- Example: Programmes promoting awareness, job creation, and equitable benefit distribution will foster acceptance.

3.8 RISKS AND RISK MITIGATION STRATEGIES

The successful implementation of the ETSAP faces several risks that could hinder progress if not proactively addressed. These risks span governance, policy, financial, operational, environmental, and socio-economic dimensions, reflecting the complexity of Africa's energy transition. While some risks stem from external factors, such as geopolitical instability and supply chain disruptions, others are linked to internal challenges, including institutional capacity, regulatory gaps, and financial constraints.

The "Likelihood" column represents the probability of a risk materialising, categorised as *low*, *medium*, or *high* based on current trends and expert analysis. The "Impact" column indicates the potential consequences of each risk on the success of the ETSAP, also classified as *low*, *medium*, or *high*. Table 16 below categorises these risks and outlines corresponding mitigation strategies to ensure resilience, scalability, and sustainability in achieving the ETSAP's objectives.

Table 16. Risks and Risk Mitigation Strategies

NO	RISK	LIKELIHOOD	IMPACT	RISK MITIGATION APPROACH
Governance Risks				
1	Lack of political commitment to energy transition.	Medium	High	Strengthen high-level political engagement through AU frameworks. Promote intergovernmental cooperation and commitments on energy transition.
2	Inadequate policy and regulatory frameworks supporting energy transition.	Medium	High	Align national policies with continental strategies such as AfSEM, AfEES and CMP. Develop regulatory reforms that encourage clean energy investment.
3	Weak institutional capacity for implementation and monitoring.	Medium	High	Invest in capacity-building programmes, and provide technical assistance for project planning, implementation and monitoring.
4	Limited stakeholder engagement and public acceptance of energy transition initiatives.	Low	Medium	Implement awareness campaigns, participatory planning, and inclusive policies that engage women, youth and communities.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

5	Data gaps and inadequate monitoring frameworks for tracking progress.	Medium	Medium	Develop robust M&E systems. Enhance data collection and reporting frameworks.
6	Geopolitical instability and regional conflicts disrupting energy infrastructure projects.	Medium	High	Enhance regional cooperation for conflict resolution. Build resilient infrastructure with contingency plans for disruptions.
Financial Risks				
1	Insufficient access to financing for clean energy projects.	High	High	Promote blended finance mechanisms, green bonds, and climate finance. De-risk investments via partnerships and guarantees.
2	Limited Financial Viability of Energy Utilities and Off-Takers	High	High	Strengthen utility financial management, introduce cost-reflective tariffs while ensuring affordability through targeted subsidies, and develop guarantees and risk-sharing mechanisms to improve off-taker credibility and attract investment.
Operational Risks				
1	Technological barriers and slow innovation adoption.	Medium	Medium	Enhance R&D investment, facilitate technology transfer, and develop local manufacturing for clean energy technologies.
2	Infrastructure gaps and slow pace of grid Modernisation.	High	High	Prioritise grid expansion and modernisation. Support decentralised systems including mini-grids and solar home solutions.
3	High dependency on imported clean energy technologies and critical materials.	High	Medium	Promote local manufacturing and regional supply chain development. Foster partnerships for efficient resource utilisation.
4	Inadequate energy skills and workforce development to support the energy transition.	Medium	High	Invest in education, technical training, and capacity-building programmes to equip the workforce with clean energy skills.
5	Supply Chain Disruptions for Renewable Energy Technologies	Medium	High	Develop regional manufacturing capacity for renewable energy components, promote intra-Africa trade of critical materials, and reduce dependency on imports by fostering local industrialisation.
Environmental, Social & Economic Risks				
1	Resistance to energy transition due to socio-economic impacts, particularly in fossil-dependent regions.	Medium	High	Adopt just transition policies, create jobs in clean energy sectors, and engage communities through social dialogue.
2	Climate change impacts on energy infrastructure, such as extreme weather events.	Medium	High	Integrate climate resilience into energy planning and investments. Develop contingency and disaster recovery frameworks.
3	Energy Affordability and Social Acceptance Risks	Medium	High	Design equitable pricing mechanisms, introduce targeted subsidies for vulnerable populations, and implement extensive public awareness campaigns to ensure social buy-in for clean energy transitions.

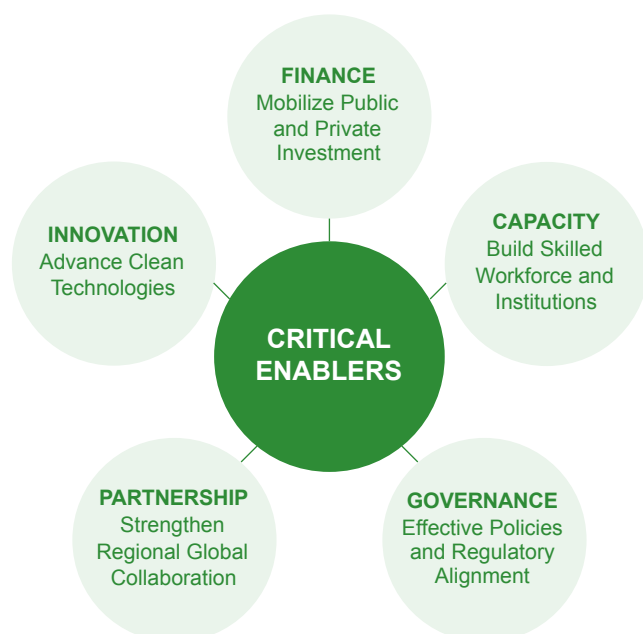
Source: Authors' own creation

MAIN RISKS		MITIGATIONS	
Financial	Limited Investment Flows	→	Innovative Financing and Blended Capital
Political	Policy Misalignment	→	Harmonized Frameworks
Technical	Grid Instability, Technology Gaps	→	Resilient Networks, Research and Development
Environmental	Climate Shocks	→	Adaption and Resilience Planning

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

3.9 CRITICAL ENABLERS

The following enablers are identified as essential conditions that must be actively pursued to address the assumptions and mitigate identified risks. These enablers are organized based on the key themes emerging from the SWOT and PESTEL analyses.



1. Policy and Regulatory Frameworks

Effective policies and regulatory systems are critical for creating an enabling environment for Africa's energy transition.

- **Harmonisation of Policies:** Aligning national policies with regional and continental strategies, such as Af-SEM and CMP, ensures coherence, eliminates policy fragmentation, and facilitates regional energy markets.
- **Incentives for Investment:** Developing supportive policies including fiscal policies, auction-based mechanisms, feed-in premiums (FiPs), and contracts for difference (CfDs), and risk guarantees, will attract private sector investments in renewables and energy efficiency.
- **Transparent Governance:** Strengthening governance institutions and adopting transparent frameworks will improve trust and accountability, while addressing weaknesses identified in the SWOT analysis.

2. Financing and Investment Mobilisation

The energy transition requires substantial financial resources to build infrastructure, scale technologies, and support innovation. Key enablers include:

- **Access to Climate Finance:** Mobilizing international funds from mechanisms like the Green Climate Fund

and carbon credits can unlock capital for clean energy projects.

- **Innovative Financial Tools:** Promoting blended finance, green bonds, and public-private partnerships to reduce investment risks and scale up infrastructure deployment.
- **Regional Resource Pooling:** Strengthening regional cooperation to finance cross-border projects and optimise resource use across countries.

3. Technological Innovation and Local Manufacturing

Innovation is vital for addressing Africa's unique energy challenges and positioning the continent as a leader in clean energy solutions.

- **Support for R&D:** Establishing innovation ecosystems, strategic laboratories, and research programmes will advance clean energy technologies.
- **Local Manufacturing:** Developing regional supply chains for solar panels, wind turbines, batteries, and energy-efficient appliances will reduce reliance on imports and create jobs.
- **Technology Transfer:** Facilitating partnerships for technology transfer between Africa and global innovators will accelerate adoption.

4. Infrastructure Development

Reliable and modern infrastructure is foundational to achieving energy access and clean energy goals.

- **Grid Expansion and Modernisation:** Strengthening transmission and distribution networks, including smart grid technologies, will enable the integration of renewable energy at scale.
- **Off-Grid Solutions:** Supporting decentralised systems such as mini-grids, solar home systems, and clean cooking technologies will address rural and underserved populations.
- **Regional Interconnections:** Prioritising infrastructure projects under the CMP will enhance cross-border energy trade and energy security.

5. Human Capital and Capacity Building

A skilled workforce and strong institutions are critical for implementing energy transition strategies.

- **Skills Development:** Investing in education, training, and capacity-building programmes to prepare Africa's workforce for clean energy technologies and innovations.
- **Institutional Strengthening:** Enhancing the technical and administrative capacities of national and regional energy agencies to implement, monitor, and adapt transition strategies.

STRATEGY: A PATHWAY TO AFRICA'S ENERGY TRANSITION

- **Knowledge Sharing:** Promoting platforms for knowledge exchange, best practices, and peer learning among African Member States.

6. Social Inclusion and Public Engagement

Ensuring the energy transition is just, inclusive, and people-centred is essential for long-term success.

- **Community Engagement:** Promoting participation of local communities, women, and youth in decision-making processes.
- **Equitable Access:** Addressing energy affordability and ensuring that vulnerable groups benefit from transition efforts.
- **Awareness and Advocacy:** Raising public awareness of the benefits of clean energy and energy efficiency to foster acceptance and active participation.

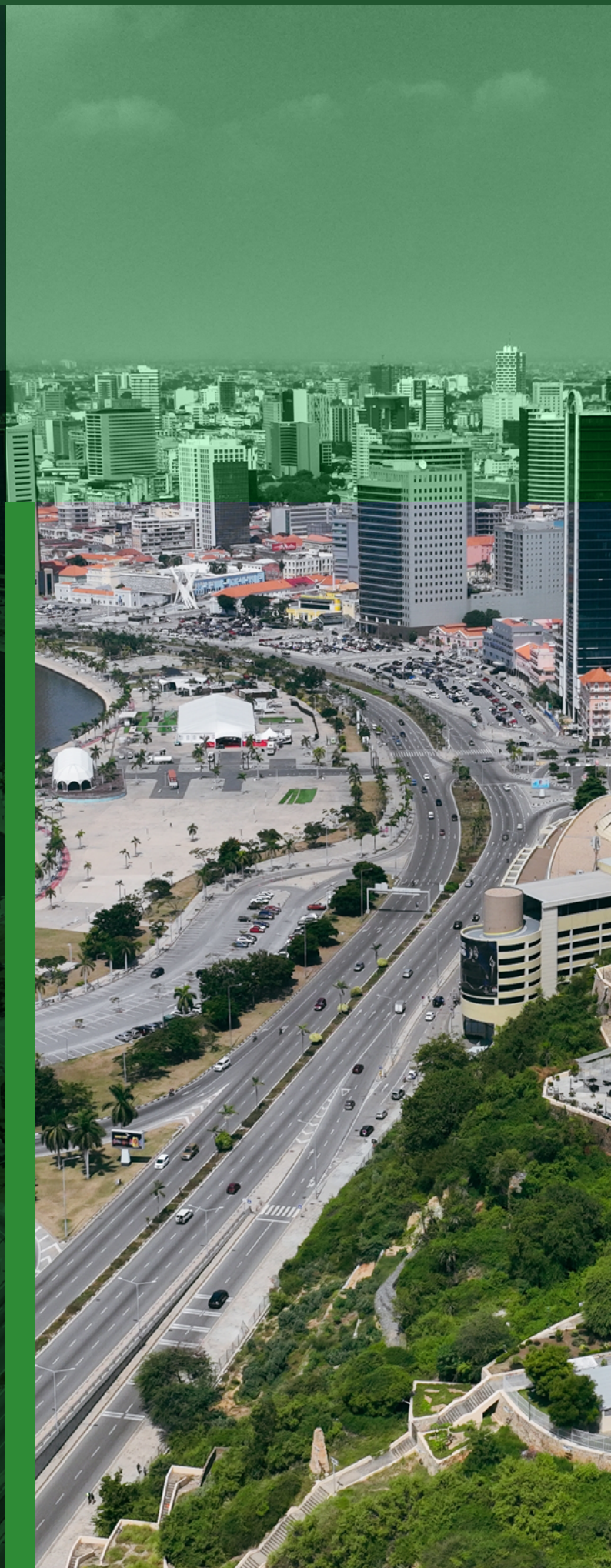
7. Environmental and Climate Resilience

Energy transition strategies must align with climate goals while addressing Africa's environmental vulnerabilities.

- **Sustainable Resource Use:** Ensuring the development of renewables and critical minerals is environmentally sustainable and compliant with ESG standards.
- **Climate Adaptation:** Enhancing energy infrastructure resilience to climate impacts including extreme weather events.
- **Carbon Management:** Promoting CCUS to decarbonise fossil-derived energy.

SECTION 4

ACTION PLAN



4. ACTION PLAN

4.1 INTRODUCTION AND METHODOLOGICAL APPROACH

This chapter sets out the detailed Action Plan supporting the African Union Energy Transition Strategy. It begins with an explanation of the conceptual framework adopted and the key terms employed, ensuring clarity for all stakeholders. Central to the approach is a Theory of Change perspective, which helps illustrate how each intervention can lead to tangible improvements, from foundational activities to measurable outcomes. By laying out these definitions and the structure used to present them, readers can readily understand how each element contributes to the broader aims of the Strategy.

Underpinning this chapter is a Theory of Change model, which identifies critical drivers of transformation in each sector and maps how they are expected to generate positive shifts over time. At its heart, this model shows the logical flow from everyday tasks and immediate results to meaningful, longer-term benefits for African societies. By clarifying these pathways, the Strategy ensures that every action has a clear rationale and that the sum of these actions leads to the intended impact.

Each sector is divided into *Strategic Interventions*²⁸, which are high-level focus areas deemed necessary for achieving the Pillars set out in the Strategy. Underpinning each Strategic Intervention is a concise “Pathway to Change”, illustrating how the intervention fits into the broader Theory of Change and informing the Actions that lead to the intended results. Within each *Strategic Intervention*, specific *Actions* translate overarching intentions into more precise undertakings. These actions are, in turn, broken down into *Activities*, which are well-defined tasks such as policy reviews, training programmes, infrastructure upgrades, data collection efforts, and so forth. Activities form the operational backbone of the Action Plan, laying out the day-to-day work that puts each action into effect.

Two categories of results help measure the success of these actions.

- *Expected Outputs* capture the immediate products or services that stem from the activities implemented per action, such as guidelines developed, capacity-building sessions conducted, or new data systems opera-

tionalised. These outputs are the direct, tangible evidence of progress.

- *Expected Outcomes* represent the desired and expected results in the form of changes or benefits that the outputs catalyse. Examples include greater institutional capacity for energy planning, enhanced regulatory frameworks, or improved knowledge among practitioners and policymakers.

To track whether the Strategy is on course, the outcomes are paired with *chosen Key Performance Indicators (KPIs)*. These indicators may be quantitative or qualitative. By reviewing KPI data at regular intervals, implementing agencies and stakeholders can confirm that actions are bearing fruit, make course corrections if required, and maintain accountability for results.

In the pages ahead, each Strategic Intervention is presented in a structured format that highlights the actions to be taken, the activities involved, the parties responsible for implementation, and the timeframe envisaged. Alongside each action, the expected outputs and outcomes are presented, together with respective KPIs. This format makes it easier to see how everyday tasks build toward the overarching objectives of each sector. It also ensures that governments, development partners, and other collaborators have a clear reference point when coordinating, monitoring, and assessing the Strategy’s progress.

The overarching aim is to tie immediate efforts to meaningful change, guided by the logic of the Theory of Change and measured through recognisable milestones. Through this framework, the African Union Energy Transition Strategy moves from broad vision to on-the-ground reality, backed by transparent goals, structured planning, and an evidence-based plan of action.

4.2 ELECTRICITY

Originating from the situational analysis, the relevant strategy is to provide solutions for implementation of decarbonisation technical measures that will accelerate deployment of renewable energy sources (RES), supported by policy, legal, regulatory, standards, and R&D frameworks. Deployment of RES will be facilitated by the declining and competitive costs, particularly for solar and wind technologies. Between 2010 and 2023, there was a 90% decrease in the levelised cost of electricity (LCOE) for solar PV and a 63% decrease in LCOE for wind²⁹.

²⁸ Emanating from the Strategic Objectives in Section 3.4

²⁹ IRENA. Renewable Power Generation Costs in 2023, 2024

ACTION PLAN

Therefore, the strategic objective for the sector is to **Strengthen and Modernise Electricity Infrastructure and Systems in the Electricity Supply Sector.**

ELECTRICITY



Expand Renewables

Modernize Grids

Strengthen Storage

For the electricity generation, the objective relates to the integrated deployment of the various clean energy sources, both grid and off-grid systems, to meet demand, reduce losses, and address intermittence of renewable energy. Distributed generation systems such as mini-grids, off-grid systems, floating solar PV, rooftop solar, emerging small-scale wind systems, and battery storage systems are included, as they can address electricity access issues and reduce network losses by avoiding long transmission and distribution line losses. The intermittence of renewable energy will be addressed by deployment of Advanced Energy Storage Systems, including various types of batteries, pumped hydro, and other emerging storage technologies³⁰.

The strengthening and modernisation of the network infrastructure relates to upgrading the electricity grid and systems to handle renewable integration and improve

energy supply and distribution efficiency. The digitisation of the network systems adds to the modernisation aspects of both the transmission and distribution systems. The success of these technical measures will require conducive market reforms, supported by R&D.

On the enabling environment, opening up the markets for direct supplies from generators to consumers, avoiding the single-buyer bottlenecks, will entice potential investors to explore expansion of renewable generation and supply in the continent. This will require attraction and protection of the investors, legally, to realise their return on investments. Special legal and regulatory frameworks and cost-reflective pricing will be needed for both cross-border trade and deployment of mini-grids and other off-grid systems.

The formulated Strategic Interventions around this strategic objective are thus framed as follows:

- **Strategic Intervention 1: Accelerate the deployment of RE**
- **Strategic Intervention 2: Foster and Accelerate development of resilient Transmission and Distribution networks to support deployment and trade of clean and RE power**

The Action Plans developed for these selected strategic interventions are presented in the tables below (Table 17-18) motivated by the Pathways to Change as provided.



Legend: Shopping mall rooftop solar installation – clean energy in buildings

30 Winfield, Mark, Shahab Shokrzadeh, and Adam Jones. "Energy policy regime change and advanced energy storage: A comparative analysis." *Energy Policy* 115 (2018): 572-583.

ACTION PLAN

Table 17. Action Plan for Strategic Intervention 1: Accelerate the deployment of RE

The adequacy of electricity supply from clean energy sources is still to be met, and the CMP has modelled grid-scale RE supply (including other supply sources) that will be needed to meet Africa's demand up to 2040. The assumption is that investments will be realised in accordance with the defined timelines in the CMP, and that needs to be monitored in case policy frameworks require adjustments. CMP has scenario projections for grid electrification, but not for isolated, mini-grid, and off-grid systems, and that opportunity is not well defined. The extent to which these supply options can augment the grid electricity is needed. Both grid-scale and isolated RE systems will best be supported by market reforms that will be attractive to all forms of investors, including the private sector. There is also significant demand for clean energy arising from the extensive deployment of data centres globally, which may also be implemented on the continent in due course. Research and development (R&D) is needed to ensure adoption by the AU MS of the most recent RE technologies, their applications, and impacts on achieving universal access to RE for all consumers.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIME FRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Set a M&E System at AFREC to track deployment of RE and natural gas for electricity generation both grid and off-grid/mini-grids	Continental	AFREC	Africa Union Development Agency- New Partnership for Africa's Development (AUDA-NEPAD), Power Pools, Power Utilities, Ministries in charge of energy	Short term on going	- Standardised monitoring framework - Updated energy database - Periodic analytical policy briefs	Enhanced evidence-based planning and timely policy revision for RE and natural gas deployment	- M&E system established for informing adoption of clean energy supply systems and RE(Yes/No) - Number of AU MS reporting data - Policy briefs published (Yes/No)
2	Promotion and Demonstration of utility scale ESS and for rural electrification	Continental	AFREC	AUDA-NEPAD, Power Pools, Power Utilities, Ministries in charge of energy and Industry	Short Term	- Operational pilot ESS projects - Feasibility reports and policy recommendations - Stakeholder workshops on lessons learned	Accelerated uptake of cost-effective storage solutions, expanding reliable rural electrification and attracting private sector interest	- Number of pilot sites (count) - ESS feasibility report produced (Yes/No) - Policy recommendation document (Yes/No)
3	Harmonisation of policy/legal/regulatory frameworks for RE mini-grids/ microgrids/ other off-grid systems	Continental	African Forum for Utility Regulators (AFUR)	Regional and national energy regulators and Ministries in charge of energy, Power utilities	Short Term	- Consolidated policy/regulatory toolkit and guidelines - Workshop materials and outcomes	Greater alignment of mini-grid/off grid policies, increase in private and public investment in mini grid/off-grid RE across the continent	- Number of Member States adapting harmonised policy/ legal/regulatory framework by AU MS - Toolkit finalised (Yes/No) - Workshops conducted (count)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIME FRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Promote the uptake of renewable energy for grid and distributed generation systems	1. Establish demonstration sites featuring integrated SSDG. 2. Assess performance and regulatory alignment 3. Conduct outreach to local Communities, commerce and industry 4. Publish a market study to encourage replication	National	Ministries in charge of Energy	Power utilities, Commercial and industry players	Short-medium time	• Operational SSDG demonstration sites • Performance data and regulatory recommendations • Market assessment report	Wider adoption of distributed RE, strengthened policy support for small-scale projects, and expanded opportunities for local industry and other consumers	• Existence of performance/ regulatory report (Yes/No) • Market assessment completed (Yes/ No)
5	Support the development of the Off-grid Sector in Africa (mini grids/ microgrids and solar home systems)	1. Review current mini-grid and microgrid policies across AU Member States 2. Develop standardised tariff, pricing, and licensing models 3. Support Capacity Building for Energy Regulators on mini-grid tariff, pricing and licensing guidelines 4. Provide in country support to MS on adoption of adaptation and domestication of the framework at national levels	Continental	AFREC	Regional Centres for Renewable Energy and Energy Efficiency (RCREEEs), Ministries of Energy	Short- Medium Term	• Approved uniform Tariff/pricing model for Africa • Model licensing regulations	Enhanced uptake of off-grid electrification solutions in Africa	• Number of MS regulators trained • Number of MS adopting the standardised tariff, pricing, and licensing models • Population with access to electricity (%)
6	R&D of new and emerging clean /RE technologies	1. Conduct scans of advancing RE technologies (e.g., battery, tidal/ wave, modern biomass) 2. Pilot emerging solutions with research institutions 3. Document cost-benefit and scalability potential 4. Disseminate findings to AU Member States, investors, and industry	Continental	AFREC/AU -DIE	Regional Power Pools, regional regulators, RCREEEs, Ministries in charge of energy	Short-Long term	• Comprehensive R&D studies • Pilot projects initiated • Published cost-benefit analyses	Improved knowledge base on innovative RE options suited to African contexts, guiding policy decisions and investment in diverse clean energy solutions	Uptake of Innovative and emerging RE technologies by AU MS

Source: Authors' own creation

ACTION PLAN

Table 18. Action Plan for Strategic Intervention 2: Foster and Accelerate development of resilient Transmission and Distribution networks to support deployment and trade of clean and RE power

Pathway to Change: The transmission network is not adequate to interconnect all African power pool grids, and this limits trade of electricity across the continent. Inter-regional, cross-border transmission, and in-country transmission lines are still needed, although emphasis has been placed on those networks in the past. Distribution networks also need upgrading in terms of coverage and modernisation as smart grids. Some of the networks are old and need replacement. The CMP, together with the objectives of the AfSEM, has been developed, but it will be important to track implementation so that required adjustments to investments and policy frameworks can be made for effective achievement of the targets. Research and development (R&D) focusing on efficient network systems is needed to achieve resilient transmission and distribution systems.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Set a M&E system for tracking network expansion and loss reduction at AFREC	1. Develop a standardised data collection methodology for network expansion and T&D losses 2. Conduct regular surveys on CMP network project and Other Projects implementation 3. Integrate collected data into AFREC's Energy Information System 4. Analyse trends and produce periodic reports for policy adjustments	Continental	AFREC	AUDA-NEPAD, African Union Commission (Dept. of Infrastructure & Energy), Power Pools, Regional Regulators, MS Power Utilities	Short to Long Term	- Standardised data collection framework - Updated T&D database under AFREC's system - Periodic progress reports for policymakers	Improved insight into network expansion and losses, supporting timely policy interventions and informing ETSAP updates.	M&E system for national, regional and continental network expansion established (Yes/No)
2	Support AU MS to calculate, monitor regulate and Report T&D losses	1. Conduct training on T&D loss assessment and reporting. 2. Develop a standardised T&D loss reporting mechanism. 3. Facilitate data-sharing protocols via national energy focal points with AFREC. 4. Provide ongoing technical support for data collection, loss validation and reporting	Continental	AFREC	AUDA-NEPAD, Power Pools, Regional Regulators, Power Utilities Ministries in charge of Energy	Short to Long Term	- Training materials and workshops on loss assessment, validation, Reporting - T&D loss reporting guidelines - Data exchange protocols for MS with AFREC	Enhanced capacity in monitoring and reducing T&D losses through consistent measurement and reporting across Member States, Power Pools and at Continental level.	% of AU MS reporting T&D Loss data - Updated Network loss reporting and database at AFREC

ACTION PLAN

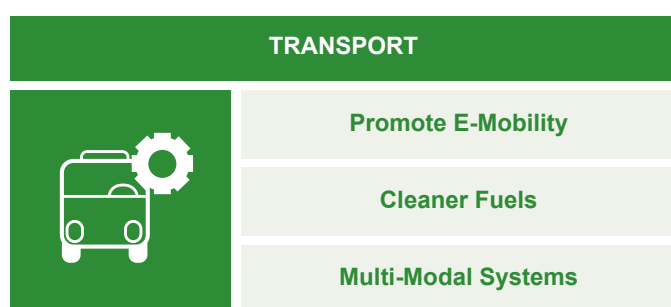
ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Support MS to enforce standards for Smart distribution networks	1. Review existing smart grid standards and identify gaps 2. Develop or adapt standards for various voltage levels 3. Conduct capacity-building workshops for regulators and utilities 4. Provide technical assistance for domestication of standards.	National	Ministries in charge of Energy	Power Utilities National Electricity Regulators Regional Power Pools, And regulators	Short Term (ongoing)	• Consolidated and harmonised smart grid standards • Workshop materials and training sessions from capacity building workshops • Implementation guidelines for MS	Upgraded and modernised distribution networks through adoption of robust smart grid standards, minimizing losses and enhancing network reliability.	Number of AU-MS with enforced harmonised smart distribution grids standards
4	Promote sustainable cross-border network Standards and pricing	1. Review existing cross-border codes and tariff structures. 2. Provide technical assistance to align cross-border standards, codes, and tariff methodologies. 3. Organise regional stakeholder workshops. 4. Monitor uptake of harmonised cross border standards and tariffs and evaluate outcomes.	Regional	Regional Regulators	African Forum for Utility Regulators, Power Pools, AUDA NEPAD Ministries in charge of Energy	Short Term	• Harmonised cross-border codes and tariff methodologies reported • Developed and adopted cross border standards, codes, tariffs • Workshop proceedings and Reports • Policy briefs on improved network and electricity trade practices	Enhanced regional power trade, network performance, and cost-effective electricity exchange through standardised cross-border protocols.	• Number of Regions with enforced cross border standards/ codes/tariffs • Number of training workshops held
5	R&D for new and emerging network efficient technologies	1. Identify priority research areas (e.g., digitalisation, cybersecurity, advanced transmission super conductors etc). 2. Collaborate with research institutions and utilities for pilot projects 3. Perform cost-benefit analyses of T&D innovations. 4. Disseminate findings to MS, regulators, and investors.	Continental	AFREC/AU-DIE	African Forum for Utility Regulators, Association of Power Utilities in Africa (APUA), Power Pools, RCREES, Ministries in charge of Energy National Utilities	Short to Long Term	R&D studies on advanced T&D solutions Pilot projects undertaken and outcomes Policy briefs or guidelines for knowledge dissemination and technology adoption.	Faster adoption of innovative, resilient network technologies across Africa, reducing technical and commercial losses and improving reliability of supply.	T&D innovative technology database established

Source: Authors' own creation

ACTION PLAN

4.3 TRANSPORT

For the ETSAP, there is a need for a strategic reorientation towards more sustainable and resilient, energy-efficient consumption in the transport subsectors of road, rail, aviation, and navigation. The most fuel-intensive subsector is the road subsector, and this has been the main target for decarbonisation within the transport sector in the ETSAP. Options for decarbonisation are also realised in the promotion of Sustainable Aviation Fuels³¹, and other possibilities for deployment of hydrogen and other cleaner fuels in maritime transport. Actions to enhance these efforts have been considered.



Legend: Aerial view of highway interchange – improved transport connectivity.

Whilst there have been country-specific initiatives relating to electric mobility within the continent, these have been fragmented, and there is limited evidence to suggest a strategic fit at regional and continental level. However, institutions such as the Africa E-Mobility Alliance (AfEMA) connect stakeholders in electric mobility ecosystems across Africa. AfEMA actively drives awareness, activates markets, and catalyses advocacy efforts to transform the transportation landscape into a zero-emission sector. The aspiration is that by 2030, 30% of all vehicles sold in Africa

will be Zero Emission Vehicles (ZEVs). Their work informs and accelerates this transition. The integrated planning of electrification solutions in rural and peri-urban areas can support transport through solar and wind-powered charging stations for electric two-wheelers, three-wheelers, and small electric cars, thus supporting mobility in even areas without robust grid infrastructure. The planning for such electrification solutions will require cross-sectoral planning with the electricity subsector.

The development of smart transportation systems is crucial. Leveraging digital technologies for better traffic management and improved efficiency of transport operations can significantly reduce energy consumption and traffic congestion. Real-time data collection and analytics can optimise routes, reduce idling times, and enhance the overall efficiency of public and freight transport systems.

The formalisation and support for the informal transport sector also hold substantial potential. By integrating informal transport modes into official urban planning and providing support for energy-efficient upgrades, governments can improve the quality and sustainability of public transport services. This approach not only enhances the livelihoods of those working within the informal transport sector, but also increases access to clean, efficient, and affordable transport for the urban poor.

Integrating urban planning and the development of transport infrastructures with industrial and commercial hubs, urban planners can significantly reduce travel distances, thereby minimising energy consumption and enhancing overall efficiency. This approach not only facilitates smoother and faster movement of goods and people but also supports economic growth by connecting labour markets more effectively with industrial centres. Effective integration can lead to substantial reductions in urban congestion, lower carbon emissions, and pollutants, and a streamlined approach to urban development, making cities more sustainable and smarter.

At regional level, fostering regional collaboration to harmonise vehicle, fuel, and driving standards and policies across AU Member States can accelerate the adoption of clean transportation technologies. Such cooperation can facilitate the cross-border trade of energy-efficient vehicles and renewable energy technologies, creating a larger, more competitive market.

31 The Continental Strategy to support development and deployment of SAF and other Low Carbon Aviation Fuels (LCAF) in Africa; The revised Abuja Aviation Safety Targets

ACTION PLAN

Whilst some traction is realised in some of these energy transition solutions, there are some constraints that need to be resolved, including the current high cost of NEVs, inadequate charging infrastructure, and the lack of robust policy frameworks to support such a shift. However, there is an acknowledged potential for growth in this area, especially with the global push towards reducing carbon emissions and enhancing energy efficiency in transportation. Africa is also endowed with the much-needed strategic minerals that are used in the manufacturing of the batteries for EVs.

To that end, the devised strategic objective for the transport sector under this energy transition is presented as: **to “Advance Sustainable Transport Solutions in Africa”**. The objective targets the transformation of the transportation sector with a focus on reducing emissions, enhancing public transit, and integrating clean alternative

transport energy sources and fuels that include electric, hydrogen, ammonia fuel, biofuel solutions, and other emerging alternatives.

The related strategic interventions to address sustainable energy solutions and the decarbonisation effort in the transport sector are:

- **Strategic Intervention 1. Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector**
- **Strategic Intervention 2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.**

The Action Plans developed for the selected strategic interventions are presented in Tables 19-20 below.



Legend: Elevated rail line through Nairobi National Park – modern rail infrastructure.

ACTION PLAN

Table 19. Action Plan for Strategic Intervention 1. Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector.

Pathway to Change: Africa's transport sector relies heavily on imported fossil fuels, contributing to environmental concerns and economic vulnerabilities across road, rail, maritime, and aviation. Transitioning to clean energy alternatives, including NEVs, green methanol, hydrogen, ammonia, and other sustainable fuels, presents a viable route towards low-carbon growth in the transport sector. By leveraging Africa's ample renewable resources, this strategic intervention aims to create a clean fuels market, along with supply chain infrastructure and systems to cater for the transport subsectors, resulting in infrastructure upgrades, investment incentives, and policy alignment that will drive down emissions, bolster energy security, and foster industrial development throughout the continent.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Scoping, pilot/proof of concept, and potential roll-out of NEVs	National	Ministries in charge of Energy, Transport, and Treasury	Automobile and fuel companies, AFREC, International Council on Clean Transportation (ICCT)	Short-Medium Term	- Feasibility reports with clear NEV adoption recommendations - Pilot demonstration data - Stakeholder feedback sessions	Evidence-based strategies for scaling NEV adoption, shaping national policies and investment frameworks	- Number of feasibility studies (Yes/No) - Number of pilot programmes implemented - Publication of cost-benefit analysis (Yes/No) - Number of AU MS with NEV Adoption strategies
2	Introduction of harmonised standards and related regulations for NEVs to guide importation and production	Continental	AFREC	AFSEC, ARSO, Ministries in charge of Transport/Energy, NEV associations, charging infrastructure operators, RECs	Short-Medium Term	- Draft standards and guidelines - Workshop proceedings and stakeholder input - Finalised NEV standards for circulation	Higher-quality NEVs in African markets, ensuring consumer trust, safety, and environmental protection, while encouraging local production	Established continental NEV Market standards (Yes / No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Promote use of NEVs through incentives and subsidies	1. Conduct market assessments to identify consumer barriers and demand factor 2. Develop policy frameworks for tax incentives, subsidies, and low-interest financing options 3. Launch public awareness campaigns on NEV benefits and available incentives	National	Ministries in charge of Energy	Ministry of Transport, automobile/fuel companies, AFREC, academic institutions, development partners	Short-Medium Term	• Market assessment report • Policy proposals for incentives and subsidies • Outreach and promotional materials	Accelerated NEV adoption through consumer-friendly policies, reducing reliance on fossil fuels and lowering emissions	• Completion of market assessment (Yes/No) • Incentive policy established (Yes/No) • Newly registered NEVs per year)
4	Align Transport and Energy policies and infrastructure development to accommodate the NEV market	1. Develop an integrated plan for NEV introduction, including charging infrastructure requirements 2. Conduct stakeholder engagement sessions (government, private sector, civil society) 3. Identify financing mechanisms for infrastructure deployment	National	Ministries in charge of Energy	Ministries in charge of Transport, Automobile/fuel companies, AFREC, African Union Commission (AUC), RECs,	Medium-Long Term	• Integrated NEV policy and infrastructure plan • Stakeholder consultation reports • Financial mechanisms to support charging infrastructure	A well-coordinated NEV ecosystem with suitable infrastructure, regulatory support, and cross-sector synergy, boosting confidence in NEV investments	• Number of AU MS with published NEV and Electricity investment Plan
5	Decarbonize maritime transport, focusing on green methanol and emerging alternative fuels	1. Assess feasibility of green methanol supply chains for shipping 2. Identify pilot maritime routes and ports for demonstration projects 3. Create guidelines for technology adoption and bunkering infrastructure 4. Facilitate partnerships among shipping companies, port authorities, and fuel suppliers	Regional	African Union Commission's Department of Infrastructure and Energy (AUC-DIE)	Ministries in charge of Transport (+Maritime Authorities), Maritime regulators, shipping companies, AFREC, development partners	Short-Medium Term	• Feasibility studies on green methanol in maritime • Pilot route selection and implementation • Infrastructure/ bunkering guidelines"	Reduced maritime emissions through adoption of cleaner fuels, encouraging industry-wide shift and laying groundwork for broader implementation	• Potential GHG reduction from maritime sector • Investment Plan for supply chains and market
6	Promote SAF	1. Research feedstock availability for various types of SAF (bio-based, synthetic, etc.) 2. Develop policy incentives to encourage SAF adoption by African airlines 3. Collaborate with international aviation authorities for standard alignment 4. Launch pilot SAF initiatives with selected carriers	Continental	AUC-DIE	Ministry in charge of Transport (Civil Aviation Authorities), Airlines, fuel suppliers, R&D institutions, development partners	Medium-Long Term	• Feedstock research papers • Policy framework for SAF incentives • Pilot SAF flights in partner airlines • Stakeholder workshop reports"	Steady decarbonisation of aviation through SAF, reducing reliance on conventional jet fuels and aligning Africa with global sustainability targets	• % SAF Uptake in Aviation Industry.

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
7	Modernize rail networks with emphasis on hydrogen locomotives	National	Ministries in charge of Transport (Rail Authorities)	Railway operators, hydrogen technology suppliers, financial institutions AUC/AFREC	Medium-Long Term	- Comparative feasibility studies - Pilot demonstration of hydrogen locomotives - Infrastructure guidelines for hydrogen refuelling	Adoption potential in the railways transportation for both passenger and freight	- Feasibility studies completed (Yes/ No) - Number of hydrogen locomotive pilots - Guidelines for hydrogen infrastructure published (Yes/ No)

Source: Authors' own creation

Table 20. Action Plan for Strategic Intervention 2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.

Pathway to Change: The transport sector's inefficiencies stem from outdated practices and fragmented regulatory frameworks. This intervention aims to optimise fuel use and energy demand through harmonised policies, coordinated planning, and common standards, implemented at both national and regional levels. Starting with bottom-up approaches in Member States, and scaling through continental harmonisation, the pathway will reduce fuel consumption, lower emissions, and foster resilient and efficient transportation systems, while creating the institutional frameworks necessary for long-term energy sustainability.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Promote integrated land-use, energy, and transport planning to reduce travel demand and plan for energy infrastructure and services	National	Ministries in charge of Energy,	Ministries in charge of Transport, Land use planning, Environment Automobile Automotive and fuel companies. African Association for Public Transport (UATP); the Africa Transport Policy Programme (SSATP); ICCT.	Short-Medium Term	- Comprehensive baseline reports - Integrated planning frameworks - Pilot project proposals	Reduced travel demand and optimized energy consumption through coordinated land-use and transport, laying groundwork for more sustainable infrastructure investments	- Assessments completed (Yes/ No) - Integrated framework approved (Yes/No) - Number of pilot projects launched

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
2	Introduction of smart transportation systems and technologies	1. Identify and evaluate relevant smart transport technologies (e.g., intelligent traffic systems, digital ticketing) suited to African contexts 2. Conduct pilot deployments in select urban areas and monitor performance 3. Establish guidelines for scalability and integration with existing transport networks	National	Ministries in charge of Energy	Ministries in charge of Transport, Land Use Planning, Environment, Automotive and Fuel Companies, UATP, SSATP, ICCT	Short-Medium Term	• Technology feasibility studies • Pilot deployment reports • Guidelines for smart transport scalability	Reduced congestion, lower emissions, and improved transport efficiency through the adoption of smart technologies tailored to regional needs	• Evidence of emission or congestion reduction (Yes/No)
3	Regulated vehicle importation and informal transport sector	1. Review existing vehicle import regulations, focusing on emission standards and fuel efficiency 2. Incorporate non-motorised transport (NMT) and informal transport providers into policy frameworks 3. Propose phased regulation updates for older/high-emission vehicles	National	Ministries in charge of Transport	Ministries in charge of Energy, Environment, Customs, Automotive and Fuel Companies, UATP, SSATP	Short-Long Term	• Regulatory review report • Revised policy guidelines on NMT and informal transport • Phased plan for regulating imports and high-emission vehicles	Lower overall energy demand, minimized pollution from transport fleets, and safer, more inclusive mobility options	• Revise vehicle/importation guidelines approved (Yes/No)
4	Harmonise standards, regulations and policies across AU Member States to accelerate adoption of clean transportation technologies	1. Identify gaps in existing vehicle, infrastructure, and fuel standards across MS 2. Draft harmonised standards in collaboration with AFSEC/ ARSO 3. Conduct stakeholder consultations at continental and regional levels 4. Publish final standards and monitor initial implementation	National	Ministries in charge of Energy, Environment	Ministries in charge of Transport, National and Regional Standards Bodies Automotive and Fuel Companies, SSATP	Short-Long Term	• Comparative study on standards • Draft harmonised policy/technical documents • Finalised continental standards	Expanded clean transport markets across Member States through unified regulatory frameworks, promoting economies of scale for sustainable technologies	• Final standards published (Yes/No) • Number of Member States adopting standards
5	Develop technical and institutional capacity to deliver net-zero commitments	1. Design specialised training modules for transport regulators and policymakers 2. Organise regional and continental workshops on emissions reduction, smart transport systems, and integrated planning 3. Facilitate peer-learning sessions among AU MS	Continental	AFSEC/ ARSO	Regional Directorates of Transport, Regional Standard Bodies, Ministries in charge of Transport, Energy, Environment, Automotive and Fuel Companies, SSATP, ICCT	Short-Long Term	• Training curricula and materials • Workshop proceedings and knowledge-sharing platforms • Certified cohorts of trained personnel	Enhanced expertise among regulators and policymakers, paving the way for more ambitious and effective emission-reduction strategies in transport	• Number of certified experts and Institutions.

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Align infrastructure and energy policies to accommodate and stimulate decarbonisation	1. Convene multi-stakeholder forums to align energy and transport policy objectives 2. Draft integrated policy frameworks for coordinating infrastructure upgrades (charging stations, clean fuel depots, public transit hubs) 3. Implement pilot programmes in select AU MS to test integrated solutions	National (with Regional/ Continental training sessions)	Ministries in charge of Energy	Ministries in charge of Transport, Environment, Automotive Companies, ICCT, Technical Vocational Education and Training (TVET) Academies	Short-Long Term	• Multi-stakeholder forum outcomes • Integrated infrastructure policy framework • Pilot programme reports and lessons learned	Seamless, coordinated infrastructure development that supports decarbonized transport, ultimately reducing emissions and enhancing system resilience	• Number of AU-MS with aligned infrastructure policy frameworks finalised • Evidence of improved energy-transport coordination (Yes/ No)
7	Development of Multi-Modal Transport Systems	1. Create strategic transport hubs integrating rail, road, waterways, and non-motorised options 2. Enhance connectivity between modes through improved scheduling, ticketing, and infrastructure linkages 3. Promote energy-efficient logistics systems for freight and passenger movement	National (Pilot AU Member States)	Ministries in charge of Energy	Ministries in charge of Transport, Environment, Automotive Companies, ICCT	Short-Long Term	• Strategic hub development plans • Multi-modal scheduling and ticketing systems • Framework for energy-efficient logistics	Reduced energy consumption and emissions through coordinated use of multiple transport modes, leading to more efficient connectivity and improved service reliability	• Existence of multi-modal plans (Yes/ No) • Evidence of coordinated multimodal transport system in AU-MS (Yes/No)
8	Development and Harmonisation of Energy Efficiency Standards and regulatory framework for Transport Systems	1. Draft a unified regulatory framework for transport-related energy efficiency (vehicles, rail, waterways) 2. Coordinate with international standard-setting organisations for best practices 3. Roll out standards adoption strategies across MS 4. Monitor and evaluate compliance	Regional	RECS	Ministries of Transport and Infrastructure, private logistics providers, development banks, urban planning authorities AUC	Short-Medium Term	• Draft energy efficiency standards • Adoption strategies for Member States • Compliance monitoring reports	Improved energy efficiency across diverse transport systems, significantly curtailing greenhouse gas emissions and facilitating smoother regional trade and travel	• Number of Member States adopting standards (Yes/No)

Source: Authors' own creation

ACTION PLAN

4.4 BUILDINGS

Energy transition opportunities exist to make buildings energy efficient. This can be made feasible by the shift to zero-carbon-ready buildings, which are extremely energy-efficient structures that are climate-responsive. Globally, by 2050, buildings-related emissions can be reduced by 70% by applying EE upgrades and electrification, with the remaining 30% coming from a change in behaviour and on-site renewable energy sources³².

BUILDINGS



Enforce Efficiency Standards

Retrofit Existing Stock

In Africa, to achieve buildings with net zero carbon emissions, the strategy for buildings aims to identify potential energy-efficient and low-carbon actions and activities that should be explored for implementation in the short term to the long term. This ETSAP acknowledges that different Member States have different national circumstances, targets, and priorities in relation to energy-efficient buildings, and that each will be establishing its own path and pace for improvements in the buildings sector. For a continental initiative to succeed, however, harmonisation of standards for decarbonisation will be imperative.



The most popular measures for African Union Member States are **energy-efficient building codes, green building standards, retrofitting buildings, and the use of energy-efficient appliances, including heating, ventilation and air conditioning/cooling systems and smart building technology**³³.

Enabling Regulatory Policies

Few sub-Saharan African Union Member States, including South Africa, Kenya, Uganda, Cameroon, and Rwanda, have so far implemented national building codes with energy efficiency chapters.

The adoption and implementation rates of these codes remain low, particularly in countries with nascent building sectors. As a result, most of the current building stock lacks energy efficiency measures integrated into their design.

Material Use and Emissions

Buildings already account for over 50% of extracted materials and 37% of energy-related CO₂ emissions globally³⁴. The construction sector's rapid growth is expected to increase emissions from building materials like steel and cement.

Lack of awareness

The population lacks adequate awareness of sustainable building practices and is mostly reliant on market trends. This presents a challenge because many buildings will ignore energy efficiency measures in favour of more widely used and available building techniques.

Socio-Economic and Environmental Inequities

The swift growth in construction, particularly in urban areas including slums, will exacerbate existing socio-economic and environmental inequities. This rapid expansion poses challenges for energy resources, infrastructure, and sustainability efforts.

Considering the situational analysis of the subsector and the identified potential, the strategic objective for the buildings subsector seeks to **elevate building standards for energy consumption**. This is with a view to reducing buildings' energy consumption per unit of floor space.

To that effect the proposed strategic interventions for the ETSAP for the building sector are as follows:

- **Strategic intervention 1: Strengthen and adopt compliance with mandatory building energy codes.**
- **Strategic Intervention 2: Boost market demand for energy-efficient buildings.**
- **Strategic Intervention 3: Boost capacity for the delivery of energy-efficient buildings.**

³² UNEP. 2021. Global status report for buildings and construction. Retrieved from https://globalabc.org/sites/default/files/2021-10/GABC_Buildings-GSR-2021_BOOK.pdf

³³ Smart building technology integrates IoT sensors, AI, and automation to optimize energy use, security, and comfort. Key systems include smart HVAC, adaptive lighting, occupancy sensors, predictive maintenance, and energy management platforms

³⁴ <https://globalabc.org/news/building-sustainable-future-unlocking-africas-potential-construction-industry>

ACTION PLAN

The related Action plans for these interventions are presented below in Tables 21-23.

Table 21. Action Plan for Strategic intervention 1: Strengthen and adopt compliance with mandatory building energy codes.

Pathway to Change: Efforts to establish energy-efficient building codes in Africa remain fragmented and hindered by cultural diversity and technical gaps. This intervention focuses on developing adaptable, regionally harmonised building codes that balance living conditions, decarbonisation goals, and cultural contexts. By increasing technical capacity, raising awareness, and encouraging compliance through incentives, education, and supportive enforcement, the pathway seeks to transform building practices into a cornerstone of sustainable development, reducing emissions and improving energy efficiency

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Support dissemination and implementation of harmonised minimum energy efficiency and thermal performance standards for buildings	1. Conduct a comprehensive review of existing building codes and identify gaps in energy efficiency 2. Develop or adapt regionally relevant MEPS for heating, ventilation and air-conditioning/cooling systems as well as other appliances and devices. 3. Organise stakeholder workshops (governments, industry, civil society) to finalise proposed standards 4. Disseminate MEPS guidelines to AU Member States	Continental	AFREC	UN-Habitat, Global Alliance for Buildings and Construction, UNEP ARSO, AFSEC, Regional Standard Bodies	Short-Medium Term	• Gap analysis report • Drafted MEPS guidelines • Workshop proceedings	Adoption of harmonised MEPS across diverse Member States, leading to measurable improvements in building energy performance	Uptake of developed MEPS by AU-(count)
2	Develop comprehensive national guidelines for energy performance in buildings (based on building audits) to establish consumption baselines	1. Segment Member States by climatic zones and socio-economic contexts 2. Create region-specific guidelines for energy-efficient design and retrofits 3. Pilot the guidelines in selected Member States with varying building cultures 4. Gather feedback and refine guidelines for broader roll-out	National	Ministries in charge of Energy	Ministries in charge of Buildings and Public Works, AFREC, RCREEEs	Short Term	• Region-specific EE building guidelines • Pilot project evaluation reports	Contextualized, practical protocols for building design and renovation that reduce energy consumption and guide national baselines	• Number of AU MS adopting developed energy performance Guidelines by AU-MS Guidelines produced (Yes/No) • Baseline data established (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Conduct national building energy audits to establish consumption baselines	1. Develop region-specific audit tools tailored to various building typologies 2. Train local auditors and public works officials 3. Conduct large-scale building energy audits in pilot countries 4. Compile audit results into a centralised database for policy use	National (Pilot AU Member States)	AFREC	Ministries in charge of Buildings and Public Works, energy Local Research and technology Institutes	Short-Medium Term	- Validated audit tools - Pool of energy audit experts - Completed building audits - Centralized database of audit findings	A robust evidence base of actual building energy use, informing updates to building codes, EE benchmarks, and investment priorities	Building energy baselines by Type. (Yes/No)
4	Build capacities of building authorities and practitioners	1. Identify specific training needs (code enforcement, design best practices, material selection) 2. Develop tailored training curricula and materials 3. Conduct workshops, seminars, and study tours for regulators, architects, and builders 4. Evaluate training effectiveness via post-training assessments	National	Ministries in charge of Energy	AFREC, UN-Habitat, Global Alliance for Buildings and Construction, UNEP/United for Efficiency (U4E)	Short-Medium Term	- Training materials and curricula - Workshops/study tours implemented - Trained cadres of building professional	Enhanced expertise across the building sector, boosting adherence to energy-efficient design and effective code enforcement	- Number of training sessions - Number of participants trained - Post-training assessment completed (Yes/No)
5	Create a regional database for building stocks, energy consumption, and related carbon emission levels	1. Conduct a stocktaking study of building types across Member States 2. Develop an online platform to store and share building energy performance data 3. Collaborate with local authorities and ministries for regular data updates 4. Generate periodic analysis reports for policymakers	Regional	RECs Directorates in charge of Energy	Ministries in charge of Energy & Buildings, Local Authorities	Medium-Long Term	- Comprehensive building stock survey - Operational online database - Regularly published data/analysis reports	Improved data-driven policymaking through timely, standardised information on building energy use and emissions across regions	Building stock Database platform established (Yes/No)
6	Create national building compliance bodies with associations at regional and continental level	1. Identify relevant public works bodies and professional associations 2. Provide training on energy-efficient building guidelines and compliance protocols 3. Form official compliance committees to oversee code adherence 4. Facilitate best-practice exchanges at regional/continental levels	National (Pilot AU Member States)	AFREC	Ministries in charge of Buildings and Public Works	Short Term	- Compliance committees formed - Training sessions for public works associations - Compliance monitoring framework	Consistent enforcement and monitoring of building codes, leading to higher rates of compliance and enhanced building efficiency standards	Compliance Authorities established in AU-MS (Number)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
7	Launch energy efficiency awareness campaigns for the public	1. Develop a multi-channel awareness strategy (TV, radio, print, social media) 2. Partner with community organisations and media to highlight benefits of energy-efficient buildings 3. Conduct periodic evaluations to measure campaign reach and impact 4. Adapt messaging based on feedback	Continental	AFREC	Ministries in charge of Energy & Buildings, Local Media Houses	Short-Long Term	• Campaign materials (TV spots, radio messages, brochures) • Media coverage reports • Outreach evaluation surveys	Broader public understanding of and demand for energy-efficient buildings, creating market pressure for compliance with established standards	Public awareness surveys conducted (Yes/No)
8	Promote large-scale building retrofit programmes for existing stock	1. Identify funding mechanisms (grants from development banks, private partnerships) to support retrofitting 2. Develop guidelines for cost-effective retrofits (insulation, glazing, Heating, ventilation, and air conditioning (HVAC) upgrades) 3. Train local contractors in retrofit best practices 4. Pilot retrofit projects in select urban areas	National	Ministries in charge of Energy and Buildings	AFREC, UN-Habitat, Development Partners, Ministries of Finance	Short-Medium Term	• Retrofit funding proposals • Technical guidelines for retrofits • Completed pilot retrofit projects	Substantial improvements in the energy efficiency of existing buildings, generating immediate energy savings and emission reductions	• Financing and technical support schemes for retrofitting in buildings established (Yes/No) • Number of retrofit projects completed • Adoption of retrofit guidelines (Yes/No)

Source: Authors' own creation

ACTION PLAN

Table 22. Action Plan for Strategic Intervention 2: Boost market demand for energy-efficient buildings.

Pathway to Change: Creating awareness of energy-efficient building practices alone is insufficient without a corresponding market demand. This intervention addresses barriers such as the high cost of energy-efficient structures and the low income levels of many African households. Through robust regulatory frameworks and financial incentives for large corporations and consumers, the pathway envisions the mainstream adoption of energy efficiency in buildings, while fostering innovation and economic growth in the building sector

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Develop minimum energy efficiency labels for building materials and products	1. Conduct a baseline study of existing labelling standards among for building materials in AU Member States 2. Benchmark with international best practices for EE labelling 3. Draft labelling frameworks tailored to African contexts 4. Organise regional stakeholder consultations to finalise labelling requirements	Continental	AFREC	Ministries in charge of Buildings and Public Works, Ministries in charge of Energy, UN-Habitat, Global Alliance for Buildings and Construction, UNEP/U4E	Short-Long Term	• Draft EE labelling frameworks • Stakeholder feedback reports • Final labelling guidelines	Widespread recognition and use of standardised labels for building materials, enhancing clarity on product efficiency and promoting market demand for greener products	EE labelling framework for buildings finalised and adopted by AU-MS (Yes/No)
2	Introduce national building certification tools and systems (standardizable at regional or continental level)	1. Examine current certification practices across select AU Member States 2. Develop a unified framework that defines certification criteria and institutional roles 3. Train certifiers and establish information systems for issuing certificates 4. Pilot certification processes in selected regions	National	Ministries in charge of Energy	Ministries in charge of Buildings and Public Works, AFREC, Global Alliance for Buildings and Construction	Short Term	• Building certification framework • Institutional guidelines for certifiers • Pilot certification records	Clear, credible certification pathways that boost consumer trust and encourage investment in energy-efficient buildings, eventually harmonizable regionally or continentally	• Building Certification framework, capacity and lessons established in select AU-MS (Yes/No) • Number of trained certifiers • Pilot certifications completed (count)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Create a funding mechanism/window to support EE in buildings	1. Map existing funding instruments (public, private, international) for EE projects 2. Conduct stakeholder consultations on establishing or adapting a specialised EE financing window 3. Develop training modules for national banking institutions on financing EE 4. Propose government guarantees or partial risk-sharing models to incentivise loans 5. Explore Development Financial Institutions (DFIs) / International Financing Institutions (IFIs) grants to fortify the EE funding window 6. Develop standard tools and templates for financial institutions	Regional	AfDB	Regional and National Development Banks, Ministries in charge of Energy, International Finance Corporations (IFCs), World Bank	Medium Term	• EE financing strategy or window • Training materials for banks • Draft risk-sharing agreement templates	Expanded access to affordable capital for EE building projects, driving higher uptake of energy-efficient materials and designs across different income brackets	• Specialised EE finance mechanisms and institutional framework to support EE in Buildings established (Yes/ No)
4	Implement demonstration programmes for energy-efficient buildings	1. Select pilot Member States representing diverse economic and climatic contexts 2. Choose building types (residential, commercial, institutional) for EE retrofits or new builds 3. Document cost-benefit analyses (energy savings, payback periods) 4. Provide technical guidance throughout project implementation	National	Ministries in charge of Energy	Ministries in charge of Buildings and Public Works, AFREC, UN-Habitat, Global Alliance for Buildings and Construction, UNEP/ U4E	Short-Medium Term	• Demonstration project reports • Technical guidance manuals • Cost-benefit analysis summaries	Stronger evidence base illustrating the feasibility and returns of energy-efficient building designs, encouraging broader policy and market adoption	• Benefits of EE in Buildings Demonstrated in selected MS and Building types (Yes/No) • Availability of cost-benefit data (Yes/ No)
5	Create national building compliance bodies	5. Determine whether new entities are required or if mandates for existing authorities/regulators can be extended 6. Draft compliance guidelines clarifying institutional roles and responsibilities 7. Deliver training sessions for compliance officers and relevant professionals	National	Ministries in charge of Energy	Ministries in charge of Buildings and Public Works, AFREC UN-Habitat, Global Alliance for Buildings and Construction, UNEP/ U4E	Short Term	• Compliance guidelines • Established or expanded compliance bodies • Trained enforcement staff	A stable institutional framework ensuring consistent enforcement of EE standards and certification protocols, ultimately reinforcing market confidence in energy-efficient construction	• Compliance bodies operationalized (Yes/No) • Guidelines established in AU-MS (Yes/No) • Number of trained compliance officers

Source: Authors' own creation

ACTION PLAN

Table 23. Action Plan for Strategic Intervention 3: Boost capacity for delivery of energy-efficient building

Pathway to Change: While building codes and certification systems provide the foundation for energy-efficient construction, their success depends on the capacity of implementers and practitioners. This intervention seeks to enhance technical expertise and ensure access to financing and models to ensure the sustainability of energy efficiency practices in the building sector. By fostering a skilled workforce and creating enabling conditions, the pathway ensures the long-term viability of energy-efficient building practices, contributing to decarbonisation and resilience in the built environment.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Support ESCOs	National	Ministries in charge of Energy	Ministries in charge of Buildings and Public Works, Standards Regulators, AFREC, UN-Habitat, Global Alliance for Buildings and Construction, UNEP	Short-Long Term	- Comprehensive ESCO startup training modules - Standard ESCO contract templates - Policy Recommendations for ESCO-friendly regulations - Database of ESCOs and potential partners/investors	Enhanced ecosystem for ESCO development and service delivery, driving energy-efficiency improvements in buildings through expert, performance-based contracting	- Existence of standardised ESCO contracts (Yes/No) - Policy recommendations submitted (Yes/No) - Number of ESCOs formally registered
2	Capacitate local manufacturers of building materials and energy equipment/appliances	National	Ministries in charge of Energy	AFREC, Ministries in charge of Energy & Buildings, Global Alliance for Buildings and Construction	Medium-Long Term	- Workshop proceedings and training materials - Demonstration of improved manufacturing processes - Access-to-finance toolkits for manufacturers	Wider availability of cost-effective, locally produced EE building materials and appliances, reducing construction costs and boosting domestic industries	- Number of manufacturers participating in workshops - Introduction of new EE products (Yes/No) - Financing framework for manufacturers (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Create an accreditation system for building and energy professionals	1. Define core competencies and standards for accreditation (engineers, architects, auditors) 2. Develop training modules and exams to assess applicants' expertise 3. Partner with professional associations to run accreditation programmes 4. Set up a registry of accredited professionals across regions	Regional	Directorates in charge of Energy	AFREC	Short Term	• Accreditation scheme guidelines • Training and examination materials • Regional registry of accredited experts	A Recognized pool of qualified professionals able to implement and maintain energy-efficient building practices, fostering trust and consistency in project outcomes	• Accreditation scheme launched (Yes/No) • Number of professionals accredited • Registry established (Yes/No)
4	Create regional training programmes and knowledge-sharing platforms	1. Develop open-source curricula and training modules covering EE building techniques, materials, auditing, and policy 2. Schedule periodic, multilingual webinars/workshops for practitioners 3. Launch an online portal for resource-sharing and peer learning 4. Conduct annual conferences to foster continuous professional development	Regional	Directorates in charge of Energy	AFREC, Ministries in charge of Energy & Buildings, Regional Energy Centres/RCREEEs	Short-Medium Term	• Comprehensive training materials • Online knowledge-sharing platform • Annual conference and webinar materials and proceedings	Uplifted technical capacity across different regions, facilitating the widespread adoption of energy-efficient construction methods and collaborative learning	• E-learning platform active (Yes/No)
5	Develop local and regional awards for buildings that excel in energy efficiency	1. Define award categories (e.g., best retrofit, innovative design, net-zero pilots) 2. Establish selection criteria and an independent judging panel 3. Publicize the awards through media campaigns and industry events 4. Host annual award ceremonies to showcase exemplary projects	National	Ministries in charge of Energy	AFREC, Ministries in charge of Buildings and Public Works, Regional Energy Centres/RCREEEs	Short Term	• Award guidelines and selection criteria • Promotional materials and media coverage • Annual award event proceedings	Stronger market incentives for energy-efficient design and construction, motivating both private and public sector actors to innovate and invest in sustainability	• Operating Award-winning scheme launched and M&E of awards (Yes/No) • Media coverage of winning projects (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Support research and development of energy-efficient technologies and building materials	1. Use existing building audit data to identify priority R&D areas 2. Establish collaborative research projects with universities and private companies 3. Provide seed funding or grants for pilot innovations (insulation, solar-integrated materials, etc.) 4. Document and disseminate successful R&D outcomes	National	Ministries in charge of Energy	AFREC, Ministries in charge of Buildings and Public Works, Regional Energy Centres/RCEEES	Short-Long Term	• R&D project proposals and pilot studies • Technical briefs on new materials/technologies • Database of research outputs	Increased innovation pipeline for localised EE solutions, empowering African construction ecosystems to adopt and scale sustainable materials and technologies	• Number of R&D projects funded • Publication of pilot study results (Yes/No) • Adoption of new technologies/products in the marketplace (Yes/No)
7	Launch regional and continental fund for ESCOs	1. Assess financing gaps for ESCOs and design suitable fund parameters 2. Engage development banks (AfDB, IFC, World Bank) to structure the fund 3. Train national banking institutions in ESCO-specific financial products 4. Roll out pilot programmes in selected countries to refine the fund's operational model	Regional to continental	Regional Development Banks	AfDB, IFCs, World Bank, National Development Banks	Short-Medium Term	• ESCO fund proposal and governance structure • Trained financial institutions on ESCO lending • Pilot programmes to test fund operations	A well-financed ESCO market, accelerating quality energy-efficiency services for buildings through performance-based mechanisms and scalable investment solutions	• ESCO fund and related institutional framework proposed and established (Yes/No) • Number of trained financial institutions • Pilot ESCO funding programmes launched (Yes/No)

Source: Authors' own creation

ACTION PLAN

4.5 INDUSTRY

With regard to energy transition, analysis of NDCs indicates that Member States are placing interest in implementing industrial efficiency improvements through energy efficiency technologies and cleaner industrial technologies. There is also a desire to introduce industrial emission standards and process improvements. The bulk of the EE and cleaner technologies required are largely imported from outside Africa, hence manufacturing them on the continent will enhance opportunities for adoption.

INDUSTRY



Reduce Fossil Fuel Use

Foster Hydrogen and Green
Manufacturing

The beneficiation of the strategic decarbonisation minerals found in Africa also calls for attention. Maximising utilisation of strategic minerals for the manufacture of decarbonisation energy products, such as electric batteries, as well as the manufacturing of RE and EE equipment, are important energy transition options for the subsector.



Legend: Industrial workers in a roofing factory

Particularly widespread energy storage system (ESS) innovation (e.g., battery systems, pumped-storage hydro, etc.) and green hydrogen innovation and production will be transformative to African industries if the AU Member States capture manufacturing capability.

The main gap is the lack of policy and regulatory framework that will direct what decarbonisation energy sources and practices to adopt in order to maximise profits through

the sustainable deployment of clean energy. The gaps also include the lack of policy to promote localisation of industries, especially those of strategic nature. Adopting these new technologies will also require capacity building, including capacity for R&D and technology transfer.

The strategic objective presented for the industry sector is to **foster sustainable and transformative industrial development**, prioritising the reduction of fossil fuel energy demand through the deployment of EE and RE measures in all industries, including those without smokestacks. Sustainability will be achieved through promoting the development and deployment of renewable energy sources, energy-efficient technologies, the use of hydrogen in manufacturing processes, and carbon capture, storage and utilisation. The transformative element will be through the manufacturing of green technologies, offered by Africa's abundant mineral and RE resources, thus meeting socio-economic goals of GDP growth through value addition and employment creation. New industries will thus be created. It has to be highlighted that the industry sector of ETSAP also includes, and applies to, industries without smokestacks, like tradable services, tourism, agribusiness, ICT, and others.

Cost-reflective tariff regimes will also persuade industrialists to save costs through cost-saving measures. Industry players, apart from being regulated, need to be educated on the benefits that can accrue from the deployment of such decarbonisation measures.

Incentives to attract manufacturing companies that can venture into the production of both decarbonisation equipment and hydrogen will be required. Examples of specialised export processing zones with friendly taxation regimes and required infrastructure, such as roads, water, and even subsidised energy tariffs, may be required at the start. Such companies would, however, need to be assured of markets both locally and abroad, and of the absence of any restriction on moving their goods and profits outside the countries.

The derived strategic interventions for energy transition in the industry sector are:

- **Strategic Intervention 1. Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices.**
- **Strategic Intervention 2. Transformative industrialisation to leverage Africa's comparative advantage.**

ACTION PLAN

The proposed Actions for these strategic interventions are presented below in Table 24-25.

Table 24. Action Plan for Strategic Intervention 1: Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices.

Pathway to Change: Many African Union Member States, in their NDCs, have expressed ambition to increase industrial energy efficiency and achieve emissions reductions. There are proven practices and technologies to enhance energy efficiency in industries (e.g., efficient motors, etc.) and these can be replicated across the continent, supported by regulations, standards, incentives, awareness raising, and capacity building or skills development.

The opportunity also exists for deploying distributed RE systems, such as rooftop solar in commerce and industry, thereby increasing the reliability and sustainability of energy supply while reducing dependence on fossil fuels, which currently have a high share in the sector. The emergence of green hydrogen in industrial applications is also another opportunity that can be deployed in 'hard-to-abate' industries, and Africa has not yet done adequate assessment regarding its market potential in industry.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Develop and implement a carbon benchmark for traded goods manufactured in Africa under the AfCFTA	Continental	AFSEC/ ARSO	AFREC, Regional/ National Standards Bodies, Ministries in charge of Industry, Trade, Energy	Short-Long Term	- Carbon benchmark framework - Workshop proceedings and stakeholder inputs - Pilot implementation reports	Reduced carbon footprint of goods traded under AfCFTA, aligning industrial practices with low-emission objectives and enhancing product quality and competitiveness	A functioning Carbon Benchmark framework finalised and adopted by selected AU-MS and AfCFTA (Yes/ No)
2	Determine RE/ EE market potential in national industries to inform scope of needed manufacturing	National	Ministries in charge of Energy	Ministries in charge of Industry and Trade Industry Associations, RCREEs, REC Industry Directorates	Short-Long Term	- Market potential assessment report - Baseline fossil-fuel usage data - Priority policy recommendations	Targeted investments and policy measures supporting RE and EE adoption in industrial processes, reducing fossil fuel reliance and operational costs	- Completion of market study (Yes/ No) - Number of industry associations engaged - Policy recommendations integrated (Yes/ No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Introduce and enforce an EE regulatory framework for industrial decarbonisation performance	National	National Energy Regulators	Ministries in charge of Energy, Ministries in charge of Industry, Industry Associations/ Players, Regional/ National Regulatory Bodies, AFUR	Short-Long Term	- EE regulatory framework and guidelines - Compliance audit reports - Sector-specific EE targets	More efficient and low-carbon industrial operations driven by regulated energy management practices and transparent performance tracking	Operating EE regulatory framework published, enforcement and compliance established (Yes/No)
4	Create an incentive and financing scheme for adoption of RE and EE technologies/ practices	Continental	AfDB	IFIs (World Bank, IFC), Regional/ National Development Banks	Short-Medium Term	- Established incentive/ financing mechanism - Application guidelines and toolkits - Monitoring/ evaluation reports on funded projects	Higher adoption of RE and EE solutions in industrial facilities, lowering production costs and enhancing competitive advantage while cutting emissions	Functioning and widely accessible Financing mechanism for large and SMEs for deployment of RE/EE established (Yes/No)
5	Create awareness campaign for IEE and renewable energy substitution	Continental	AFREC	AUC-DIE, RECs (Energy/ Industry Directorates), National Ministries (Energy/ Industry) Industry associations	Short Term (Ongoing)	- Documented case studies and policy briefs - Conferences/ seminars/ workshops - Media outreach materials	Increased awareness and willingness among industry stakeholders to adopt clean energy solutions, accelerating the transition towards low-carbon industrial systems	Increased uptake of RE/EE measures realized (Yes/No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Develop skills and accreditation schemes for EE and RE service providers for the industry sector	Continental	AFREC	AUC-DIE, RCREEEs, Ministries in Charge of Energy/ Industry/Science and Technology, Centres of Excellence, Industry Associations	Short-Long Term	- Training curricula and accreditation guidelines - Database of certified EE/RE service providers - Continuous professional development programmes	High-quality services available for industrial decarbonisation, fostering reliable project execution and trust in new technologies across African industries	Roster of Accredited and certified experts and service providers specialising in industry (Yes/No)

Source: Authors' own creation

Table 25. Action Plan for Strategic Intervention 2. Transformative industrialisation to leverage Africa's comparative advantage.

Pathway to Change: Africa possesses extensive strategic mineral resources for battery manufacturing, ranging from cobalt to lithium, and ample renewable energy potential for green hydrogen production. Currently, local industrial uptake lags, as the strategic minerals are largely exported without beneficiation, and technology transfer mechanisms remain limited for local manufacture. This intervention, therefore, seeks to spur transformative industrialisation by capitalising on the continent's resource advantages, fostering local manufacturing and research, and enabling diverse industries, including those without smokestacks (e.g., ICT services and climate-smart agro-processing). Through strategic partnerships, incentives, and targeted R&D, Africa can position itself to meet both domestic and global demand for sustainable energy storage systems, hydrogen solutions, and value-added goods, thereby strengthening its economic growth and climate resilience.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Establish regional production potential for advanced battery energy storage solutions	Regional	Regional Energy and Industry Divisions in RECs	Ministries in charge of Energy (ME), Industry (MI), Mining, AUC-DIE, AUDA-NEPAD, RCREEEs	Short Term	- Regional storage potential study - Database of strategic mineral reserves - Policy briefs and investor engagement materials	Targeted investments in sustainable storage manufacturing and deployment, diversifying Africa's industrial base beyond batteries to include emerging storage solutions	- Established Energy Storage potential by type of ESS technology (Yes/No) - Mineral reserves database established (Yes/No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
2	Develop a BESS and alternative storage strategy/ programme for Africa	Continental	AUC-DIE	AUDA-NEPAD, RECs, RCREEEs, Car Industry Associations, Power Pools, Utilities	Short Term	- Africa-wide storage potential and roadmap - Implementation milestones for each region - Memoranda of Understanding with key stakeholders - Updated Industrial Strategy aligned with AfCFTA and AU industrialisation goals	Clear framework guiding large-scale storage deployment (battery and non-battery) across Africa, fostering investor confidence and regional collaboration	Investor ready strategy, investment plan and Roadmap published for Africa (Yes/No)
3	Domesticate the continent-wide hydrogen strategy at national levels	National	Ministries in charge of Energy	Ministries in charge of Industry and Local Industry Players Ministries in charge of transport AUC-DIE	Short Term	- National adaptation guidelines for hydrogen strategy - Identified pilot hydrogen projects - Technical assistance materials	Accelerated adoption of green hydrogen programmes in AU-MS, bridging global ambitions with local industrial priorities	AU-MS Hydrogen strategies, guidelines and implementation plans accomplished. (Yes/No)
4	Support enhancement of green hydrogen development and utilisation in industry and transport	Continental	AUC-DIE	AFREC, RCREEEs, REC Industry Directorates, National Industry/ Energy/ Water/Agriculture Ministries	Short-Medium Term	- Comprehensive hydrogen market study - Training modules on hydrogen safety - Financing framework proposals for adoption of hydrogen in industry	Robust hydrogen ecosystem linking industrial and transport sectors, driving emissions reductions through technological innovation across the continent	- Publication of hydrogen market potential and financing by sectors (Yes/No)
5	Promote local manufacturing of RE/EE equipment	Regional	RCREEEs	RECs Energy/ Industry Divisions, Ministries in charge of Energy & Industry	Short Term	- Market assessment reports - Technology transfer agreements - Pilot production line ximplementation	Strengthened manufacturing capacity for RE/EE technologies, reducing import dependence and stimulating job creation	- Market assessment completed (Yes/No) - Number of technology transfer agreements - Pilot production lines operational (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Incentive scheme to attract technology transfer and build local manufacturing capacity	1. Develop special economic zones or processing zones with tax incentives 2. Provide streamlined licensing for green technology investors 3. Subsidize utilities (water, electricity) for clean manufacturing units 4. Launch investor outreach campaigns (webinars, investment forums, tours)	National	Ministries in charge of Energy	MI, Finance (MF) Industry associations	Short-Medium Term	• Policy briefs on special zones • Investor outreach materials and forums • Database of companies that can benefit from incentives	Enhanced inflow of advanced manufacturing investments, nurturing indigenous industries for energy-efficient and clean technology solutions	Increase in local manufacturing facilities of strategic decarbonisation industries (%)
7	Institute R&D for value addition of strategic minerals and innovative clean energy technologies/fuels	1. Identify priority minerals (e.g., lithium, rare earth metals) and potential local refining/processing ventures 2. Fund collaborative R&D between universities/research Institutes and private sector to create or adapt clean energy technologies 3. Host knowledge-exchange seminars on fuel, material and technology innovations 4. Launch calls for proposals for region-specific pilot projects	Regional	RCREEEs	REC Divisions in charge of Science/Technology, Ministries in charge of Energy/Industry, Research Institutions	Short-Long Term	• R&D project grants • Feasibility studies on fuel/mineral refining • Technology demonstration reports	Increased domestic value addition to strategic minerals and adoption of locally tailored clean energy technologies, fuelling broader industrial competitiveness	• Findings of R&D solutions that can be adopted for implementation in Africa published (Yes/No) • Feasibility studies completed (Yes/No) • Pilot projects launched (Yes/No)
8	Expand industries without smokestacks through green technology adoption (e.g., ICT, digital services, agro processing)	1. Map energy needs and efficiency opportunities in service-based and agro-processing industries 2. Offer targeted incentives (low-interest loans, tax breaks) for green data centres or sustainable agro-processing facilities 3. Develop training modules for digital service providers on energy management best practices	National	Ministries in charge of Industry	Ministries in charge of ICT, Agriculture, Development Banks & Partners, Private Sector, Non-Governmental Organisations (NGOs)	Short-Medium Term	• Sector-specific energy audits • Incentive packages for smokestack-free industries • Training curricula on sustainable operations	Greater economic diversification and job creation in low-emission service sectors, while driving energy efficiency and resource optimisation in emerging industries	• Findings of energy efficient applications, investment potential and required incentives in industries without smokestacks published (Yes/No) • Incentives for green service industries introduced (Yes/No) • Number of businesses trained or adopting EE measures

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
9	Facilitate green data centres and digital infrastructure for regional connectivity	1. Identify potential sites for renewable-powered data centres 2. Collaborate with telecoms and cloud service providers to establish energy-efficient server infrastructure 3. Launch pilot green data centre projects to demonstrate cost and performance benefits	Regional	Regional ICT/Industry Coordinating Bodies	Ministries in charge of Energy, Telecoms, Cloud Service Providers	Medium Term	• Site feasibility studies • PPP agreements • Pilot data centre facilities	Strengthened digital economy built on sustainable infrastructure, enhancing regional connectivity and service export potential without increasing carbon footprints	• Feasibility studies published (Yes/No) • PPP agreements signed (count) • Operational green data centre pilots (Yes/No)
10	Advancing Sustainable NEV Manufacturing in Africa	1. Map Africa's critical minerals and potential supply chains for batteries and NEVs 2. Foster partnerships with international technology providers for local assembly or manufacturing 3. Develop workforce training programmes for NEV production and maintenance 4. Establish battery recycling and end-of-life management frameworks	Continental	AUC	RECs, private sector NEV manufacturers, R&D institutions, international technology partners	Medium-Long Term	• Resource mapping reports • Partnership agreements or Memorandums of Understanding (MoUs) • Certified training modules and participants • Recycling/end-of-life guidelines"	Robust local NEV value chains, enhanced manufacturing capacity, and a trained workforce, reducing import dependence while boosting sustainable economic growth	• Completion of resource mapping (Yes/No) • Number of local manufacturing or assembly partnerships • Existence of battery recycling guidelines (Yes/No)

Source: Authors' own creation

ACTION PLAN

4.6 OIL AND GAS

With regards to energy transition for most AU Member States, NG and RE represent the potential to bridge the energy deficit on the continent and support industrialisation and economic low-carbon growth.

OIL AND GAS



Plan Gas as Transition Fuel

Apply ESG Standards

This energy transition is further compounded by the ongoing climate transition, which ultimately requires the phasing out of carbon-emitting sources to reach the global target of net zero emissions by 2050. Natural gas is, in itself, a “fuel of transition” from the current energy situation to the goal of net zero emissions.

In fact, the following factors offer credence to upholding NG as a bridge towards the Net Zero Emission horizon:

- The intermittent nature of renewable energy sources requires that a more reliable source of power generation is made available as a parallel or standby source, to enable an uninterrupted supply of electrical energy to users. **Natural gas-powered plants represent an immediate solution**, among others (nuclear), or more costly alternatives (pumped-storage hydro power plants, batteries, etc.).
- Certain industrial processes requiring tremendous heat input at temperatures exceeding 1,000 °C (such as cement factories and petrochemicals) cannot rely on renewable energy sources (mainly wind and solar) in a sustained, competitive, and affordable manner.
- Most countries rely heavily on **natural gas-powered plants** to produce their electricity. Despite their commitment to introduce a larger share of renewable energy into their energy mix, these countries will have no choice but to continue investing in natural gas power plants, as the shift to a fully renewable-based power generation system is expected to be gradual and take several decades

While Africa has potential to extract more of its oil and gas reserves, the critical decarbonisation intervention will be to ensure adequate supply of natural gas across the continent, and to put in place the necessary infrastructure, enabling environment, and regulatory framework that will ensure producers, refineries, and suppliers operate in a sustainable manner.

This will entail the proliferation of natural gas delivery systems, such as pipelines where feasible, and LNG facilities. Decarbonisation should be pursued across the entire natural gas value chain, ensuring optimal design of systems and minimising gas leaks into the atmosphere.

An enabling environment is also required to attract investors in the oil and gas industry by ensuring a sustainable pricing regime and other incentives. Participation of both public and private sector oil and gas companies should be encouraged.

AU Member States will also need to provide guidance and be able to regulate ESG aspects of the oil and gas industry to ensure that national and international oil companies honour the sustainability protocols of oil and gas producing countries.



Legend: Machine to explore oil on land being used in Angola

In line with the above, the proposed strategic objective of the oil and gas subsector is to **optimise oil and gas sector transition**. A strategic shift of this nature could unlock significant value for the continent while reducing the risks of climate change and helping to secure a greener, more prosperous future for all Africans.

The Strategic interventions for the oil and gas to achieve both oil and gas and Climate transitions are:

- **Strategic Intervention 1:** Sustainable supply of natural gas on the continent
- **Strategic Intervention 2:** Promote economic and technical efficiency in the production, transport, and use of oil and gas
- **Strategic Intervention 3:** ESG Sustainability enhanced

The Action Plans for these Strategic Interventions are in Table 26-28 below.

ACTION PLAN

Table 26. Strategic Intervention 1: Sustainable supply of natural gas on the continent

Pathway to Change: Natural gas will remain a key transitional fuel in Africa, supporting power generation, clean cooking, and industrial growth. To meet rising demand, this intervention focuses on strengthening natural gas infrastructure, harmonising network codes, and planning interconnections that can eventually be repurposed for hydrogen. By establishing regulatory frameworks for product quality and pricing, the pathway ensures a sustainable and secure natural gas supply, enabling trade across borders while laying the groundwork for a hydrogen-based energy future.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Promote the supply and utilisation of NG across the continent	1. Conduct outreach campaigns targeting non-producing AU Member States to highlight benefits of NG in power generation, clean cooking, and industry 2. Provide technical assistance on NG project scoping, feasibility studies, and infrastructure development 3. Facilitate multi-stakeholder forums (governments, private sector, financiers) to encourage investment in NG value chains	Continental	AFREC	Regional and National Energy Regulators, RECs Oil companies	Short-Medium Term	• Outreach materials and workshop reports • Technical assistance toolkits • Investment prospectus for non-producing states	Expanded NG consumption and demand replacing coal and oil, leading to cleaner energy mixes and more reliable supply across AU-MS	Investment commitments for NG projects (Yes/No)
2	Develop a Continental Gas Master Plan and cross-border NG network codes/ standards	1. Consolidate data on existing gas reserves, pipelines, and infrastructure in all AU Member States 2. Draft a Continental Gas Master Plan setting targets for production, trade, and interconnectivity 3. Create or harmonise technical and safety codes for cross-border pipelines 4. Engage policymakers and industry stakeholders to finalise and adopt the plan	Continental	AFREC/ AUDA-NEPAD	RECs, Regional Energy Directorates, Ministries in charge of Energy/ Petroleum Oil and NG producing companies	Short Term	• Continental Gas Master Plan • Harmonised cross-border pipeline codes • Policy dialogue outcomes	Robust gas infrastructure and well-coordinated policy frameworks enabling seamless trade, secure supply, and readiness for future hydrogen integration	Investment ready Gas Master Plan and infrastructure and fuel quality standards and codes published (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Develop continental refined products (including synthetic fuels) standards and pricing mechanisms	- Assess existing refinery capacity and synthetic fuel production capabilities and quality standards - Draft standardised quality specifications and pricing guidelines for refined products - Host validation workshops with regional/national authorities and African Refiners & Distributors Association (ARDA) - Publish final standards and promote adoption across Member States	Continental	AFUR	AFSEC/ ARSO AFREC, Regional Energy Directorates, Ministries in charge of Energy/ Petroleum, ARDA Oil and NG companies	Short Term	- Refinery capacity and quality standards assessment report - Draft refined product standards and pricing guidelines - Workshop proceedings and finalised standards	Transparent, predictable pricing and quality standards for refined products and synthetic fuels, ensuring reliability for both domestic markets and cross-border trade	Adoption of Harmonised continental standards and pricing for the refined products produced and traded on the continent (Yes/No)
4	Harmonise gas regulations for trade (fuel standards, pricing)	- Conduct benchmarking studies on international gas price indices and quality requirements - Draft guidelines aligning African gas trade with global best practices - Organise training sessions for regulators on new standards - Establish monitoring and reporting mechanisms for compliance	Continental	AFUR	AFSEC, Regional/ National Energy Regulators Oil and NG companies	Short Term	- Comparative study of gas price/quality benchmarks - Gas trading guidelines - Regulator training materials	Unified African gas market that adheres to global standards, boosting investor confidence and ensuring competitive gas pricing for industrial and residential users	Regulated and monitored NG market Guidelines aligned to best practice, finalised (Yes/No)
5	Establish harmonised regulatory and institutional framework	- Identify existing agencies or institutions regulating energy/petroleum - Draft mandates and legal frameworks to expand regulation into NG (including licensing, oversight, dispute resolution) - Train institutional personnel on new NG regulatory processes	National	Ministries in charge of Energy	AFUR, AFREC, Regional Energy Regulators, National Energy Regulators Oil/NG companies and associations	Short Term	- Regulatory framework documents - Trained regulatory staff - Mandate expansions for relevant institutions	Robust governance enabling effective negotiations with international oil/gas companies, ensuring fair terms and efficient licensing for NG projects	Mandated Governance structures for NG supply chains in place (Yes/No)
6	Build capacity for negotiations and regulation	- Develop specialised curricula for energy/petroleum negotiation (contract law, pricing strategies, risk mitigation) - Conduct regional workshops and on-the-job training for regulatory authorities - Facilitate peer learning platforms for knowledge exchange among Member States	National	United Nations Economic Commission for Africa (UNECA)	Regional and National Energy Regulators, MEs Oil companies	Short-Long Term	- Negotiation training modules - Regional workshops and peer-learning sessions - Database of trained negotiators	Enhanced expertise among regulators and policymakers to negotiate equitable contracts with IOCs, securing better deals and investment terms for NG projects	Adequate expertise of oil/NG regulators matching IOCs in negotiations. (Yes/No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
7	Plan for hydrogen-ready gas infrastructure	Continental	AFREC	AUC-DIE, Regional Energy Regulators, oil/ng Industry Associations	Short-Medium Term	- Feasibility study on hydrogen repurposing - Technical guidelines for dual-use pipelines - Stakeholder roundtable proceedings	Future-proofed gas infrastructure positioned to shift toward hydrogen markets, facilitating smoother decarbonisation pathways across the continent	Approved feasibility study and Guidelines for design and implementation of NG that can be repurposed for hydrogen supply in place (Yes/No)

Source: Authors' own creation

Table 27. Strategic Intervention 2: Promote economic and technical efficiency in the production, transport, and use of oil and gas

Pathway to Change: Ensuring affordable natural gas prices while maintaining investor interest is critical for Africa's energy future. This intervention promotes balanced subsidy frameworks, sound public financial management, and attractive investment conditions. By safeguarding public company finances and fostering private sector participation, the pathway creates an environment where natural gas can sustainably meet the continent's energy needs without imposing undue financial burdens on consumers or governments.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Conduct NG energy price affordability analysis and adoption	Continental	UNECA	AFREC, Regional Directorates of Energy, Ministries of Energy and Finance Oil/NG Companies	Short-Long Term	- NG price benchmarking report - Draft pricing/ subsidy framework - Stakeholder validation workshop outcomes	Balanced and transparent NG pricing models that ensure affordability for consumers while retaining investor interest, reducing financial strain on public budgets	Harmonised continental NG pricing regime in place and being adopted (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
2	Ensure better financial stability for public companies (NOCs and other state-owned enterprises)	1. Analyse current financial health and risk profiles of national oil and gas companies 2. Identify incentive mechanisms (tax relief, guarantee schemes) to strengthen capital structures 3. Develop performance metrics and accountability frameworks 4. Provide capacity-building sessions on best financial management practices	National	Ministries in charge of Energy	Ministries of Finance, AFREC, Regional/National Development Banks, Commercial Banks, national oil companies and associations	Short-Long Term	• Financial stability assessment reports • Incentive packages and accountability frameworks • Trained financial managers in NOCs	Stronger NOCs with robust governance and liquidity, ensuring efficient service delivery and resilience to market fluctuations	Evidence of Well financed and capacitated NOCs published in AU-MS (Yes/No)
3	Promote private sector involvement and PPPs in oil and gas	1. Organise regular forums for NOCs, IOCs, and private investors to explore collaboration 2. Compile a pipeline of investable O&G projects (upstream, midstream, downstream) for potential partnerships 3. Develop guidelines on equitable risk-sharing and contractual obligations	National	Ministries in charge of Energy	UNECA, AFREC, National Business Associations NOCs/IOCs	Short-Long Term	• Forum proceedings and partnership agreements • Project pipeline database • PPP guideline documents	A broader investment base in the oil and gas sector, fostering technology transfer, cost-sharing, and innovative financing structures that expand market opportunities	• Collaboration projects pipeline of NOCs and IOCs • (Yes/No)
4	Ensure wide access to clean NG energy through targeted subsidies and network expansion	1. Design policy measures for pro-poor NG subsidies tied to household income thresholds 2. Outline infrastructure rollout plans (pipelines, distribution nodes) in underserved areas 3. Monitor and evaluate subsidy efficacy to minimize fiscal strain	National	Ministries in charge of Energy and Petroleum	UNECA, Ministries in charge of Finance Private sector NG suppliers	Medium-Long Term	• Policy documents on pro-poor subsidies • Infrastructure expansion plans • Annual subsidy impact evaluation	Improved affordability and accessibility of NG for lower-income households, supporting equitable energy transitions and reducing reliance on harmful fuels	AU-MS Subsidy policy, infrastructure plans and impact analysis results in place (Yes/No)
5	Enhance operational efficiency across O&G supply chains	4. Implement advanced pipeline monitoring and leak detection systems 5. Introduce digital solutions (IoT, real-time data analytics) for Optimising storage, transport, and distribution 6. Provide training on modern logistics and asset management for O&G personnel 7. Foster cooperation among national regulators to Harmonise operational standards	Regional	Regional Directorates of Energy	National and regional Energy Regulators, O&G Companies, Ministries in charge of Energy	Short-Medium Term	• Deployment of digital monitoring and leak detection technologies • Training modules for O&G logistics • Harmonised operating standards/regulations	Reduced losses and environmental incidents in O&G infrastructure, lowering operational costs and improving sustainability across the entire supply chain	• Robust monitoring of implementation of O&G leaks regulatory framework on full value chain. (Yes/No)

Source: Authors' own creation

ACTION PLAN

Table 28. Strategic Intervention 3: Environmental, Social and Governance Sustainability enhanced

Pathway to Change: The oil and gas sector's future depends on adherence to ESG protocols to maintain competitiveness and financial sustainability. This intervention focuses on building capacity among African stakeholders to negotiate and enforce ESG compliance, ensuring that both IOCs and NOCs adopt sustainable practices. By embedding ESG principles into regulations and operations, the pathway ensures environmental responsibility, workforce equity, and long-term resilience of the sector.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Establish ESG minimum guidelines for both IOCs and NOCs	- Draft ESG guidelines aligned with global best practices while reflecting African socioeconomic contexts - Convene stakeholder consultations (IOCs, NOCs, civil society) for feedback - Develop standardised monitoring and reporting templates for voluntary adoption - Finalise guidelines and circulate to Member States and industry actors	Continental	AFREC	UNECA, Regional Oil & Gas Associations, Ministries in charge of Energy and Petroleum (MEP), Ministries in charge of Labour/Social Affairs (MoL/MSA)	Short Term	- ESG guidelines document - Stakeholder consultation reports - Reporting templates	A clear, uniform approach for sustainable O&G investments and operations across Africa, paving the way for environmental responsibility and social equity	Established ESG Guidelines and reporting system in Place in AU-MS (Yes/No)
2	Develop ESG model regulations for the oil and gas industry, including a reporting platform	- Review existing national/regional ESG regulations to identify best practices - Draft model regulations detailing compliance requirements, enforcement procedures, and penalties - Create a digital reporting platform for transparent disclosure of ESG metrics - Promote uptake of model regulations through regional workshops	Continental	AFUR	AFREC AFSEC, Regional Energy Regulators, Regional Oil & Gas Associations, MEP, MoL/MSA	Short Term	- Model ESG regulations - Digital reporting platform - Workshop proceedings and adoption guidelines	A harmonised regulatory framework with consistent ESG compliance and reporting requirements, facilitating investor confidence and accountability across the continent	Model regulations and reporting published and adopted by AU-MS (Yes/No)
3	Raise awareness on ESG responsibilities and benefits for NOCs and IOCs	- Develop user-friendly outreach materials (guides, toolkits) in multiple languages - Conduct national and regional seminars on ESG obligations and potential operational benefits - Capture success stories and case studies for wide dissemination - Integrate ESG content into O&G conferences	National	MEPs	AFREC, AUC-DIE, Regional & National Energy Regulators	Short Term (Ongoing)	- Outreach toolkits and seminar materials - Documented case studies - ESG sessions integrated into sector events	Heightened ESG consciousness among O&G stakeholders, driving voluntary improvements in sustainability performance and reducing ESG risks	Increased awareness on ESG by regulatory authorities and NOCs/ (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Build capacity for ESG regulation and negotiations	1. Design specialised ESG training modules for regulators, negotiators, and contract managers 2. Organise study tours to regions with advanced ESG frameworks 3. Partner with certifying institutions undertaking ESG certification programmes 4. Establish a cross-country peer-learning network to share experiences	National	MEPs	NOCs, National/Regional Energy Regulators, Regional Oil & Gas Associations, UNECA, United Nations Development Programme (UNDP)	Short Term (Ongoing)	• ESG training curricula • Study tour & peer-learning programme reports • Certification scheme guidelines	Better-equipped regulators and policymakers capable of enforcing ESG standards, negotiating fair contracts, and ensuring sustainable operations in the oil and gas sector	Capacitated institutional framework for ESG enforcement and certification in place (Yes/No)
5	Promote decarbonisation of the O&G value chain	5. Conduct baseline studies on methane emissions, flaring, and venting 6. Enforce guidelines and penalties for zero-flaring and zero-venting practices 7. Identify CCUS pilot projects and facilitate investment partnerships 8. Promote the use of clean energy in upstream and downstream operations	Continental	AFREC	National and regional Regulators, Regional Oil & Gas Associations, MEP	Short-Medium Term	• Methane baseline report • Zero-flaring/venting guidelines • CCUS pilot project proposals	Reduced carbon and methane footprints across oil and gas operations, fostering compliance with global climate goals and boosting the sector long-term viability	• Decarbonisation measures (flaring, venting, CCUS) defined for the oil and gas value chain and adopted by oil /NG producing AU-MS (Yes/No)

Source: Authors' own creation

ACTION PLAN

4.7 AGRICULTURE

The current status of energy consumption in Africa's agriculture sector is limited and yet transitioning to more sustainable and efficient energy systems is not merely beneficial but imperative. Such a transition would not only address the challenges of energy inefficiency and environmental degradation but also unlock the potential for enhanced agricultural productivity, which would be crucial for the economic development of rural areas. This is crucial for meeting the growing food demands of the continent's growing population and for propelling Africa towards a more sustainable and economically sound future. It has to be highlighted that in the scope of the ETSAP, agriculture is considered up to the farm gate. Beyond that, logistics fall under transportation and agro-industry under industry.

AGRICULTURE



Modernise Equipment

Use Renewable-Powered
Irrigation

Legend: Durban port logistics – linking agriculture to export markets

The strategic objective presented for this sector is to **increase the use of modern and efficient energy technologies in agriculture**. The strategic objective is to address several crucial needs: optimising the energy use of the sector, decreasing its environmental footprint, and

lowering the costs of agricultural production. This objective not only aligns with the broader goals of the AU's Energy Transition Strategy but also ensures that the agricultural sector can contribute positively to achieving carbon neutrality and enhanced energy, water, and food security across the continent.

The related strategic interventions are as follows:

- 1. Modernisation of Agricultural Equipment:** This intervention aims to overhaul the existing agricultural machinery with state-of-the-art, energy-efficient models. Support mechanisms such as subsidies or favourable financing options will be essential to facilitate access to such equipment for smallholder farmers. Complementary to this, robust training programmes will be implemented to maximise the adoption and proper use of these technologies.
- 2. Promotion of Renewable Energy in Agriculture:** Focused on reducing reliance on traditional energy sources, this strategy advocates for the integration of renewable energy technologies, like solar and biomass, into farming operations. Tailored renewable energy solutions will be developed to meet the unique needs of the agricultural sector, ensuring sustainability and energy independence.
- 3. Enhancement of Agricultural Extension Services:** To effectively disseminate knowledge and facilitate the transition to energy-efficient and renewable energy-based agricultural practices, extension services will be enhanced to include energy management and renewable integration. These services will provide continuous training and support, ensuring that farmers are well-equipped to adopt and benefit from new technologies and methods.

By implementing these strategic interventions, the continent can make significant strides towards more sustainable and productive agricultural practices that are essential for its economic growth and sustainability.

- The Action Plans for these Strategic Interventions are in Table 29-31.

ACTION PLAN

Table 29. Strategic Intervention 1. Modernisation of Agricultural Equipment

Pathway to Change: Africa's agricultural sector, despite its significant contribution to economies, consumes relatively little energy and remains largely under-mechanised, leading to low productivity and high labour intensity. This reliance on outdated and inefficient farming equipment restricts the sector's ability to meet growing food demands, adapt to climate change, and reduce its environmental impact. By modernising agricultural equipment, this intervention aims to enhance productivity, increase crop yields, and lower the environmental footprint of farming practices. The pathway involves improving access to affordable, energy-efficient machinery and fostering innovation to support sustainable agricultural modernisation.

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Subsidy Programme for Energy-Efficient Farm Equipment	National	Ministries in charge of Agriculture	Ministries in charge of Finance & energy International Donors Farmers Associations	Short Term	- Subsidy guidelines and application forms - Monitoring reports on subsidy uptake - Interim impact assessments	Wider adoption of modern, efficient machinery that reduces labour intensity and boosts productivity, ultimately contributing to food security and lower energy costs	- Subsidy programme launched (Yes/No) - Number of subsidy applications received - Reduction in average energy use per farm (Yes/No)
2	Pan-African Equipment Modernisation Fund	Continental	AfDB	Regional Economic Communities, Regional Development Banks, National Commercial Banks, Ministries in charge of Finance & energy	Medium Term	- Needs assessment reports - Fund operational guidelines - Financing agreements with participating banks	Enhanced continental market for modern, energy-efficient farm equipment, promoting economies of scale and sustained agricultural Modernisation	- Fund officially established (Yes/No) - Number of financing agreements - Repayment/default rates monitored (Yes/No)
3	Regional Demonstrations of Advanced Farming Equipment	Regional	REC's Agricultural Directorates	National Ministries of Agriculture & Energy Private Sector Equipment suppliers Farming Associations and communities	Medium Term	- Demonstration event schedules - Training session materials - Farmer feedback surveys	Increased regional acceptance and uptake of energy-efficient technologies, adapting to local environmental conditions and improving yields	- Number of demonstration events held - Training materials produced (Yes/No) - Positive feedback from farmers (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Harmonisation of Farm Equipment Standards	- Review existing national and international equipment standards - Draft harmonised specifications and safety norms applicable to AU Member States - Conduct consultative workshops with stakeholders (manufacturers, farmers, regulatory bodies) - Finalise and publish standardised guidelines	Continental	AUC	Pan-African Quality Infrastructures (PAQI) / AFSEC / ARSO National & Regional Standards Bodies, International Standards Organisation (ISO)	Medium-Long Term	- Draft harmonised equipment standards - Workshop findings and consensus reports - Final published guidelines	Improved quality, safety, and efficiency of farm equipment across the continent, facilitating cross-border trade and consistent performance benchmarks	- Standards document published (Yes/No) - Number of Member States adopting standards - Stakeholder workshops conducted (count)
5	Electric and Renewable Fuels Powered Machinery Deployment Guidelines	- Research best practices for integrating electric and renewable fuel machinery in agriculture - Develop easy-to-follow technical guidelines and case studies - Train extension officers to support farmers in adopting these technologies - Monitor pilot deployments to refine guidelines	Regional	RCREEEs	Ministry of Energy, Renewable Energy Firms Farming equipment suppliers	Medium-Long Term	- Technical guidelines and case studies - Trained extension officers - Pilot deployment reports	Greater prevalence of electric and renewable-fuel agricultural machinery, cutting reliance on fossil fuels while improving resilience to energy supply disruptions	- Guidelines published (Yes/No) - Number of extension officers trained - Pilot deployments completed (Yes/No)
6	Mobile Training Units for Rural Areas	- Design mobile modules covering equipment operation, maintenance, and safety - Coordinate with local governments to schedule training in remote communities - Gather feedback and adapt modules to local needs and languages - Evaluate changes in productivity post-training	National	Ministries in charge of Agriculture	Local Governments, Community Organisations	Short-Medium Term	- Mobile training curricula and schedule - Training feedback reports - Productivity assessment data	Boosted productivity in rural areas through hands-on, context-specific skill development, closing the gap in equipment usage and maintenance knowledge	- Number of mobile trainings conducted - Modules adapted for local contexts (Yes/No) - Measurable productivity improvements (Yes/No)
7	Nationwide Awareness Campaigns for Equipment Modernisation	- Launch multi-channel media campaigns (radio, TV, social media) promoting modern equipment benefits - Partner with local agri-cooperatives and authorities to distribute informational materials - Track campaign reach and measure changes in farmer awareness	National	Ministries in charge of Agriculture	Media Outlets, Local NGOs, Agricultural Associations	Short-Medium Term	- Campaign materials (radio spots, pamphlets, etc.) - Outreach partnership agreements - Awareness tracking reports	Increased public knowledge of advanced agricultural technologies, driving higher demand and easing the transition to energy-efficient equipment	- Campaign launched (Yes/No) - Number of households reached - Measured increase in farmer awareness (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
8	Equipment Leasing Programmes	1. Collaborate with commercial banks and equipment suppliers to design affordable leasing arrangements 2. Establish guidelines for lease terms and maintenance responsibilities 3. Provide financial literacy sessions for farmers to ensure responsible use and repayments	Continental	AfDB	Commercial Banks, Equipment Suppliers Farmers Associations	Medium Term	- Leasing framework and template agreements - Financial literacy workshop materials - Partnership MoUs with banks/equipment providers	Expanded access to modern equipment through flexible payment options, increasing mechanisation levels and agricultural competitiveness	- Leasing programme launched (Yes/No) - Number of farmers opting for leases - Repayment default rate monitored (Yes/No)

Source: Authors' own creation

Table 30. Strategic Intervention 2. Promotion of Renewable Energy in Agriculture

Pathway to Change: Africa's agriculture faces the dual challenge of high energy costs and limited access to reliable power, which constrain efficiency and growth. This intervention seeks to integrate renewable energy solutions, such as solar-powered irrigation, wind, and biogas systems, into agricultural processes, providing cost-effective and sustainable energy sources. By addressing energy reliability and affordability, the pathway envisions increased agricultural productivity, reduced environmental degradation, and enhanced resilience to climate change, transforming the sector into a model of sustainable development.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Training Programmes on Renewable Energy Technologies	1. Design comprehensive modules covering solar (PVs, pumping systems), wind (small-scale turbines), and biomass (digesters, gasifiers) 2. Train extension officers, agribusiness owners, and farmers through workshops and online platforms 3. Provide follow-up support (hotlines, digital Q&A forums) to address technical challenges	National	Agricultural Extension Services	Technical Schools, Universities	Short-Long Term	• Training curricula and materials • List of trained extension officers and farmers • Follow-up support system established	Enhanced expertise enabling farmers and agribusinesses to adopt renewable energy solutions, leading to greater productivity and cost savings	• Number of trainings delivered • Training materials published (Yes/No) • Post-training support system in place (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
2	Development of Biomass Energy Supply Chains	- Partner with local cooperatives and agro processors to identify viable biomass feedstock (crop residues, animal waste) - Establish collection/processing centres for converting waste into energy products - Train local entrepreneurs on managing biomass supply chains	National	Ministries in charge of Agriculture	Ministry of Environment, Forestry Departments Ministries in charge of energy	Medium Term	- Inventory of biomass feedstocks - Operational collection/processing centres - Training manuals for local entrepreneurs	A robust biomass-based renewable energy industry that lowers agricultural waste, diversifies farmer income streams, and improves rural energy access	- Biomass inventory completed (Yes/No) - Number of processing centres operational - Trainings for supply chain managers conducted (Yes/No)
3	Renewable Energy Mini/Micro-grids for Irrigation and Post-processing Equipment	- Conduct feasibility studies for micro-grid deployment in farming communities - Install small-scale solar, wind, or hybrid systems tailored to irrigation and processing needs - Integrate irrigation and post-processing with existing mini/micro-grid infrastructures where feasible	National	Ministries in charge of Water and Energy	International Development Organisations Ministries in charge of agriculture, Farming communities SME agricultural industries	Medium Term	- Feasibility study reports - Installed micro-grid systems - Integration protocols for existing mini grids	Increased agricultural yield and improved product quality through reliable, clean power sources for irrigation and post-harvest processing	- Feasibility studies completed (Yes/No) - Number of micro-grids deployed - Integration with existing mini grids (Yes/No)
4	Renewable Energy Driven Fertiliser Production	- Collaborate with fertiliser manufacturers to pilot solar- or bioenergy-powered production lines - Research low-emission production methods suitable for decentralised, rural settings - Set up demonstration sites to showcase reduced carbon footprints	Regional	Regional Agricultural Authorities	Chemical/fertiliser Companies, Research Bodies National and regional agricultural associations	Long Term	- Pilot projects with RE-powered fertiliser plants - Research papers on low-emission production - Demonstration site performance data	Significant reduction in the carbon intensity of fertiliser production, boosting sustainable agriculture while lowering operational costs for rural communities	- Number of pilot production lines - Research publications released (Yes/No) - Demonstration sites established (Yes/No)
5	Expansion of Biogas Programmes	- Identify farms with high potential for biogas (livestock operations, crop waste) - Provide financing schemes (microloans, grants) for biogas installation - Train farmers on biogas system maintenance and safe usage	National	National Energy Agencies	Local Biogas Companies, NGOs, Farmers International organisations/partners	Medium Term	- Biogas feasibility assessments - Financing guidelines and agreements - Maintenance training modules	Widespread biogas adoption, reducing reliance on traditional fuels while improving farm sustainability and lowering waste disposal issues	- Number of biogas units installed - Financing mechanisms established (Yes/No) - Maintenance training conducted (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Renewable Energy Certifications for Agri-businesses	1. Develop criteria for certification (percentage of RE use, emissions reductions, operational efficiency) 2. Partner with certification agencies to implement audits and validations 3. Maintain an online registry highlighting certified agri-businesses	National	National Standards Bodies	Industry Associations, Certification Agencies	Short-Long Term	• Certification criteria and audit protocols • Established pool of certified auditors • Public registry of certified businesses	Growing recognition of sustainable agri-businesses, spurring broader sector adoption of renewable energies and encouraging corporate responsibility	• Certification criteria published (Yes/No) • Number of businesses audited • Online registry operational (Yes/No)
7	Online Marketplace for Renewable Energy Solutions	1. Collaborate with RE technology firms and farmer cooperatives to create a user-friendly e-platform 2. Develop a rating and review system for RE suppliers 3. Conduct digital marketing campaigns to drive traffic and usage	Continental	African Union	RE Technology Firms, Agricultural Cooperatives	Medium Term	• E-platform featuring RE solutions and providers • Rating/feedback mechanism • Marketing campaign analytics	Easier access to vetted RE technologies and providers, boosting adoption rates and bridging information gaps across the continent	• Marketplace platform launched (Yes/No) • Number of suppliers listed • Rating system established (Yes/No)
8	Public Awareness Campaigns on the Benefits of Renewables in Agriculture	1. Host workshops, seminars, and social media outreach spotlighting cost savings and environmental benefits 2. Feature farmer success stories and demonstrate return on Investment (ROI) to potential adopters 3. Engage local media to broadcast renewable energy testimonials	National	Ministries in charge of Agriculture	Media Houses, Educational Institutions, NGOs	Short-Long Term	• Campaign materials (videos, brochures, radio segments) • Success story portfolio • Audience outreach metrics	Broadened acceptance of RE in agriculture, translating into higher demand for green solutions and an accelerated transition to sustainable practices	• Campaign materials produced (Yes/No) • Coverage in local media (Yes/No) • Increase in inquiries or adoption rates (Yes/No)
9	Regulatory Frameworks for On-farm Renewable Energy	1. Draft model regulations covering small-to-large scale RE installations on farms 2. Consult with energy companies, farmers, and regulators to refine policy 3. Implement and enforce regulations through local authorities	National	Ministries in charge of Agriculture	Ministries in charge of energy National energy regulators	Short Term	• Draft legislation/regulatory guidelines • Stakeholder consultation reports • Published regulations for on-farm RE	Supportive legal environment enabling farmers to install and operate RE systems with minimal bureaucratic barriers, promoting sector-wide innovation and cost efficiency	• Regulations drafted (Yes/No) • Stakeholder consultations completed (Yes/No) • Regulatory framework published (Yes/No)

Source: Authors' own creation

ACTION PLAN

Table 31. Strategic Intervention 3. Enhancement of Agricultural Extension Services

Pathway to Change: The lack of robust agricultural extension services in many parts of Africa continues to hamper the dissemination of modern farming techniques and technologies, widening the gap between agricultural research and farm-level practices. This intervention focuses on enhancing these services to bridge the knowledge gap, enabling farmers to adopt sustainable, efficient, and climate-resilient farming methods. By improving farmer education and access to technical support, the pathway aims to increase productivity, strengthen food security, and empower rural communities with the tools to drive agricultural transformation.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Build Capacity of Extension Workers in Energy Applications in Agriculture	1. Develop and deliver specialised training modules on energy-efficient and renewable energy technologies 2. Conduct in-person workshops for extension officers in multiple regions 3. Provide continuous refresher courses and mentorship programmes	National	Ministries of Agriculture	Agricultural Colleges, International NGOs	Short Term	• Training curricula and manuals • List of trained extension officers • Refresher course schedules	Extension workers equipped with up-to-date knowledge, enabling widespread adoption of energy-efficient and renewable energy practices in farming	• Training modules produced (Yes/No) • Number of extension workers trained • Mentorship programme operational (Yes/No)
2	Deploy Digital Tools for Extension Services	1. Design user-friendly mobile apps and online portals with real-time weather data, energy management tips, and best farming practices 2. Conduct pilot testing in selected regions to refine the tools 3. Train extension workers to guide farmers on effectively using digital platforms	National	National ICT Agencies	Technology Companies, Universities	Medium Term	• Functional mobile apps/online portals • Pilot test reports • Trained extension workers on digital tool usage	Increased access to timely, data-driven advice for farmers, improving on-farm energy use and overall productivity	• Digital tools developed (Yes/No) • Number of pilot tests conducted • Farmers adopting digital platforms (Yes/No)
3	Establish Continental Extension Service Network	1. Create an online repository of best practices, case studies, and policy guidelines 2. Facilitate regular virtual meetings and conferences among extension officers in different regions 3. Collect and share region-specific success stories and challenges	Continental	African Union	Food and Agriculture Organisation (FAO), International Fund for Agricultural Development (IFAD), NGOs	Medium Term	• Online knowledge hub • Regular virtual conferences • Database of success stories and challenges	Stronger collaboration among extension services across Africa, leading to standardised approaches and faster diffusion of innovations	• Knowledge hub launched (Yes/No) • Number of virtual conferences held • Documented success stories (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Implement Mobile Extension Services	1. Equip mobile units with demonstration materials on efficient irrigation, solar pumping, and sustainable land management 2. Coordinate schedules with local governments to cover remote communities 3. Gather feedback from farmers to continuously improve service delivery	National	Ministries of Agriculture	Mobile Network Operators, Local Governments	Short Term	• Mobile unit operational plans • Demonstration materials and manuals • Farmer feedback reports	Expanded outreach to remote areas, enhancing farmers practical skills and adoption of modern energy-efficient farming techniques	• Number of mobile units deployed • Demonstrations conducted (Yes/No) • Positive farmer feedback (Yes/No)
5	Develop Online Training Modules for Farmers	1. Produce interactive e-learning courses on topics like energy conservation, renewable energy integration, and climate-resilient agriculture 2. Host live webinars and Q&A sessions with experts 3. Offer downloadable certifications upon course completion	Continental	African Union	Educational Technology Firms, Agricultural Institutions	Medium Term	• E-learning platform with multiple modules • Webinar recordings and transcripts • Certificate issuance system	Broad access to specialised knowledge, enabling farmers to independently upskill and adopt sustainable energy solutions on their farms	• E-learning platform launched (Yes/No) • Number of course enrolments • Certifications issued (Yes/No)
6	Standardise Extension Service Protocols	1. Collaborate with regional bodies to define minimum standards for service delivery (curriculum, outreach methods, evaluation metrics) 2. Pilot standardised protocols in select regions 3. Refine standards based on feedback and publish final guidelines	Regional	Regional Economic Communities	National Ministries of Agriculture	Medium Term	• Draft extension service standards • Pilot region reports and stakeholder feedback • Finalised protocols and guidelines	Consistent, high-quality extension services across multiple regions, ensuring reliable information and uniform support for energy-related agricultural needs	• Standard protocols drafted (Yes/No) • Pilot feedback collected (Yes/No) • Protocols finalised (Yes/No)
7	Launch Public Awareness Campaigns on Modern Farming	1. Develop multimedia campaigns (radio, TV, social media) highlighting benefits of energy-efficient agricultural practices 2. Partner with community leaders to adapt messages in local languages 3. Measure changes in public perception and interest through surveys	National (Pilot AU Member States)	Ministries of Information	Media Outlets, Community Leaders, Ministries in charge of agriculture, energy	Short Term	• Campaign materials (radio ads, print, social media) • Localised messaging strategies • Survey data on public perception	Greater public understanding of modern, energy-saving farming methods, accelerating adoption and improving sector sustainability	• Campaign launched (Yes/No) • Local language adaptations (Yes/No) • Positive shift in survey responses (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
8	Develop Partnerships with Agribusiness for Training	1. Identify and engage agribusiness firms willing to collaborate on training 2. Integrate latest energy-related technological innovations into extension curricula 3. Offer internships or on-site demonstrations for farmers and extension officers	National (Pilot AU Member States)	Ministries of Agriculture	Agribusiness Corporations, Local Businesses	Medium Term	• Partnership agreements or MoUs • Updated training materials with industry input • Internship/on-site demonstration reports	Empowered agri-business communities with cutting-edge, energy-efficient solutions, fostering robust value chains and improved market competitiveness	• Number of partnership agreements signed • Incorporation of industry insights into curricula (Yes/No) • Internships/on-site demos conducted (Yes/No)
9	Develop Partnerships with Agribusiness for Training	1. Identify and engage agribusiness firms willing to collaborate on training 2. Integrate latest energy-related technological innovations into extension curricula 3. Offer internships or on-site demonstrations for farmers and extension officers	National (Pilot AU Member States)	Ministries of Agriculture	Agribusiness Corporations, Local Businesses	Medium Term	• Partnership agreements or MoUs • Updated training materials with industry input • Internship/on-site demonstration reports	Empowered agri-business communities with cutting-edge, energy-efficient solutions, fostering robust value chains and improved market competitiveness	• Number of partnership agreements signed • Incorporation of industry insights into curricula (Yes/No) • Internships/on-site demos conducted (Yes/No)

Source: Authors' own creation

ACTION PLAN

4.8 CLEAN COOKING

The strategic objective of innovating and strategising for clean cooking solutions forms a critical component of the African Union's Energy Transition Strategy. This objective arises from the urgent need to address the widespread reliance on inefficient and harmful cooking practices across the continent. A substantial portion of the African population still depends on traditional cooking methods, such as burning wood, charcoal, and agricultural residues. These practices not only contribute to environmental degradation through deforestation and pollution but also pose serious health risks due to indoor air pollution. The transition to cleaner, more efficient cooking solutions is crucial for mitigating these impacts.

CLEAN COOKING



Scale up Advanced Stoves

Strengthen Supply Chains



Legend: Woman preparing food – household energy access

Despite the availability of cleaner technologies, several barriers hinder their widespread adoption. Key challenges include the high cost of advanced cooking technologies, limited accessibility, entrenched traditional cooking habits, and a lack of supportive infrastructure. Additionally, the market structures necessary for the efficient distribution and maintenance of clean cooking solutions are often underdeveloped. Moreover, policy and regulatory frameworks in many African countries are not conducive to the adoption of new technologies, further complicating efforts to shift away from traditional methods.

Given these complexities, the strategic objective to **promote the adoption of clean cooking technologies in Africa** will allow for the creation of a holistic approach that encompasses technological innovation, availability, accessibility, social acceptability, and affordability, supported by established market systems, policy support, and public engagement. This multifaceted strategy is designed to foster an environment where modern, efficient, and culturally acceptable cooking solutions can thrive, thereby enhancing health outcomes, reducing environmental impacts, and contributing to economic and social development across Africa.

The derived strategic interventions for this objective are as follows:

Strategic Interventions

- 1. Development and Deployment of Advanced Cooking Technologies:** Prioritise the research, development, and dissemination of advanced cooking technologies that are both affordable and suited to diverse cultural and regional culinary practices. Focus on scalable solutions that use locally available resources and align with the economic realities of African households.
- 2. Enhancing Market Structures and Supply Chains:** Strengthen the production, distribution, and after-sales networks for clean cooking technologies through partnerships with local and international stakeholders. Develop innovative financing models to enhance affordability and accessibility of these technologies.
- 3. Policy Development and Regulatory Support:** Develop supportive policies and regulatory frameworks that facilitate the adoption and scaling of clean cooking solutions. This includes revising existing regulations, removing barriers, and implementing incentives to foster a conducive market environment.
- 4. Public Awareness Campaigns and Education:** Conduct comprehensive public awareness campaigns and educational programmes to shift perceptions and inform the public about the benefits of clean cooking technologies. Engage communities directly to encourage the adoption of modern, healthier, and more sustainable cooking practices.

The proposed Actions for these strategic interventions are presented in Tables 32-35 below.

ACTION PLAN

Table 32. Strategic Intervention: 1 Development and Deployment of Advanced Cooking Technologies

Pathway to Change: The reliance on traditional cooking methods in Africa leads to widespread household air pollution, contributing to significant health risks, environmental degradation, and energy inefficiency. The adoption of advanced cooking technologies has remained low due to high costs, cultural preferences, and inadequate supply chains. This intervention seeks to develop and deploy affordable, user-friendly, and culturally appropriate clean cooking solutions. By improving access to advanced cooking technologies, the pathway envisions a reduction in air pollution, lowered disease burdens, enhanced energy efficiency, and an improved quality of life for millions of households.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Promote various CCTs	1. Identify target communities and assess baseline cooking practices 2. Select and disseminate information on diverse clean cooking technologies (e.g., LPG stoves, improved biomass stoves, electric induction) 3. Conduct training sessions for households on usage, maintenance, and safety 4. Track user feedback to gauge acceptance and refine technology offerings	National	National Ministries of Energy	Local Governments, NGOs	Short Term	- Baseline assessment reports - Training workshop materials - Feedback surveys and analysis	Broader diversity of clean cooking solutions introduced in pilot communities, increasing user awareness and acceptance of alternatives to traditional cooking methods	- Assessment completed (Yes/No) - Number of training sessions conducted - Feedback survey results compiled (Yes/No)
2	Roll out Successful Pilot Projects	1. Evaluate results from pilot communities (e.g., adoption rates, user satisfaction, cost savings) 2. Partner with local distributors/retailers to expand the supply chain 3. Develop marketing campaigns highlighting successful outcomes 4. Monitor performance and address challenges during scale-up	National	National Ministries of Energy	National Governments, NGOs	Medium Term	- Evaluation reports from pilot areas - Partnerships with local distributors - Marketing and expansion strategies	Significant scaling of proven clean cooking solutions, driving larger adoption rates and improving health and environmental outcomes for the wider population	- Pilot evaluation completed (Yes/No) - Number of distributor partnerships formed - Uptake rate in new communities (Yes/No)
3	Establish Quality Control and Standards for Clean Cooking Equipment	1. Review international and national standards for cooking technologies 2. Draft or update standards emphasising safety, efficiency, and durability 3. Organise workshops with manufacturers and regulatory bodies to finalise guidelines 4. Enforce compliance through inspections and certification	Continental	AUC / PAQI / AFSEC / ARSO	National Standards Bodies, RECs	Short Term	- Standardised guidelines and protocols - Workshop proceedings with stakeholder input - Certification framework for clean cooking equipment	Consistently high-quality, safe, and efficient cooking technologies available across African markets, building consumer trust and protecting users from subpar products	- Standards guidelines finalised (Yes/No) - Number of manufacturers participating in workshops - Certification system operational (Yes/No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Implement Tax Incentives for Clean Cooking Technologies	National	National Ministries of Finance	Tax Authorities, Industry Stakeholders Ministries in charge of energy	Short Term	- Legislative proposals or policy briefs - Stakeholder consultation reports - Published eligibility criteria	Lower upfront costs and enhanced market competitiveness of clean cooking solutions, leading to increased affordability for end users and manufacturers alike	- Incentive policy approved (Yes/No) - Number of eligible products identified - Adoption rate post-incentive introduction (Yes/No)
5	Launch Awareness Campaigns for New Technologies	National (Pilot AU Member States)	National Ministries of Energy	RECs, Media, Universities, Local NGOs	Short Term	- Awareness campaign materials (radio spots, brochures, videos) - Testimonial case studies - Public perception survey results	Increased public understanding of clean cooking benefits, boosting consumer demand and willingness to transition away from traditional stoves	- Campaign materials produced (Yes/No) - Number of media channels engaged - Positive shift in public perception (Yes/No)
6	Create a Clean Cooking Technology Certification Programme	Regional	Regional Economic Communities	National Certification Bodies, AFREC	Medium Term	- Certification criteria and testing protocols - Operational certification registry - Updated criteria for periodic review	Higher consumer confidence in verified clean cooking solutions, encouraging manufacturers to innovate and maintain high-quality products	- Criteria document published (Yes/No) - Registry of certified products launched (Yes/No) - Technologies re-assessed periodically (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
7	Implement Consumer Financing Programmes for Innovative Clean Cooking Technologies	1. Partner with microfinance institutions to design low-interest loan or pay-as-you-go schemes 2. Roll out pilot financing programmes in target communities 3. Train local NGOs on consumer finance literacy to reduce loan defaults 4. Evaluate repayment rates and overall consumer satisfaction	National (Pilot AU Member States)	National Development Banks	Microfinance Institutions, NGOs	Medium Term	• Consumer financing models (loan, pay-as-you-go) • Pilot roll-out reports • Training materials on financial literacy	Higher adoption of clean cooking technologies by low-income households, driven by accessible financing options that ease upfront costs	• Financing schemes launched (Yes/No) • Default rates monitored (Yes/No) • Number of households benefiting from financing
8	Develop Cookbooks for Traditional Recipes Using Advanced Cooking Technologies	1. Identify popular local dishes and adapt them for modern, efficient stoves 2. Partner with culinary experts and community leaders to test and refine recipes 3. Publish and distribute cookbooks (print, digital) in multiple local languages	National (Pilot AU Member States)	National Ministries of Energy	National Food Authorities	Short Term	• Recipe collection adapted for clean cooking • Community feedback reports • Multilingual cookbook distribution	Increased user acceptance and cultural alignment of new cooking methods, facilitating a smoother transition and sustained usage of advanced technologies	• Cookbook produced (Yes/No) • Number of local languages included • Adoption feedback from users (Yes/No)
9	Deployment of Clean Cooking Solutions in Institutional Kitchens	1. Conduct baseline assessments of cooking energy needs in schools, refugee camps, prisons, etc. 2. Install large-scale clean cooking systems (biogas, LPG, energy-efficient stoves) 3. Train personnel on operation, maintenance, and safety practices 4. Monitor fuel consumption and air quality improvements	National (Pilot AU Member States)	National Ministries of Energy	AFREC, World Food Programme (WFP), United Nations High Commissioner for Refugees (UNHCR), NGOs	Short Term	• Baseline reports on institutional cooking demand • Installed institutional-scale clean cooking technologies • Training session records and maintenance logs	Reduced dependence on traditional biomass in institutional settings, leading to better indoor air quality, cost savings, and a demonstration effect for wider community uptake	• Baseline assessment completed (Yes/No) • Number of institutions adopting clean cooking

Source: Authors' own creation

ACTION PLAN

Table 33. Strategic Intervention 2 Enhancing Market Structures and Supply Chains

Pathway to Change: The reliance on traditional cooking methods in Africa leads to widespread household air pollution, contributing to significant health risks, environmental degradation, and energy inefficiency. The adoption of advanced cooking technologies has remained low due to high costs, cultural preferences, and inadequate supply chains. This intervention seeks to develop and deploy affordable, user-friendly, and culturally appropriate clean cooking solutions. By improving access to advanced cooking technologies, the pathway envisions a reduction in air pollution, a decrease in disease burdens, enhanced energy efficiency, and an overall improvement in quality of life for millions of households.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Implement Policy Frameworks to Support Local Manufacturing	1. Draft policy proposals offering tax breaks, subsidies, and capacity-building programmes to local manufacturers 2. Organise stakeholder consultations (manufacturers, trade associations) to refine policy measures 3. Enact legislation or executive directives enabling financial and technical support 4. Track and evaluate policy impact on domestic manufacturing growth	National (Pilot AU Member States)	National Ministries of Trade and Industry	Local Manufacturers, Trade Associations Ministries of energy	Short Term	• Policy briefs and draft legislation • Stakeholder consultation reports • Enacted legislative measures	Strengthened local manufacturing base for clean cooking technologies, reducing import dependence and creating local jobs	• Legislation enacted (Yes/No) • Number of local manufacturers receiving support • Measurable increase in domestic production (Yes/No)
2	Facilitate Cross-border Clean Cooking Equipment Trade Agreements under AfCFTA ³⁵	1. Identify tariff barriers and regulatory bottlenecks for clean cooking product trade 2. Collaborate with customs authorities to streamline processes for essential components and finished products 3. Develop and adopt common standards to ease cross-border movement 4. Monitor progress and compliance among member states	Continental	AUC/AfCFTA	Customs Authorities, RECs	Short Term	• Tariff and regulatory review reports • Simplified customs procedures • Common standards for clean cooking trade	Seamless trade of clean cooking technologies across African borders, lowering costs and expanding regional markets for manufacturers and consumers	• Agreement on reduced tariffs (Yes/No) • Common standards adopted (Yes/No) • Increase in cross-border trade volume (Yes/No)

35 In full alignment with the report: EU TAF, Strategy and Roadmap for Establishing a Market for Energy Efficient Appliances in Africa, 2021

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
3	Create Incentive Schemes for Local Production	1. Develop grant and award programmes targeting entrepreneurs in clean cooking tech 2. Promote innovation contests encouraging cost-efficient designs 3. Collaborate with financial institutions to provide low-interest loans 4. Conduct periodic impact assessments on technology availability and affordability	National	National Ministries of Industry	Financial Institutions, Local Entrepreneurs	Medium Term	• Grant/award programme guidelines • Innovation contest outcomes • Low-interest loan agreements	Enhanced local manufacturing capabilities and diversity of clean cooking solutions, making them more accessible and affordable for end users	• Number of grants/awards allocated • Innovation contest held (Yes/No) • Loan facility utilisation by local producers (Yes/No)
4	Enhance Electricity Distribution Networks for Rural Access	1. Map out underserved regions with limited grid access 2. Upgrade or extend electrical infrastructure, focusing on compatibility with clean cooking appliances 3. Partner with private sector to establish mini grids where full grid extension is not feasible 4. Provide training on system maintenance to local technicians	National	National Ministries of Energy	Local Governments, NGOs, Private Sector	Short Term	• Infrastructure upgrade plans • Installed or extended grid/mini-grid systems • Maintenance training materials	Increased adoption of electric clean cooking solutions in rural and underserved areas, reducing reliance on polluting fuels and improving living standards	• Number of grid extensions/mini grids implemented • Maintenance training conducted (Yes/No) • Rise in electric clean cooking appliance usage (Yes/No)
5	Subsidize Transportation Costs for Clean Cooking Solutions to Remote Areas	1. Develop subsidy criteria targeting transport companies serving remote regions 2. Collaborate with local governments to identify high-priority communities 3. Monitor distribution routes and costs to ensure subsidy effectiveness 4. Evaluate impact on final retail prices of clean cooking products	National (Pilot AU Member States)	National Ministries of Transport	Transportation Companies, Local Governments	Short Term	• Subsidy guidelines • Priority route mapping • Periodic cost-benefit reports	Improved availability and affordability of clean cooking technologies in remote communities, bridging the rural-urban gap in access	• Subsidy policy established (Yes/No) • Number of participating transport companies • Reduced final retail price in target areas (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
6	Coordinate Continental Clean Cooking Exhibitions and Trade Shows	1. Identify host countries and venues for large-scale exhibitions 2. Invite manufacturers, investors, and policymakers to showcase new products and forge partnerships 3. Develop marketing campaigns to raise public and industry awareness 4. Collect feedback from exhibitors and attendees for continuous improvement	Continental	AUC	Industry Associations, RECs	Medium Term	• Exhibition schedule and event materials • Participation agreements from key stakeholders • Post-event feedback reports	Expanded visibility of clean cooking innovations and greater collaboration among key actors, accelerating the exchange of ideas and market solutions	• Exhibitions/trade shows held (Yes/No) • Number of participating exhibitors • Partnerships/agreements formed (Yes/No)
7	Develop Online Platforms for Clean Cooking Technologies	1. Build or enhance existing e-marketplace websites for clean cooking solutions 2. Integrate user reviews, ratings, and technical specs to guide consumer choices 3. Conduct digital marketing campaigns to boost platform traffic 4. Offer customer support and troubleshooting resources online	National (Pilot AU Member States)	Ministries of Energy, Food, Agriculture	Information Technology (IT) Companies, E-commerce Platforms	Short Term	• Functional e-marketplace websites • User-friendly product listings and reviews • Marketing campaign analytics	Wider consumer reach and awareness of clean cooking products, fostering competitive pricing and informative decision-making for buyers in both urban and rural areas	• E-marketplace launched (Yes/No) • Number of products listed • User adoption/traffic metrics (Yes/No)
8	Promote Investment in Clean Cooking Technology Startups	1. Collaborate with investment promotion agencies to host pitch events 2. Offer venture capital seed funding or loan guarantees to selected startups 3. Provide mentorship and business development support to young enterprises 4. Track job creation and market expansion metrics	National (Pilot AU Member States)	National Investment Promotion Agencies	Venture Capitalists, Angel Investors	Medium Term	• Investment pitch events • Seed funding agreements • Mentorship session logs	Increased flow of capital and expertise to clean cooking startups, diversifying the supply chain and fostering innovative, cost-effective solutions	• Number of pitch events conducted • Funding secured by startups (Yes/No) • Increase in number of clean cooking enterprises (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
9	Implement Targeted Subsidies for Critical Supply Chain Components	1. Identify essential parts (burners, regulators, packaging) that significantly affect production costs 2. Provide direct subsidies or rebates for these components 3. Collaborate with manufacturers and importers to track distribution 4. Assess price reductions for end consumers	National (Pilot AU Member States)	National Ministries of Finance	Manufacturing Firms, Importers	Short Term	• List of subsidised components • Subsidy application process • Monitoring reports on component distribution	Lower production costs enabling manufacturers to offer final products at more affordable prices, boosting access for low-income groups	• Subsidized components identified (Yes/No) • Number of manufacturers/importers participating • Documented end-user price reductions (Yes/No)
10	Establish Sustainable Supply Chains for Communal Cooking Technologies	1. Develop centralised procurement frameworks for institutional-scale clean cooking solutions 2. Facilitate partnerships between local manufacturers and communal institutions (schools, health centres, etc.) 3. Set up distribution hubs and maintenance services for spare parts 4. Monitor usage and fuel savings in communal kitchens	Regional	RCREEEs	AFREC, Local Manufacturers, Development Banks, International Donors	Medium Term	• Centralised procurement mechanisms • Partnership agreements for local manufacturing • Distribution and maintenance network for communal kitchens	Robust, cost-effective supply chains enabling institutions to adopt clean cooking solutions at scale, reducing biomass use and mitigating deforestation	• Procurement framework established (Yes/No) • Maintenance networks operational (Yes/No) • Reduction in biomass consumption at communal sites (Yes/No)

Source: Authors' own creation

ACTION PLAN

Table 34. Strategic Intervention 3 Policy Development and Regulatory Support

Pathway to Change: The absence of supportive policies and comprehensive regulatory frameworks in many parts of Africa impedes the adoption of clean cooking solutions across the continent. This intervention focuses on developing robust policies and regulatory mechanisms that create an enabling environment for innovation, investment, and the scaling up of clean cooking technologies. By aligning with international health and environmental standards, the pathway seeks to accelerate clean cooking adoption, foster market growth, and build consumer confidence, contributing to healthier communities and sustainable energy systems.								
ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Development of a National Strategy on Clean Cooking	National	Ministries of Energy, Food, Agriculture	Consumer Groups, NGOs	Short Term	- Comprehensive baseline report - Stakeholder consultation summaries - National clean cooking strategy document	A clear roadmap guiding the expansion of clean cooking solutions, ensuring coordinated efforts and resource allocation	- Baseline assessment completed (Yes/No) - Stakeholder consultations conducted (Yes/No) - Strategy document officially approved (Yes/No)
2	Development of Guidelines on Clean Cooking Strategy Development and Link with Available Financing	Continental	AFREC and AfDB	AFREC, AUDA-NEPAD	Short Term	- Best practice compendium - Financing opportunities catalogue - Guideline booklet/online toolkit	Strengthened capacity among policymakers to formulate and finance effective clean cooking strategies, enabling faster implementation across various regions	- Guideline document published (Yes/No) - Number of Member States receiving guidelines - Incorporation of financial mechanisms in national strategies (Yes/No)
3	Implement Tax Breaks and Subsidies for Clean Cooking Equipment	National	National Ministries of Finance	Local Manufacturers, Importers	Medium Term	- Revised fiscal policy proposals - Legislative directives on tax breaks - Monitoring reports on price changes	Enhanced affordability of clean cooking technologies, spurring higher adoption rates among various income groups	- Tax incentive policy approved (Yes/No) - Price reduction observed (Yes/No) - Uptake rate increase (Yes/No)

ACTION PLAN

ACTIONS	ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Coordinate with International Bodies for Policy Alignment	Continental	AFREC	International Environmental Organisations	Short–Long Term	- Policy alignment memos - Updated national regulations - Periodic alignment reports	Improved synergy between African clean cooking initiatives and international standards, enhancing credibility and unlocking global support and funding	- Memoranda of understanding signed (Yes/No) - Regulations updated for global compliance (Yes/No) - Alignment reports produced (Yes/No)
5	Facilitate Access to International Clean Cooking Funds	National	National Ministries of Environment	International Donors, Environmental NGOs	Short Term	- Online funding repository - Training sessions and materials - Funding application support documents	Increased success in securing international finance for local clean cooking projects, accelerating growth and innovation in the sector	- Funding repository launched (Yes/No) - Number of stakeholders trained - Successful grant/loan applications (Yes/No)
6	Develop Impact Assessment Studies for Clean Cooking Policies	National	National Environmental Agencies	Universities, Research Institutions	Medium Term	- Impact assessment protocols - Published studies with data-driven findings - Feedback sessions with stakeholders	Continuous improvement of clean cooking policies, informed by evidence-based insights into environmental, health, and socioeconomic outcomes	- Assessment studies completed (Yes/No) - Number of stakeholder feedback sessions - Policy adjustments recommended (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
7	Establish Clean Cooking Advocacy Groups	1. Identify civil society, community leaders, and NGOs interested in advocacy 2. Develop common advocacy objectives and messaging strategies 3. Launch outreach initiatives (workshops, media campaigns) to promote clean cooking 4. Coordinate with policymakers to channel public concerns and suggestions	Regional	RECs	Civil Society, Community Leaders	Short Term	• Formalised advocacy groups • Shared advocacy roadmap • Media and outreach materials	Greater public engagement and community-driven demand for clean cooking solutions, pressuring governments and markets to respond with robust policies and product offerings	• Advocacy groups established (Yes/No) • Media outreach campaigns initiated (Yes/No) • Instances of policy influence by advocacy groups (Yes/No)
8	Strengthen Legal Frameworks for Clean Cooking Implementations	1. Review existing legal provisions and identify gaps hindering clean cooking adoption 2. Draft amendments or new laws supporting clean cooking (liability, consumer protection, product safety) 3. Mobilise legislative support through consultations with legal experts and stakeholders 4. Publicise enacted legislation and enforcement measures	National	Ministries of Energy, Food, Agriculture	Local Governments, Legal Consultants	Medium Term	• Legal gap analysis reports • Drafted amendments/new laws • Enacted legislation on clean cooking	Robust legal environment that protects consumers, enforces safety standards, and holds stakeholders accountable, thereby enhancing trust in clean cooking technologies	• Gap analysis completed (Yes/No) • Legislation approved (Yes/No) • Enforcement mechanisms operational (Yes/No)
9	Foster Inter-regional Collaboration on Clean Cooking Initiatives	5. Organise inter-regional forums to exchange successful policies and technologies 6. Develop joint action plans for cross-border projects (e.g., shared manufacturing, distribution) 7. Share resources (research, technical expertise) to accelerate adoption 8. Track outcomes in participating regions	Continental	AFREC	Intercontinental RECs, Foreign Governments	Medium Term	• Inter-regional collaboration forums • Joint action plans and resource-sharing protocols • Monitoring reports on cross-border clean cooking projects	Expanded scale and efficiency of clean cooking initiatives through cooperative efforts and shared innovations, leading to more cohesive continental progress	• Number of inter-regional forums held • Joint action plans published (Yes/No) • Cross-border project outcomes monitored (Yes/No)

Source: Authors' own creation

ACTION PLAN

Table 35. Strategic Intervention: 4. Public Awareness Campaigns and Education

Pathway to Change: A lack of awareness and entrenched misconceptions about advanced clean cooking technologies hinder their acceptance and adoption. This intervention leverages targeted public awareness campaigns and educational programmes to highlight the health, environmental, and economic benefits of clean cooking solutions. By changing perceptions and cooking habits, this pathway fosters widespread behavioural shifts, encouraging communities to transition to cleaner and more efficient cooking methods, ultimately improving public health and environmental sustainability.

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
1	Launch Continental Clean Cooking Awareness Campaign	1. Develop campaign messages (radio, TV, social media) highlighting health and environmental benefits 2. Partner with major media outlets and NGOs to ensure broad coverage 3. Conduct baseline and follow-up surveys on public awareness levels 4. Collect feedback to refine messaging over time	Continental	AFREC	Media Networks, NGOs	Short Term	• Multi-platform campaign materials • Media partnership agreements • Pre- and post-campaign awareness survey data	Increased public awareness and understanding of clean cooking benefits, catalysing larger-scale behaviour change in households	• Campaign materials produced (Yes/No) • Media partnerships established (Yes/No) • Positive shift in survey results (Yes/No)
2	Develop Educational Programmes for Schools and Universities	1. Integrate clean cooking topics (health, environment, technologies) into existing curricula 2. Train teachers and lecturers on delivering practical demonstrations 3. Develop age-appropriate learning materials (textbooks, online modules) 4. Evaluate student knowledge retention and interest	National (Pilot AU Member States)	Ministries of Education	Schools, Universities, Educational NGOs	Medium Term	• Revised curricula with clean cooking content • Trained educators • Educational resources for different levels	Enhanced generation of knowledgeable youth and graduates who advocate for and adopt clean cooking methods, driving long-term societal change	• Curriculum updates approved (Yes/No) • Number of teachers trained • Student evaluation results (Yes/No)
3	Organise Community Workshops on the Benefits of Clean Cooking	1. Identify key local venues (community halls, health centres) 2. Develop workshop modules covering health, cost-saving, and environmental aspects 3. Involve local influencers (community leaders, women's groups) to facilitate acceptance 4. Collect participant feedback to measure workshop impact	National (Pilot AU Member States)	National Ministries of Health	Local Governments, Community Organisations	Short Term	• Workshop modules and schedules • Community partnership agreements • Post-workshop feedback reports	Increased community-level adoption of clean cooking solutions, reducing indoor air pollution and related health risks	• Number of workshops held • Local influencers engaged (Yes/No) • Positive participant feedback (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
4	Create a Digital Campaign for Clean Cooking Adoption	1. Launch targeted social media challenges, online webinars, and digital newsletters 2. Collaborate with influencers and bloggers to amplify messages 3. Develop an interactive web platform with how-to guides and Q&A forums 4. Track campaign reach and public engagement metrics	National (Pilot AU Member States)	Ministries of Energy, Food, Agriculture	Digital Platforms, Social Media Influencers	Short Term	• Social media content and webinar materials • Influencer collaboration agreements • Web platform analytics reports	Broader digital outreach encouraging a tech-savvy audience to switch to clean cooking, normalising its use in both urban and rural settings	• Social media campaign launched (Yes/No) • Number of influencer collaborations • Web platform engagement (Yes/No)
5	Implement Regional Exhibitions and Clean Cooking Fairs	1. Identify suitable venues for regional fairs (conference centres, community halls) 2. Invite manufacturers, NGOs, and consumers to showcase products and success stories 3. Organise panel discussions, demonstrations, and networking sessions 4. Record outcomes and follow-up leads for ongoing partnerships	Regional	Regional Economic Communities Directorates of Energy, Forest, Agriculture and Natural Resources	Private Sector Partners, Trade Associations	Short-Medium Term	• Exhibition schedules and promotional materials • Signed participation agreements • Post-event partnership leads/reports	Greater visibility and acceptance of clean cooking innovations, fostering direct engagement between solution providers and end-users to boost adoption	• Number of fairs conducted • Stakeholder participation (Yes/No) • Partnerships/agreements formed (Yes/No)
6	Facilitate Training Programmes for Artisans and Local Manufacturers	1. Develop technical training modules on clean cooking equipment design, production, and maintenance 2. Conduct workshops in partnership with local technical schools 3. Provide seed grants or toolkits to promising trainees 4. Establish monitoring and support for newly skilled artisans	National (Pilot AU Member States)	National Ministries of Trade and Industry	Technical Schools, Local Businesses	Short-Long Term	• Training curricula and materials • Skilled artisan registry • Seed grants/toolkits distributed	Boosted local capacity to produce and maintain clean cooking appliances, expanding the supply chain and generating employment	• Number of training workshops • Skilled artisans certified (Yes/No) • Toolkits/grants provided (Yes/No)
7	Coordinate with Religious and Traditional Leaders	1. Identify influential religious and community figures interested in promoting clean cooking 2. Develop tailored messages emphasising health, economic, and environmental benefits 3. Conduct orientation sessions to align leaders with campaign goals 4. Organise local events led by these trusted figures	Regional	RECs	Religious Institutions, Traditional Councils	Short-Long Term	• List of engaged religious/traditional leaders • Orientation session materials • Local events championed by community leaders	Stronger advocacy for clean cooking solutions among culturally significant groups, leading to higher acceptance rates within diverse communities	• Leaders engaged (Yes/No) • Orientation sessions conducted (Yes/No) • Increase in local event participation (Yes/No)

ACTION PLAN

ACTIONS		ACTIVITIES	LEVEL OF IMPLEMENTATION CONTINENTAL, REGIONAL AND NATIONAL	LEADING IMPLEMENTING AGENCY	COLLABORATING INSTITUTIONS	TIMEFRAME	EXPECTED OUTPUTS	EXPECTED OUTCOMES	KPIS
8	Produce and Distribute Clean Cooking Educational Material	1. Design culturally relevant brochures, posters, and flyers in local languages 2. Partner with public libraries and community centres for distribution 3. Provide digital versions for wider online dissemination 4. Collect feedback to improve materials	National (Pilot AU Member States)	Ministries of Energy, Food, Agriculture	Educational Institutes, Public Libraries	Short-Long Term	• Printed and digital educational materials • Distribution agreements with libraries/centres • Feedback forms from recipients	Greater public awareness of clean cooking benefits, boosting knowledge retention and driving behavioural shifts toward cleaner methods	• Materials produced (Yes/No) • Distribution network established (Yes/No) • Feedback collected (Yes/No)
9	Organise Roadshows in Rural and Urban Areas	1. Assemble mobile demonstration teams equipped with various clean cooking technologies 2. Plan routes covering both densely populated urban centres and remote rural communities 3. Conduct live demonstrations, Q&A sessions, and instant feedback collection 4. Document adoption interest for follow-up support	National (Pilot AU Member States)	Ministries of Energy, Food, Agriculture	Local NGOs, Community Centres	Short Term	• Roadshow event schedules • Demonstration kits and informational brochures • Database of interested households/businesses	Increased public awareness and understanding of clean cooking benefits, catalysing larger-scale behaviour change in households	• Number of roadshows conducted • Urban vs. rural coverage (Yes/No) • Documented follow-up interest (Yes/No)

Source: Authors' own creation

ACTION PLAN

The summary of strategic objectives and strategic interventions by selected subsectors of the Action Plan is presented in Table 36. The full roadmap, showing the actions

for each subsector, strategic objective, and strategic intervention, accompanies this ETSAP as an attachment.

Table 36. Summary of ETSAP Strategic objectives, strategic interventions, cross cutting, and cross sectoral issues

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS
1	Electricity subsector	Strengthen and modernise energy infrastructure and systems in the electricity supply industry	Strategic Intervention 1.1: Accelerate the deployment of RE
			Strategic Intervention 1.2: Foster and accelerate development of resilient transmission and distribution networks to support deployment and trade of clean and RE power
2	Transport	Advance sustainable transport solutions	Strategic Intervention 2.1: Promote the introduction of various NEVs and clean fuels in various subsectors of the transport sector
			Strategic Intervention 2.2: Transition conventional transport systems to multimodal transport systems for efficient use and energy demand reduction
3	Buildings	Elevate building standards for energy	Strategic Intervention 3.1: Strengthen and adopt compliance with building energy codes
			Strategic Intervention 3.2: Boost market demand for Energy Efficient buildings
			Strategic Intervention 3.3: Boost capacity for delivering energy efficient buildings
4	Industry	Foster sustainable and transformative industrial development	Strategic Intervention 4.1: Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE Practices
			Strategic Intervention 4.2: Transformative industrialisation to leverage Africa's comparative advantage
5	Oil and gas	Optimise oil and gas sector transition	Strategic Intervention 5.1: Sustainable supply and utilisation of natural gas on the continent
			Strategic Intervention 5.2: Promote economic and technical efficiency in the production, transport, and use of oil and gas
			Strategic Intervention 5.3: Enhance ESG sustainability
6	Agriculture	Increase the use of modern and efficient energy technologies in agriculture	Strategic Intervention 6.1: Modernisation of Agricultural Equipment
			Strategic Intervention 6.2: Promotion of Renewable Energy in Agriculture
			Strategic Intervention 6.3: Advance Carbon Farming
			Strategic Intervention 6.4: Enhancement of Agricultural Extension Services
7	Clean cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 7.1: Development and Deployment of Advanced Cooking Technologies
			Strategic Intervention 7.2: Enhancing Market Structures and Supply Chains:
			Strategic Intervention 7.3: Policy Development and Regulatory Support
			Strategic Intervention 7.4: Public Awareness Campaigns and Education

Source: Authors' own creation

ACTION PLAN

4.9 HORIZONTAL PLANNING

Apart from the subsector strategic interventions and action plans, there is recognition that horizontal strategic interventions and action plans are also needed to address the requirements of the energy sector transition as a whole.

The identified horizontal strategic interventions pertain to:

- Supporting AU Member States in the development of their national DDPs.

- Creating adequate and focused data sets for energy transition in general, and specifically to support the development of national DDPs.
- Building capacity to support the overall energy transition across the continent, not only limited to implementing action plans for specific subsectors.

The Action Plans that have been developed for these horizontal strategic interventions are presented below (Table 37).

Table 37. Action Plan for the Horizontal Strategic Interventions

STRATEGIC INTERVENTION	ACTIONS	ACTIVITIES	LEAD AGENCY	COLLABORATING STAKEHOLDERS	TIME FRAME	OUTCOME
Supporting AU-MS to develop their national DDPs	Train MS on designing and developing DDPs and related data collection	Create a tool with a data checklist; stakeholder engagement; survey for data collection	AFREC	Ministries of Energy (including oil and gas), transport, public works, industry, agriculture; consultants for data collection and stakeholder facilitation	Short term	Emission reduction targets for regions and continent
	Train MS on scenario modelling	Identify suitable type of model; organise group training workshop on selected model	AFREC	Consultants for energy sector modelling	Short term	Publicly available modelling tool for MS
Energy Transition Information system Capacity Building	Develop a checklist of data sets used for ET	Consultant to review ET data sets from other organisations considered best practice	AFREC	National focal points in Ministries of Energy, regional power pools, national utilities, regulatory and standards agencies	Short term	Standardised ET data sets
	Create a database for ET information	Include a sub-database for ET within the AFREC Information System	AFREC	Database and website consultants	Short term	Dedicated database for ET analysis
	Establish a data collection and processing system	Develop data collection tools and processing methodologies based on diverse sources	AFREC	AFREC Statistics Unit, UNECA, IRENA, etc.	Short term	Established data sets applicable to ET analysis

ACTION PLAN

STRATEGIC INTERVENTION	ACTIONS	ACTIVITIES	LEAD AGENCY	COLLABORATING STAKEHOLDERS	TIME FRAME	OUTCOME
Capacity Building	Capacity building for continental agencies	Build capacity of AU agencies on project design, ToR development, resource mobilisation, project management, and M&E of programmes	AFREC	AUDA-NEPAD, AUC-DIE, AFUR, AFSEC	Short term – ongoing	Streamlined project procurement and implementation at continental level
	Capacity building for regional bodies	Training on coordination skills for regional initiatives; resource mobilisation for regional initiatives	AFREC	RECs Directorates, RCREEEs, regional power pools, regulators, standard bodies	Short term – ongoing	Effective design and implementation of regional actions
	National capacity building	Support for M&E systems and data collection systems; strengthen development, implementation, and enforcement of national policies, regulatory frameworks, and standards	AFREC	Ministries of Energy and other subsector ministries/regulators	Short term – ongoing	Effective policy and regulatory frameworks

Source: Authors' own creation

4.9.1 CROSS CUTTING ISSUES

The successful implementation of the ETSAP hinges on the effective mainstreaming of cross-cutting issues across all aspects of energy policy and project execution. The cross-cutting issues considered relevant in the context of this ETSAP are standardisation and inclusivity.

Inclusivity entails gender mainstreaming and youth engagement, taking into account the various energy policies relevant to the implementation of the ETSAP. Their objectives and the required strategic actions for these cross-cutting issues are provided in Table 38 below.

IMPLEMENTATION PLAN

Table 38. Key Cross cutting issues to be observed for the ETSAP Implementation

ISSUE	SUB ISSUE	OBJECTIVE	STRATEGIC ACTION
Standardisation		To harmonise technical standards, safety regulations, and quality benchmarks across MS to facilitate a seamless and robust energy market conducive to innovation, trade, and investment.	Develop a comprehensive continental framework for standardisation in collaboration with the PAQI, the AFSEC, the ARSO, and other relevant bodies. This framework should ensure interoperability and regulatory alignment across Africa, making it easier to integrate diverse energy resources and technologies.
Inclusivity		Ensure that the benefits of energy advancements reach all segments of society, with special focus on gender, youth, and vulnerable groups to promote justice, equity, and leverage diverse perspectives and talents.	Implement comprehensive policies that embed gender mainstreaming, youth engagement, and social inclusivity in all energy projects and policies across the continent. These policies should ensure that energy systems are accessible, beneficial to all, and take into account the specific needs and potential contributions of these groups.
	Gender Mainstreaming	Promote gender equality within the energy sector by enhancing women's participation and ensuring that energy policies are sensitive to gender issues. This involves eliminating gender disparities and enhancing the sustainability and efficiency of energy policies across Africa.	Develop and enforce gender-responsive energy policies that ensure women's involvement at all stages of energy policy formulation and implementation. These policies should also focus on providing women with equal opportunities for employment and leadership within the energy sector, thereby empowering them economically and ensuring their active participation in shaping the energy landscape.
	Youth Engagement	Empower the youth to participate actively and lead in the energy transition by fostering an environment that harnesses their innovative potential and prepares them for future challenges.	Create robust platforms and programmes for youth innovation and leadership in energy, including targeted training, capacity-building programmes, and engagement initiatives that are specifically designed to enhance the skills of young people and integrate their ideas and energies into the mainstream of energy development.
	Comprehensive Inclusivity	Empower the youth to participate actively and lead in the energy transition by fostering an environment that harnesses their innovative potential and prepares them for future challenges.	Create robust platforms and programmes for youth innovation and leadership in energy, including targeted training, capacity-building programmes, and engagement initiatives that are specifically designed to enhance the skills of young people and integrate their ideas and energies into the mainstream of energy development.

Source: Authors' own creation

4.10 CROSS SECTORAL ISSUES

There are intersecting strategic interventions and actions that have been proposed in the Strategy that will need to be aligned and implemented collectively for the benefit of the other subsectors, as indicated (Table 39). There are also other sectors, such as water for hydropower and ICT for digitalisation, that will need to be considered together. Hence, integrated planning of such strategic interventions, alongside the mobilisation of stakeholders and other resources, will be required.

Strategic interventions and actions that have cross-sectoral implications can be developed through stakeholder engagement and collective workshops to draw up the needed instruments, such as policies, strategies, plans, regulatory frameworks, training, capacity building, and mobilisation of required resources for implementation.

ACTION PLAN

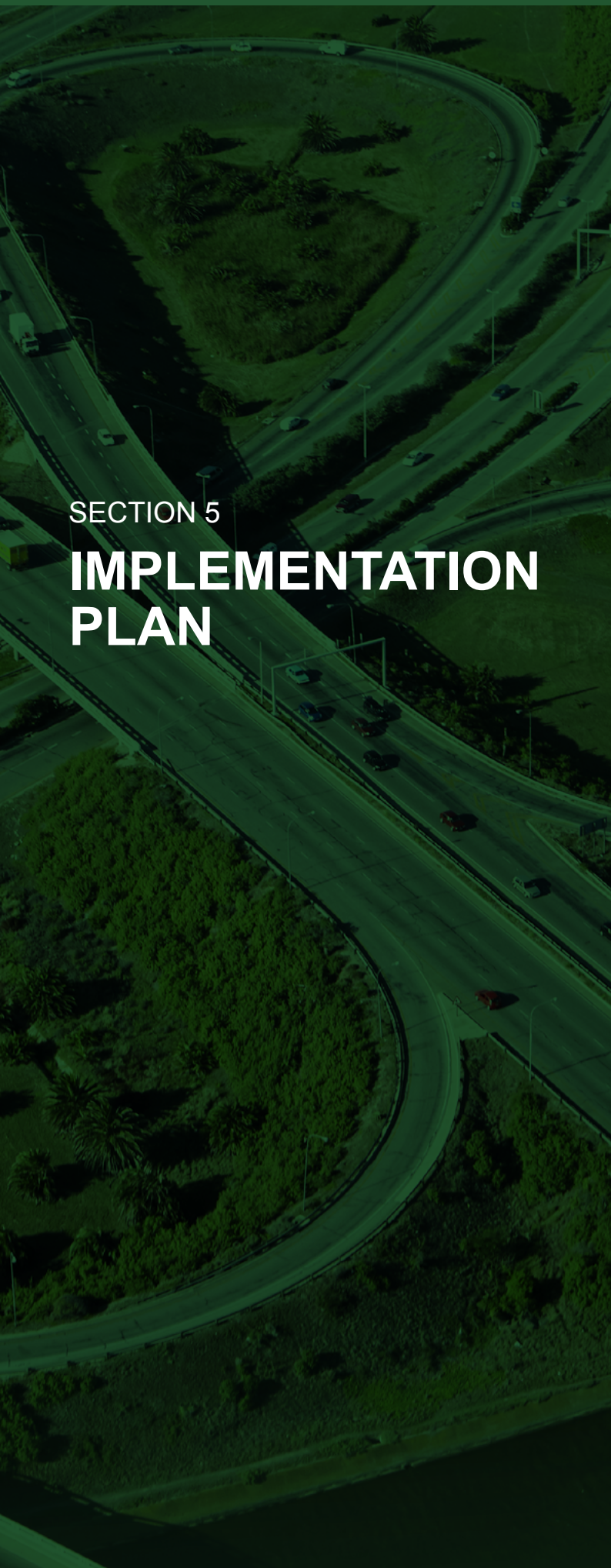
Table 39. Sub sectoral Intersections on the proposed measures and actions. Cause/Effect whereby how the Column sectors effect on Row sectors in terms of what we have already presented in the Strategy and Action Plans- Not all we know about their intersections.

SUBSECTORS	ELECTRICITY						
Electricity							
Transport	Charging infrastructure development Integrating of NEVs with smart grid technologies						
Buildings	- Buildings as electricity consumers and prosumers - Integration of renewable energy sources in building design						
Industry	Industrial energy efficiency through optimised electricity use: Targeting reduction of fossil fuel demand in industry through RE supply and EE practices	NEV Batteries and other fuels like Green Hydrogen/ ammonia produced in industry					
Oil and Gas	Natural gas as a transition fuel for electricity generation	Natural gas and LPG utilisation	Gas heating systems	Energy use optimisation in 'hard to abate' sectors like petrochemical processes			
Agriculture	Decentralised renewable energy solutions for remote areas for irrigation, processing, livestock water pumping	Biofuel production from crop residues	- Integration of energy efficiency systems in agro industries - Agricultural warehouses and cold storages with energy-efficient designs	Agro-industries	Minimise carbon footprint of fossil-based fertiliser: Targeting reduction of fossil fuel demand in farm		
Clean cooking	Electric cooking solutions (Strategic for	Transportation networks for distribution of clean cooking fuels	MEPS for cooking appliances	Industrial production of clean cookstoves	- Development of synthetic fuels for clean cooking (- Use of NG for cooking - Utilisation for LPG distribution	- Promoting biogas and biomass solutions for rural cooking needs - Agricultural waste to energy initiatives for cooking	

Source: Authors' own creation

SECTION 5

**IMPLEMENTATION
PLAN**



IMPLEMENTATION PLAN

5. IMPLEMENTATION PLAN

5.1 GUIDING PRINCIPLES

The implementation of the ETSAP is underpinned by a set of guiding principles designed to ensure alignment with strategic goals, national priorities, and sustainable outcomes. These principles focus on simplicity, practicality, and effectiveness, providing a robust framework for decision-making and execution. Table 40 outlines each principle and provides an explanation of its relevance and application within the strategic framework.

Table 40. Principles for implementation of the ETSAP

PRINCIPLE	RATIONALE FOR CONSIDERATION
Capacity to Implement	Prioritises readiness and capability at national, regional, and continental levels to execute strategic actions effectively.
Financial Feasibility	Recognises resource constraints and promotes cost-effective solutions that maximise impact with limited resources.
Subsidiarity	Implementation of ET measures at the most appropriate levels by relevant agencies at continental, regional and in Member States levels
Alignment with AU Initiatives	Ensures coherence with existing AU policies and programmes, avoiding duplication and leveraging synergies for greater efficiency.
Increasing Modern Energy Access	Focuses on expanding access to modern energy services to improve quality of life, energy security, and economic opportunities.
Integrated Cross-Sectoral Planning	Promotes holistic planning across energy, agriculture, transport, and other sectors to address interconnected challenges.
Inclusivity and Equity	Ensures active participation of all stakeholders, prioritising gender balance, youth employment, and equitable progress.
Sustainability	Emphasises local ownership, institutional capacity building, and long-term resilience to ensure sustainable transitions.
Flexibility and Differentiated Progress (Variable Geometry)	Acknowledges varying starting points among Member States, allowing for tailored implementation aligned with national priorities.

Source: Authors' own creation

5.2 INSTITUTIONAL ROLES

The ETSAP is a comprehensive framework designed to guide the continent's shift towards a sustainable and inclusive energy future. Given its broad scope, the strategy encompasses not only traditional energy sector stakeholders but also engages entities across multiple sectors, including industry, transportation, buildings, agriculture, and clean cooking. This cross-sectoral approach ensures that the energy transition aligns with diverse economic activities and development goals across Africa.

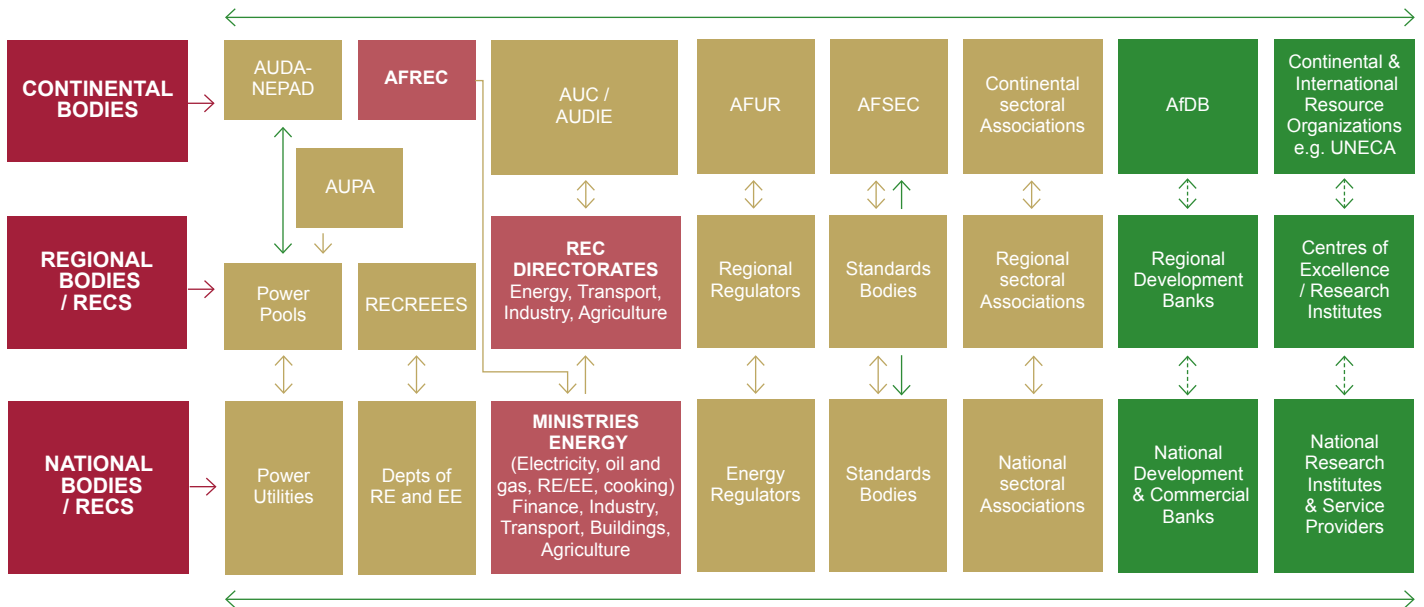


Legend: Solar power station in Upington, South Africa – large-scale renewable deployment

The proposed institutional framework for implementing the ETSAP is that AFREC will lead, supported by its continental counterpart organisations, as indicated in Figure 8.

IMPLEMENTATION PLAN

Figure 8. Comprehensive Institutional involvement in ETSAP Implementation



Source: Authors' own creation

Legend: Continental, regional, national agencies collaborate horizontally as required (no connection lines). The density of lines connecting vertically show strength of linkages; green-coloured boxes have ad hoc connections, hence broken lines vertically.

The various roles of each of the indicated continental and regional bodies presented in Figure 8 above are presented in Table 41 for continental stakeholder organisations and Table 42 for regional stakeholder organisations. Continental organisations have linkages with their regional and national counterparts, which include power utilities, RE/EE centres, directorates in regional Economic Communities, regulators, standards bodies and associations, as indicated. However, financing institutions and resources/research centres may collaborate, but not on the basis of an already established arrangement. Continental agencies also collaborate as required by their AUC establishment, and the AfDB is an official funder of some of the AU initiatives. Similarly regional agencies also collaborate as per their regional establishments, and often national agencies of similar nature collaborate through their regional agencies. AFREC also has a direct focal point within Ministries in charge of Energy for its different programmes, including on energy statistics.

There are also many international organisations that Africa is already collaborating with, and they will be called upon to support financing, capacity building, advisory services and guidance on the formulation of policy frameworks.

IMPLEMENTATION PLAN

Table 41. Continental and regional organisations for ETSAP implementation

CONTINENTAL INSTITUTIONS	
INSTITUTION	MAIN EXPECTED ROLES
AFREC	Coordinate the implementation of the energy transition strategy, support policy harmonisation, including drive clean cooking and energy efficiency programmes in Africa and monitor progress across Africa.
AUC	Lead advocacy and integration of the energy transition into broader continental agendas, mobilise resources, and coordinate with international partners.
Department of Infrastructure and Energy and Transport (DIE)	Facilitate the development of sustainable infrastructure projects critical to energy transition, such as renewable energy networks and efficient buildings and transport.
Department of Rural Economy and Agriculture (DREA)	Support sustainable agricultural practices that enhance energy efficiency and integrate renewable energy technologies in the agricultural sector.
AUDA-NEPAD	Drive project development and implementation, focusing on power system infrastructure and renewable energy projects across the continent.
AfDB	Provide financial backing for energy transition projects, focusing on renewable energy investments and energy efficiency improvements.
UNECA	Offer analytical support, data, and policy advice to shape and guide energy transition strategies tailored to African realities.
APUA	Promote best practices, capacity building, and regulatory support among power utilities to enhance energy efficiency, renewable integration and actively promotes and discusses the development of smart grids in Africa
AFUR	Advocate for and help develop regulatory frameworks that support energy transition, focusing on renewable energy and efficiency standards.
CONTINENTAL SECTORAL STAKEHOLDERS	
INSTITUTION	MAIN EXPECTED ROLES
UATP	Advocate for sustainable and energy-efficient transportation policies, promoting public transport and non-motorised transport solutions.
African Sustainable Building Network (ASBN)	Promote sustainable and energy-efficient building practices, fostering the adoption of green building standards and technologies.
African Fertiliser and Agribusiness Partnership (AFAP)	Support the adoption of energy-efficient practices in the production and use of fertilisers within the agricultural sector.
African Roundtable on Sustainable Consumption and Production (ARSCP)	Promote energy-efficient and sustainable consumption and production practices across various sectors, including industry and agriculture.
African Railway Confederation (AFC)	Support energy efficiency in the rail transport sector, promoting electrification and sustainable practices in rail operations.
SSATP	Provide policy guidance and support for the integration of energy efficiency and sustainability in transportation policies across Africa.
Sustainable Energy Africa (SEA)	Provide technical assistance and policy support for sustainable energy initiatives, focusing on urban energy planning and policy harmonisation.
African Sustainable Energy Association (AFSEA)	Advocate for sustainable energy policies and practices, supporting the development and deployment of renewable energy sources across Africa.
Pan-African Manufacturers Association (PAMA)	Promote energy efficiency and sustainable manufacturing practices within the African manufacturing industry.
International Federation of Consulting Engineers (FIDIC) Africa – (Association of consulting Engineers in Africa)	Build capacity among consulting engineers in Africa to integrate energy efficiency and sustainability in their projects.

Source: Authors' own creation

IMPLEMENTATION PLAN

Table 42. Key Regional Stakeholder Organisations for Implementation of the ETSAP

REGIONAL ORGANISATIONS	
Regional Renewable Energy and Energy Efficiency Centres	Implement regional energy transition initiatives, provide expertise, and facilitate knowledge transfer and capacity building in renewable energy and efficiency.
Power Pools	Enhance regional power cooperation and integration, promote energy-efficient and renewable power solutions within the regional grids.
Regional Regulatory Authorities	Harmonise energy policies and regulations across the region to support a unified approach to the energy transition.
Regional Regulatory Associations	Support regional harmonisation of energy policies and foster a cooperative regulatory environment for energy transition.
African Renewable Energy Alliance (AREA)	Facilitates multi-stakeholder dialogue and partnerships to advance renewable energy adoption across the continent.
Regional Development Banks (e.g., West African Development Bank (BOAD), Development Bank of South Africa (DBSA))	Offer regional expertise and financial support for sustainable energy projects, contributing to the development of regional energy infrastructures.
REGIONAL SECTORAL STAKEHOLDERS	
East African Manufacturers Association (EAMA)	Support the adoption of energy efficiency measures in the manufacturing sector in East Africa.
Federation of West African Manufacturers Associations (FEWAMA)	Advocate for and support the implementation of energy efficiency and sustainability initiatives in West African manufacturing.
Southern African Energy Efficiency Confederation (SAEEEC)	Promote awareness and implementation of energy efficiency measures in Southern Africa, providing training and networking opportunities.
Energy services Companies Association of Southern Africa (EASA)	Facilitate the development and support of ESCOs, enhancing energy efficiency services and solutions.

Source: Authors' own creation

Implementation of the ETSAP will take place at Member States level, with the various continental and regional organisations supporting with resource mobilisation, harmonisation, policy convergence and capacity building.

The key Member States entities that will be important in implementing the ETSAP are presented in Table 43.

IMPLEMENTATION PLAN

Table 43. Institutional entitles and their role in the Member States

MEMBER STATES ORGANISATIONS		
ORGANISATION	ROLE ON ETSAP	COMMENTS
Ministries	The various sectors involved in the ETSAP will provide policy guidance that can be used for convergence in the RECs and, in turn, at continental level	Ministries are usual linked via their RECs. In some cases, MS ministries have direct links with Continental bodies (e.g. AFREC for energy statistics)
Utilities	Power utilities will implement electricity sector initiatives at country level	In some countries, other sector utilities such as water and ICT would be aligned with the energy sector
Regulators	Energy regulators will be involved with harmonisation of legal and regulatory frameworks across the continent. They will also be involved in the application and enforcement of regulations	Other sector regulators such as water, communications, transport would also be looped in National regulators are members of the regional regulators/associations
Standard Bodies	Participate in harmonisation of standards across the continent. They will also be responsible for regulating agreed standards in their countries	These are often members of regional standards bodies, but may also have direct links with their relevant continental counterparts
National associations	The various sector associations will inform policy formulation and create awareness among their members about ETSAP initiatives to be undertaken at national level	These national associations tend to be members of the regional and sometimes continental associations
National Development/ Commercial banks	Creation of national financing schemes proposed in the ETSAP	Some commercial banks in MS are now joining syndicates to finance large infrastructure projects, but they will need to be the various to the benefits of initiatives like EE.
Centres of Excellence (CoEs)	Provide services such as training and expert inputs to carry out studies and develop strategies and master plans	There will be specialised CoEs, but usual TA experts will also be recruited to undertake studies/strategies

Source: Authors' own creation

The stakeholder mapping process not only highlights stakeholders' roles and importance but also guides the development of tailored engagement strategies (table below). By understanding the different motivations and capacities of each stakeholder group, the AU, through AFREC, can facilitate more effective collaboration, secure buy-in, and enhance the overall implementation efficiency of the Energy Transition Strategy. This strategic engagement is essential for mobilising resources, fostering innovation, and ensuring that the transition to sustainable energy is both equitable and economically beneficial for all.

To effectively manage and engage with this wide array of stakeholders, an initial Stakeholder Power-Interest Matrix is developed. This tool categorises stakeholders based on their level of influence over and interest in the energy transition, providing insights into how they might affect, or be affected by, the strategy. This matrix helps to identify key players whose involvement is crucial to the strategy's success and those who need to be kept informed and engaged throughout the process (Table 44).

IMPLEMENTATION PLAN

Table 44. ETSAP Stakeholder Power-Interest Matrix

HIGH	Keep Satisfied • SECTORIAL ORGANISATIONS • MEDIA • NGOs / CIVIL SOCIETY		Manage Closely	
		• AFREC • AUC • AUDA-NEPAD • RECs • Regional Centres for RE/EE • UNECA	• Power Pools • Regional Regulators and Associations • APUA • AFUR • AU MS • Sector specific stakeholders	
INFLUENCE			Keep Informed	
	Monitor • UNEP's AFRICA OFFICE • AFRICA GREENCO • CONSUMERS			
LOW		• AfDB • WORLD BANK • IFCs	• POWER AFRICA • PAQI / AFSEC / ARSO	
	LOW	INTEREST		HIGH

Source: Authors' own creation

5.3 FINANCING OPTIONS AND RESOURCE MOBILISATION FOR THE ETSAP

5.3.1 FINANCING THE ETSAP

It will be necessary to mobilise a variety of funding sources for the implementation of ETSAP, to ensure:

- **Cost-competitiveness** of recommended solutions, in line with market prices or ability to pay,
- **Public debt sustainability**, countries' abilities to meet all current and future payment obligations without exceptional financial assistance or going into default,
- **Sustainable private-sector involvement** to ensure that the required volumes of financing are available.

The fiscal situation of the member states and the low financial capacity of many utilities make financial equilibrium one of the main challenges in implementing the ETSAP.

From this perspective, the optimisation of resources and the support of technical and financial partners will be critical elements of implementing the strategy.

Financing strategy and resource mobilisation

The financing strategy must be based on several pillars:

- **Optimising state support** through targeted investment subsidies and policy incentives. For the power sector, this implies continuing structural reforms and the search for a lower-cost energy mix through investments in power generation and transmission systems, to limit the amount of public funds dedicated to operating costs. For other sectors, political support and incentives must be aimed at improving the deployment of more efficient equipment.
- **Coordination of donors and the various DFIs around a common roadmap:** ensuring that monitoring and planning mechanisms, as well as advisory services, are embedded into assistance programmes at the level of ministries and implementing agencies. This support aims to maximise synergies and learning between DFI-funded programmes and to limit bottlenecks in implementation through increased support for early-stage projects. **The mobilisation of climate financing** as a complementary source of funding, with a strategy fo-

IMPLEMENTATION PLAN

cused on seeking funding opportunities from the Global Climate Fund, other national or international funds, emerging funding solutions such as carbon financing, green bonds and Debt for Decarbonisation Swaps, if the reduction in CO₂ emissions can be measured.

- **Increasing private sector participation** in investments through blended finance programmes and increased access to de-risking support.

There is a mixture of financing instruments and sources that can be used to fund the implementation of ETSAP; therefore, it will be important to match funding sources and strategies with specific ETSAP actions.

Particularly, advisory services at ministries' level, capacity building for implementing agencies, and actions that entail developing enabling environments (policies, institutions, capacity building, information systems, and planning) are amenable to DFIs grant funding. For project-type actions, both public and private sector funding can be deployed. Public funding will be a combination of government budgets, DFIs grants and concessional loans. Private sources will play an increasingly important role in financing clean energy projects when the investment environment is more attractive, secure, and mature, with the help of de-risking tools from DFIs.

There are various sources of financing that can be obtained by project developers, with facilitation by both RECs and Member States, by providing the necessary support such as guarantees and letters of support and creating conducive policy environments. The role of Multilateral Development Banks is also central, particularly in project development, preparation, and implementation. In addition to applying their own financing mechanisms, these institutions facilitate large-scale regional sustainable energy projects, by catalysing public and private funds and mobilising additional concessional and innovative finance. Climate finance is another interesting source of funding for these projects, using different frameworks such as the Global Climate Fund.

Both Member States and RECs can also create special purpose investment funds, particularly for small projects (currently without adequate access to financing due to their inherently high transaction costs), involving both national and regional development banks.

Also worth mentioning is the use of procurement tools to establish new markets for new technologies, especially

in the EE and access to energy sectors. Member States could lead the negotiation and dialogue between buyers and manufacturers for bulk procurement of efficient appliances and equipment, to introduce and accelerate their adoption by the end-users. These innovative procurement tools would improve the confidence of manufacturers to enter and adapt their technologies to the new markets.

AFREC will have the responsibility to coordinate resource mobilisation, also giving endorsement support to RECs and Member States to ensure implementation of the ETSAP. The actual amounts of financial resources required to implement ETSAP at both regional and MS level will be determined on a case-by-case basis, as the identified actions will need to be further developed into the DDP.

Budgeting can be done for each proposed action in the action plan, but the estimates can only be indicative, as both costs and timeframes will change over time. Actual budgets will also be derived when terms of reference are prepared for the implementation of these actions. What the budget presents is an order of magnitude of what resources will be expected to implement the ETSAP.

The actions have been divided into continental, regional, and national. Continental and regional actions were estimated from previous assignments of similar type, for example, studies, policy, strategy or master plan development, training or capacity building, and awareness raising. In the case of national action plans, a set of pilot AU Member States most relevant to the subsector are proposed, for example, five pilot AU Member States each representing one of the five AU regions, or oil-producing countries, or those heavily reliant on traditional biomass. In terms of mobilising resources at AU level, AFREC can then support the pilot AU Member States, similar to what is being done for the DDPs. Lessons from these pilot national actions can then be replicated in other AU member states with similar characteristics, for example, in terms of resources and socio-economies.

Costing national level actions for 55 AU Member States would be a very challenging exercise given the differences in socio-economic, environmental and resource endowment conditions across the AU Member States. This is the main reason that a budgeting exercise has been performed only for the "Low Hanging Fruit and High Impact Activities" included in the Guidelines companion document (See Annex 6.2).

IMPLEMENTATION PLAN

5.3.2 BUDGETING ASSUMPTIONS AND ESTIMATION

Budgeting for each strategic intervention and related actions is only indicative, as both costs and timeframes may change over time. Actual budgets will be developed when terms of reference are prepared for the implementation of the strategic actions and their related activities. The purpose of the budget at this stage is to provide an indicative sense of the scale of resources required to implement the plan, thus helping relevant stakeholders understand the level of funding that may need to be mobilised.

In developing current budget estimates for the Action Plans, the focus was primarily on short-term assignments implemented at the continental level. This decision is based on several pragmatic considerations. First, providing budgets for medium- and long-term activities leads to an increased level of uncertainties. Planning for activities beyond five years introduces significant

variability in costs, such as inflation rates, technological advancements, and political or economic shifts, highly determined by the DDP at national level, that cannot be accurately predicted at this stage.

At the continental level, short-term activities are largely consulting-based, involving expert work, stakeholder consultations, and technical assistance. This makes them relatively straightforward to estimate, as they primarily consist of professional services with predictable costs, such as daily consulting rates and incidental expenses. These estimations can be derived with reasonable accuracy and without the need for complex assumptions.

The total estimated budget between 2025 and 2030 for implementing short-term continental actions is approximately USD 11 million. The breakdown by subsector and Strategic Intervention is summarised below in Table 45.

Table 45. Budget estimates for implementing short term (up to 2030) continental Actions of the ETSAP subsectors

NO.	SUBSECTOR	STRATEGIC OBJECTIVE	STRATEGIC INTERVENTIONS	ESTIMATED BUDGET (USD)	SUBSECTOR TOTAL (USD)
1	Electricity subsector	Strengthen and modernise energy infrastructure and systems in the electricity supply industry	Strategic Intervention 1.1: Accelerate the deployment of RE	997,500	1,199,000 ³⁶
			Strategic Intervention 1.2: Foster and accelerate development of resilient transmission and distribution networks to support deployment and trade of clean and RE power	201,500	
2	Transport	Advance sustainable transport solutions	Strategic Intervention 2.1. Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector.	2,300,000	4,150,000
			Strategic Intervention 2.2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.	1,850,000	
3	Buildings	Elevate building standards for energy	Strategic Intervention 3.1: Strengthen and adopt compliance with building energy codes	450,000	650,000
			Strategic Intervention 3.2: Boost market demand for energy efficient buildings	200,000	
			Strategic Intervention 3.3: Boost capacity for delivering energy efficient buildings	N/A ³⁷	

³⁶ Setting up R&D facilities will be additional.

³⁷ It means no short-term continental action under that strategic intervention.

IMPLEMENTATION PLAN

4	Industry	Foster sustainable and transformative industrial development	Strategic Intervention 4.1: Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE practices	1,173,000	1,653,000 ³⁸
			Strategic Intervention 4.2: Transformative industrialisation to leverage Africa’s comparative advantage	480,000	
5	Oil and gas	Optimise oil and gas sector transition	Strategic Intervention 5.1: Sustainable supply and utilisation of natural gas on the continent	963,500	1,667,500
			Strategic Intervention 5.2: Promote economic and technical efficiency in the production, transport, and use of oil and gas	53,500	
			Strategic Intervention 5.3 ESG sustainability enhanced	650,500	
6	Agriculture	Increase the use of modern and efficient energy technologies in agriculture	Strategic Intervention 6.1: Modernisation of agricultural equipment	345,000	345,000
			Strategic Intervention 6.2: Promotion of renewable energy in agriculture	N/A	
			Strategic Intervention 6.3: Advance carbon farming	N/A	
			Strategic Intervention 6.4: Enhancement of agricultural extension services	N/A	
7	Clean cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 7.1: Development and deployment of advanced cooking technologies	345,000	1,437,500
			Strategic Intervention 7.2: Enhancing market structures and supply chains	287,500	
			Strategic Intervention 7.3: Policy development and regulatory support	517,500	
			Strategic Intervention 7.4: Public awareness campaigns and education	287,500	
Grand subsector Total					11,102,000

Source: Authors' own creation

The budget estimate for implementing actions for horizontal planning is presented in Table 46 and the total short-term budget for implementing the horizontal planning actions is USD 900,000.

38 Setting up R&D facility will be additional.

IMPLEMENTATION PLAN

Table 46. Estimated Short Term budget for implementing Horizontal Planning ETSAP Actions

STRATEGIC INTERVENTION	ACTIONS	ACTIVITIES	ESTIMATED BUDGET (2025-2030) (USD)	TOTAL (USD)
Supporting AU-MS to develop their national DDPs	Train MS on designing development of DDP and related data collection	Create a tool with data checklist. Stakeholder engagement. Survey for data collection.	100,000	900 000
	Train MS on scenario modelling	Identify suitable type of model Organise group training workshops on selected model.	225,000	
Energy transition information system	Develop a check list of data sets used for ET	Consultant to review ET data sets from other organisations that are used in best practice	25,000	
	Create a database for ET information	Include as part of AFREC information system a sub database for ET information	20,000	
	Establish a data collection and processing system	Develop data collection tools and processing methods required for the different sources.	20,000	
Capacity building	Capacity building of continental agencies	Capacitate AU agencies on project designs, developing ToRs, resource mobilisation, project management; monitoring and evaluation of projects/programmes	60,000	
	Capacity building of regional bodies	Coordination skills for regional initiatives Resource mobilisation for regional initiatives	225,000	
	National Capacity building	M&E systems and data collection systems Strengthen development and implementation/enforcement of national policies/regulatory frameworks and standards	22,500	

Source: Authors' own creation

IMPLEMENTATION PLAN

The budget estimated for implementing short-term continental cross-cutting and cross-sectoral ETSAP actions is presented in Table 47 and amounts to USD 220,000 and USD 126,000, respectively.

Table 47. Cross cutting and Cross sectoral budgets for short continental actions (2025-2030)

CROSS CUTTING/ CROSS SECTORAL	STRATEGIC INTERVENTION	ACTION	ACTIVITIES	TOTAL USD (2025-2025)	TOTAL (USD)
Cross-cutting issues	Gender- equitable distribution of energy benefits and promotion of inclusive development	Integrating gender perspectives and emphasising the involvement of women at all stages of energy policies, programmes, and projects	Develop a guidebook on how best to engage youth and empower them to participate in the energy sector	70,000	220 000
		Youth engagement and empowerment	Develop a guidebook on how best to engage youth and empower them to participate in the energy sector	52,000	
		Inclusivity and standardisation	Study to analyse and identify which AU standards are missing, outdated under development, or need upgrading and formulate a plan for updating the standardisation system	98,000	
Cross-sectoral Issues	Integrated sub-sectoral planning	Assessment of subsector cross-sectoral issues and synergies including other relevant sectors such as water, ICT, industrialisation	A study that focuses on important subsector nexus and how to strategise cross sectoral planning	126,000	126 000

Source: Authors' own creation

The grand short-term budget to implement continental actions from 2025 to 2030 is about USD 12.35 million and is summarised as indicated in Table 48 below.

Table 48. Summarised budget for all short term ETSAP actions by category

BUDGET ITEM	TOTAL AMOUNT (2025-2030) USD
Subsectors ³⁹	11,102,000
Horizontal Planning	900,000
Cross cutting	220,000
Cross sectoral	126,000
Grand Total	12,348,000

Source: Authors' own creation

39 Setting up R&D facilities will be additional.

5.4 MONITORING AND EVALUATION FRAMEWORK

5.4.1 FORMULATION OF THE M&E FRAMEWORK

Developing a M&E framework for the African Union's ET-SAP is key to ensuring the strategy's efficacy, transparency, and adaptability over time. The M&E framework's primary objective is to systematically track progress towards achieving the strategic goals, ensure accountability in the use of resources, facilitate decision-making, and enhance learning and adaptation of the strategy based on empirical data and stakeholder feedback.

The overarching goal of the M&E framework is to provide a structured approach to assessing both the implementation and impact of the ETS. By setting clear, multi-tiered metrics and indicators, ranging from high-level progress markers to action-level KPIs as presented in the Action Plan, the framework measures efficiency, effectiveness, and transformative potential across all energy sectors (electricity, transport, buildings, industry, oil and gas, agriculture and clean cooking). This tiered approach ensures that stakeholders can pinpoint precisely where and how the strategy is succeeding, where it needs adjustments, and how to scale up successful initiatives.

Linking high-level indicators with action-level KPIs

In addition to the high-level indicators that gauge overall progress in each subsector, the Action Plan tables include specific KPIs for each action. These action-level KPIs capture immediate outputs and short-to-medium-term outcomes, complementing the overarching indicators and providing granular insights into daily implementation. By linking the higher-level metrics (e.g., additional RE capacity in MW) with the more detailed KPIs (e.g., number of training workshops, presence of financing mechanisms), the framework creates a robust feedback loop that:

1. Clarifies how localised interventions drive strategic objectives.
2. Enables timely interventions when an activity is off track.
3. Fosters continuous learning, as granular KPI data can reveal best practices and early successes that inform subsequent policy or scaling decisions.

Ultimately, the high-level indicators remain essential to monitor the broader impacts of the strategy, such as changes in energy mix, emissions reductions or in-

creased electrification rates, while the action-level KPIs deliver detailed operational feedback, ensuring no activity is overlooked.

Rather than tracking only high-level indicators, the M&E framework incorporates both top-level indicators (e.g., additional capacity in MW by renewable sources) and the action-specific KPIs listed in the Action Plan tables. This integrated approach ensures that:

- Strategic progress is systematically monitored at the macro level.
- Concrete tasks and immediate milestones are evaluated at the micro (action) level.
- Implementation gaps can be addressed promptly before they affect broader objectives.

Objective of the M&E framework

The objective of the M&E framework remains consistent: to ensure accountability, evidence-based decision-making, and iterative learning. It now explicitly integrates action-level KPIs, allowing real-time insights into how on-the-ground initiatives contribute to and align with the strategy's overarching goals and sector-specific indicators.

Development process of the M&E framework

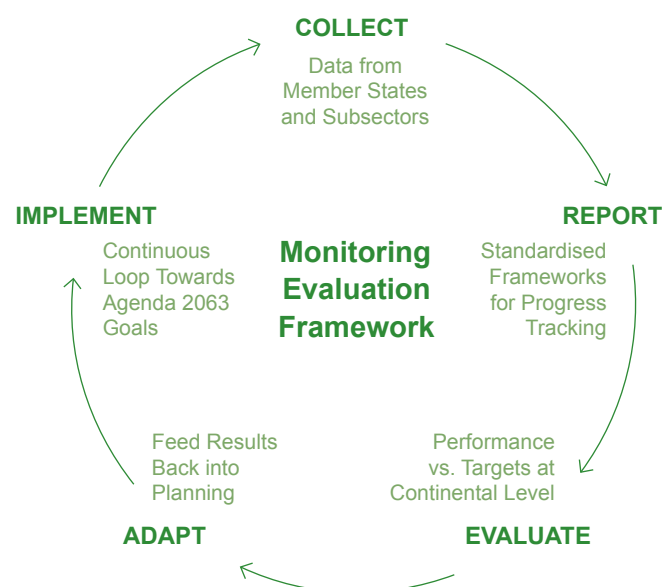
- **Defining clear objectives and indicators:** The first step in developing the M&E framework involves defining clear, specific objectives linked to each strategic goal of the ETSAP. For each objective, corresponding indicators must be developed. These indicators should be SMART (Specific, Measurable, Achievable, Relevant, Time-bound) to ensure that they provide a reliable measure of progress. Both quantitative and qualitative indicators are necessary to capture a holistic view of the strategy's impacts, while avoiding the proliferation of too many indicators that will not be monitored or that exhaust resources without providing decision-making value.
- **Establishing baseline data:** Before the implementation of the ETSAP, it is crucial to collect baseline data for all indicators. This data serves as a reference point against which future changes and impacts can be measured. Baseline data collection helps in setting realistic targets and understanding the initial conditions before any interventions are made.
- **Developing data collection methods:** The framework must specify the methods and tools for data collection for each indicator, detailing the data sources, frequency of data collection and the responsibilities assigned to various stakeholders. Emphasising the integration of existing data systems can enhance the coherence

IMPLEMENTATION PLAN

and efficiency of data collection efforts. AFREC could create an extra questionnaire to be shared with the respective focal points when collecting energy statistics.

- **Setting up a monitoring system:** Implementing a robust system to collect, store, analyse and report data is essential. This system should be capable of supporting real-time data collection and feedback where possible, and accessible to all relevant stakeholders to foster transparency and collaborative monitoring.
- **Planning for evaluation:** Periodic evaluations are integral to assess the overall impact and effectiveness of the strategy. These evaluations should be conducted by independent experts to ensure impartiality, and should comprehensively analyse the effectiveness, efficiency, impact and sustainability of the interventions.
- **Reporting and feedback mechanisms:** Developing a structured reporting system is vital for updating stakeholders about the progress and outcomes of the strategy. Regular reports, dashboards and briefings should be utilised to communicate achievements and challenges. Additionally, establishing feedback mechanisms allows stakeholders to provide insights and suggestions, fostering a participatory approach to strategy implementation.
- **Capacity building for M&E:** To effectively implement the M&E framework, there is a need for continuous capacity building among staff and stakeholders. Training programmes and workshops should be conducted to enhance their skills in monitoring and evaluation practices.
- **Reviewing and updating the framework:** The M&E framework should be dynamic, allowing for regular reviews and updates to adapt to changing circumstances and emerging insights. Flexibility in the framework ensures that it remains relevant and effective in monitoring the strategy's implementation.
- **Resource allocation:** Adequate resources, financial, human and technical, must be allocated to support the M&E activities. Ensuring sufficient funding and resources is crucial for maintaining the quality and effectiveness of the monitoring and evaluation efforts.
- **Promoting transparency and accountability:** The M&E framework should serve as a tool for promoting transparency and accountability. Public dissemination of M&E results helps in building trust among stakeholders and justifying the continuation or scaling up of interventions based on demonstrated success or impact.

By following these guidelines, the M&E framework for the ETS serves both as a tool for tracking performance and as a catalyst for ongoing learning, adaptation and improvement, bridging high-level targets with action-specific KPIs. It ensures that each strategic objective, along with its underlying actions, achieves tangible results efficiently and effectively, fostering robust economic growth and sustainable development across Africa's diverse energy sectors.



In summary, the high-level indicators in the next table and the KPIs embedded within each Action Plan form a cohesive monitoring system. The high-level metrics provide broad insight into Africa's progress towards energy transition goals, while the detailed KPIs offer operational clarity and ensure timely interventions, ultimately advancing the implementation of ETSAP as a whole.

The following table presents the objective of each strategic intervention per sector, along with a list of indicators to monitor progress (Table 49).

IMPLEMENTATION PLAN

Table 49. M&E Framework for the ETSAP

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH-LEVEL INDICATORS
Electricity sector	Strengthen and modernise energy infrastructure and systems in the electricity supply industry	Strategic Intervention 1: Accelerate the deployment of RE	Additional supply capacity by clean energy sources Innovation on clean energy systems	Additional capacity in MW by RE, NG ESS Mini grids/microgrids; SSDG New battery and RE technologies and applications
		Strategic Intervention 2: Foster and accelerate development of resilient transmission and distribution networks to support deployment and trade of clean and RE power	Connectivity across continent Performance of the continental network Innovation on efficient network systems	Connected power pools T&D losses % Traded electricity GWh New smart network systems
Transport subsector	Advance sustainable transport solutions	Strategic Intervention 1. Promoting introduction of various NEVs and clean fuels in various sub sectors of the transport sector	Population/fleet of NEVs Clean fuels/ used in transport	Number of NEV by type Quantity of clean fuels supplied to transport sector Estimated GHG reductions by NEVs and clean fuels
Transport subsector	Advance sustainable transport solutions	Strategic Intervention 2: Transitioning the conventional transport systems to multi-modal transport systems for efficient use and energy demand reduction.	Services accessibility and mobility	Passenger/tonne km per year/capita Estimated GHG per P-km and T-km
Buildings	Elevate building standards for energy	Strategic Intervention 1: Strengthen and adopt compliance with building energy codes	Adoption of building codes by buildings	No of AU Member States with harmonised building codes
		Strategic Intervention 2: Boost market demand for energy efficient buildings	Building on EE	By floor size (m ²)
		Strategic Intervention 3: Boost capacity for delivering energy efficient buildings	Experts Accreditation Scheme and accreditation of Trained experts for EE in buildings	No and types of skills
Industry	Foster sustainable and transformative industrial development:	Target reduction of fossil fuel demand in industry through fuel substitution, RE supply and EE practices	Fossil fuel consumption in industry RE deployed in the sector	% of fossil fuels used in industry subsector %RE
		Strategic Intervention 2. Transformative industrialisation to leverage Africa's comparative advantage	Battery and hydrogen manufacturing capacity on the continent Investment in industry Innovative battery and hydrogen technologies and fuels	Battery MW Hydrogen Quantity Million Ton Hydrogen (MT-H ₂ /year) US\$ New battery and hydrogen technologies and fuels

IMPLEMENTATION PLAN

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH-LEVEL INDICATORS
Oil and gas	Optimize oil and gas sector transition	Strategic Intervention 1: Sustainable supply of natural gas on the continent	Existing and planned natural gas network coverage leading to increased supplied NG on the continent Share of NG in the energy mix Share of NG in power generation	Additional NG supplied TCF % in the energy mix
		Strategic Intervention 2: Promote economic and technical efficiency in the production, transport, and use of oil and gas	Investment into NG IOC/NOC Financial stability (profit/debts) of public energy companies Sustained subsidies	US\$
		Strategic Intervention 3 ESG sustainability	Participation of IOC/ NOC in CSR activities Job creation	US\$ Number of additional jobs created IOC/NOC with ESG strategies
Agriculture	Increase the use of modern and efficient energy technologies in agriculture	Strategic Intervention 1: Modernisation of agricultural equipment	Modern and clean energy use in agriculture Labour statistics	% of clean energy used in agriculture % of agriculture employment per hectare
Agriculture	Increase the use of modern and efficient energy technologies in agriculture	Strategic Intervention 2: Promotion of renewable energy in agriculture	Productivity of the agricultural sector	Tonne/hectare
		Strategic Intervention 3: Enhancement of agricultural extension services		
Clean cooking	Promote the adoption of clean cooking technologies	Strategic Intervention 1: Development and deployment of advanced cooking technologies	Population with clean cooking on the continent	% of population with clean cooking
		Strategic Intervention 2: enhancing market structures and supply chains	Traded clean cooking appliances	Volume of trade of clean cooking appliances at AfCFTA and by country
		Strategic Intervention 3: Policy development and regulatory support		
		Strategic Intervention 4: Public awareness campaigns and education		
Horizontal planning	Support AU MS to develop their DDPs	Train MS on designing development of DDP and related data collection Train MS on scenario modelling	AU MS supported to develop their DDPs	Number of AU-MS supported, and collective estimated carbon offsets achieved following DDP introduction, (MtCO ₂)

IMPLEMENTATION PLAN

SUB SECTOR	STRATEGIC OBJECTIVES	STRATEGIC INTERVENTIONS	WHAT IS TO BE MEASURED	HIGH-LEVEL INDICATORS
Horizontal planning	Energy information system that can support energy transition	Creating a functional ET compatible energy system to support continental, regional and national ET strategies	Energy information system that can support energy transition	Energy transition compatible data sets in AFREC database for all ETSAP energy subsectors
	Capacitated continental, regional and national ET agencies	Capacity building of continental agencies Regional and National bodies For development ET strategies	Capacitated continental, regional and national ET agencies	Agencies capability to support ET strategies at continental, regional and national level
Cross cutting	Gender- equitable distribution of energy benefits and the promotion of inclusive development	Integrating gender perspectives and emphasising the involvement of women at all stages of energy policies, programmes, and projects	Gender mainstreaming in policies, plans, budgets	USD for gender budgets
		Promote gender participation in decision making roles	Women participation	% of women participation in ETSAP implementation
		Gender balanced skills development		
Cross sectoral	Cross sectoral planning	Assessment of subsector cross-sectoral issues and synergy including other relevant sectors such as water, ICT, industrialisation	Multisectoral investment projects in ETSAP	USD compared to all investment of ETSAP
		Aggregate implementation and impact costs		
		Sub sector stakeholder engagements		
		Collective resource mobilisation		

Source: Authors' own creation

5.4.2 EVALUATION FRAMEWORK

Evaluation will be undertaken in 2030, 2040 and 2063 in accordance with the end of the ETSAP Short Term, Medium Term and Long-Term timelines. Evaluation will inform any adjustments that may be needed learning from past performance and also incorporating new and upcoming paradigms.

5.5 COMMUNICATION PLAN

5.5.1 SPECIFIC OBJECTIVES OF THE COMMUNICATION PLAN

The communication plan (CP) for the African Union Energy Transition Strategy aims to catalyse effective communication and outreach efforts, which are essential for the successful implementation and widespread acceptance of the strategy. The overarching goals are to inform, engage, and mobilise all relevant stakeholders and the general public towards achieving a sustainable and inclusive energy transition across Africa. Below is a detailed

elaboration of the specific objectives and sub-objectives of this communication plan:

Objective 1: Enhance awareness and understanding of the energy transition

The primary aim is to increase awareness and deepen the understanding of the energy transition's objectives, challenges, and benefits among all stakeholders. This involves disseminating information about energy transition measures and the importance of following a low-carbon pathway.

- Sub-objective 1.1: Ensure that all AU organisations, regional organisations, and Member States, energy and related sector stakeholders, and the wider public across the continent are well informed about the goals of the ETSAP and are motivated to participate actively.
- Sub-objective 1.2: Disseminate actionable information and best practices that can assist countries and communities in transitioning towards more sustainable energy systems.
- Sub-objective 1.3: Highlight successful case studies

IMPLEMENTATION PLAN

and role models in energy transition initiatives to inspire and motivate stakeholders and the general public.

- Sub-objective 1.4: Execute targeted public awareness campaigns and educational programmes emphasising the environmental, economic, and social benefits of a robust energy transition.

Objective 2: Promote advocacy and political support

Advocacy is crucial to secure the necessary political and financial support for implementing the ETSAP. This involves engaging with political leaders, policymakers, the private sector, and international donors to obtain commitment and resources.

- Sub-objective 2.1: Leverage political will at both national and regional levels to support legislative and policy frameworks conducive to the energy transition.
- Sub-objective 2.2: Facilitate policy harmonisation across Member States to ensure a cohesive approach towards energy transition.
- Sub-objective 2.3: Foster partnerships with international bodies and organisations to align the ETSAP with global energy goals and attract funding.
- Sub-objective 2.4: Engage financial institutions and private sector investors to mobilise resources for energy transition initiatives.

Objective 3: Strengthen stakeholder engagement and participation

Building a collaborative platform for all stakeholders is essential for shared ownership and effective implementation of the ETSAP.

- Sub-objective 3.1: Establish and strengthen platforms for dialogue among government agencies, private sector players, NGOs, academia, and community representatives.
- Sub-objective 3.2: Implement inclusive decision-making processes that allow for contributions and concerns of diverse groups, particularly those most affected by energy policies.
- Sub-objective 3.3: Coordinate with educational institutions to integrate energy transition topics into curricula and public discourse to cultivate a new generation of informed citizens and professionals.

Objective 4: Facilitate knowledge sharing and capacity building

Information dissemination and capacity building are vital to equip stakeholders with the knowledge and skills needed for the energy transition.

- Sub-objective 4.1: Develop and distribute informational

materials, such as guidelines, toolkits, and online resources, that provide practical advice on adopting renewable energy and improving energy efficiency.

- Sub-objective 4.2: Organise workshops, seminars, and training sessions to build the technical capacities of stakeholders involved in energy projects.
- Sub-objective 4.3: Promote the use of digital platforms for continuous learning and interaction among stakeholders across the continent.

This comprehensive communication plan will ensure that the objectives of the ETSAP are clearly communicated, understood, and supported across diverse relevant sectors and communities, laying a solid foundation for its successful implementation and the attainment of its long-term goals.

5.5.2 COMMUNICATION PRINCIPLES AND GENERAL APPROACH

To ensure the success of the African Union's Energy Transition Strategy, it is crucial to establish a robust communication plan grounded in clear principles and a thoughtful approach. This communication plan aims to effectively disseminate the vision, goals, and ongoing progress of the ETSAP, while fostering stakeholder engagement and public support. The following principles and general approaches form the backbone of this plan, ensuring that communications are coherent, effective, and inclusive:

Clarity and accessibility

Communication should be straightforward and free of jargon to ensure it is accessible to a broad audience, including stakeholders who may not have technical backgrounds. Information should be conveyed clearly, with technical terms and abbreviations explained upon first use to ensure comprehensibility.

Evidence-based messaging

All communications should be grounded in accurate, evidence-based information. Providing scientific data and proof points will not only enhance the credibility of the messages but also reinforce the rationale behind the energy transition initiatives.

Multilingual communications

To reach a wider audience across Africa's diverse linguistic landscape, key communications should be available in English and French, with consideration for translations into additional local languages as necessary. This ensures inclusivity and broader accessibility.

IMPLEMENTATION PLAN

Positive and constructive messaging

The communication strategy should emphasise the positive aspects of the energy transition, highlighting benefits such as economic opportunities, improved energy security, and environmental sustainability. While it's important to maintain a positive tone, communications must also be balanced and realistic, avoiding exaggeration and ensuring that challenges are also acknowledged.

Minimize negative connotations

It is advisable to avoid focusing solely on negative or alarmist messaging, which can lead to desensitisation or a sense of helplessness among the audience. Instead, the strategy should focus on constructive and aspirational messages that encourage proactive involvement and convey a sense of hope and progress.

Human-centric and inclusive approach

Wherever possible, communication should highlight personal stories and case studies that illustrate the impact of the energy transition on individuals' lives. This approach helps to personalise the abstract concepts of policy and technology, showing tangible benefits and real-world changes.

Gender-sensitivity and inclusiveness

Messages should be crafted to be gender-sensitive and inclusive, using language that reflects diversity and promotes equality. This includes adhering to guidelines that encourage gender equity and inclusiveness, ensuring that communications resonate with all segments of society.

Integration with other initiatives

The communication strategy should align with and support other ongoing energy and development initiatives across the continent. By linking with these initiatives, the strategy can leverage synergies and amplify its impact, avoiding duplication of efforts and enhancing resource efficiency.

Leverage existing communication channels

To maximise reach and efficiency, the strategy should utilise existing communication channels and platforms. This includes leveraging networks and resources from various AU initiatives, regional partnerships, and international collaborations.

Flexibility and responsiveness

The communication strategy should remain flexible to adapt to new developments, feedback, and changing circumstances. This adaptability ensures that the strategy remains relevant and effective over time, capable of addressing emerging issues and capitalising on new opportunities.

By adhering to these principles, the communication plan for the ETSAP will support the strategic objectives of the strategy, promoting widespread understanding and engagement, and ultimately contributing to the successful implementation of the energy transition across Africa.

5.5.3 TARGET AUDIENCES AND KEY MESSAGES TO BE DISSEMINATED

The various stakeholders targeted by this communication and the key messages to be disseminated are presented in Table 50 below.

Table 50. Key Communication Messages and Stakeholders

STAKEHOLDER	KEY MESSAGES
AU Institutions	- The ETSAP serves as a continental flagship, driving sustainable energy practices and reinforcing Africa's commitment to carbon neutrality by 2063. This strategy positions the AU as a leader in global environmental sustainability efforts. - Through the ETSAP, AU institutions will coordinate and oversee the integration of renewable energy resources across the continent, fostering economic resilience and energy security. - AFREC will champion the adoption and implementation of the ETSAP, emphasising its role in economic development, social improvement, and environmental protection at national, regional, and international platforms. - Collaborative efforts among AU entities, such as AUC, AUDA-NEPAD, and others, are crucial for the successful implementation of the ETSAP, ensuring a unified approach towards a sustainable energy future. - The ETSAP will enable the AU to leverage new technologies and innovations in energy transition, setting the continent on a path to technological independence and sustainability. - The ETSAP calls for the AU to facilitate a continent-wide dialogue and consensus on energy transition, bridging gaps between diverse energy needs and capacities of Member States.

IMPLEMENTATION PLAN

National Governments, Policymakers, and Regulating Institutions	• The ETSAP is a strategic tool to enhance national energy autonomy, optimally reduce reliance on fossil fuels, and facilitate a transition to a green economy, aligning with national interests and sustainable development goals. • Governments are encouraged to integrate ETSAP recommendations into national legislation and policies to streamline energy transition initiatives towards low-carbon economies. • National policymakers play a pivotal role in mobilising resources, enacting supportive regulations, and engaging the public to foster a conducive environment for energy transition. • The ETSAP encourages governments to foster local industries through supportive policies for sectors involved in the energy transition, driving job creation and domestic technological advancements. • MS are alerted to seriously consider multisectoral planning in implementing their energy transition initiatives and to factor in cross-cutting issues of gender, climate resilience and poverty alleviation. • National authorities are urged to implement robust monitoring and reporting mechanisms that ensure transparency and accountability in energy transition initiatives.
RECs and Power Pools / Regional Regulators / Associations of Regulators	• ETSAP promotes regional collaboration to achieve energy security through shared clean energy initiatives and infrastructural investments. • Power Pools and RECs are instrumental in implementing cross-border energy projects that reduce costs and enhance energy access, driving regional energy market integration. • Regional regulators will ensure that energy policies are harmonised across borders, facilitating a seamless energy market and supporting sustainable energy investments. • The ETSAP empowers regional bodies to develop targeted energy resilience plans that address specific regional vulnerabilities to climate change and energy access disparities.
RCREEEs	• The RCREEEs are vital for disseminating best practices, providing training, and facilitating the adoption of renewable energy and energy efficiency technologies within the region. • The ETSAP supports these centres by providing a framework for action and a channel for funding and resources, enhancing their capacity to lead local and regional energy initiatives. • RCREEEs are tasked with pioneering pilot projects that demonstrate the viability and benefits of new energy technologies within local communities and economies. • They should act as knowledge-sharing platforms, facilitating the exchange of data, success stories, and lessons learned across the continent to speed up the energy transition process.
African Communities and Consumers	• The ETSAP aims to make sustainable energy accessible and affordable for all Africans, enhancing the quality of life and economic opportunities. • Community engagement and consumer education are key components of the ETSAP, ensuring that the benefits of energy transition, such as improved energy reliability and reduced costs, are widely understood and supported. • The ETSAP focuses on empowering consumers through knowledge, providing them with the tools to make informed energy choices and participate actively in Africa's energy transition. • The ETSAP emphasises the role of energy education in schools and community centres to cultivate a generation that is knowledgeable about sustainable energy practices. • The ETSAP advocates for consumer rights to access clean and sustainable energy, promoting policies that protect consumers and gender equality as the energy market transitions.
Investors and Donors	• The ETSAP offers a stable and transparent investment landscape, highlighting opportunities in energy transition initiatives across Africa. • By investing in Africa's energy transition, donors and investors contribute to sustainable development, promoting social equity and environmental stewardship. • The ETSAP ensures that investments are safeguarded through policy support and incentives, making Africa an attractive destination for sustainable energy investments. • The ETSAP outlines a strategic plan for phased investment opportunities that align with the progressive deployment of Energy transition measures and capabilities across the continent. • Investors are invited to participate in financing models that not only yield returns, but also generate social and environmental benefits, aligning with global sustainable investment trends.

Source: Authors' own creation

5.5.4 SPECIFIC COMMUNICATION TOOLS AND CHANNELS

For the successful implementation of the African Union's ETSAP, a comprehensive communication plan, leveraging diverse tools and channels, is essential. This plan will not only facilitate stakeholder engagement and

public awareness but also ensure the dissemination of key information and updates throughout the lifecycle of the ETSAP. The tools and activities recommended below are contingent on available budget and staff resources and should be adaptable to evolving operational contexts.

IMPLEMENTATION PLAN

Visual identity

Developing a distinct visual identity for the ETSAP is crucial. This includes the creation of a consistent colour scheme, fonts, and the use of partner logos in publications and digital content to foster brand recognition. A dedicated logo may also be considered to symbolise the ETSAP's objectives and values. Additionally, a brand book will be created to standardise templates for official documents, presentations, and social media visuals, ensuring coherence across all communications.

Promotional materials and basic visuals

Once the brand identity is established, various promotional materials will be produced. Essential items, such as roll-ups and backdrops for events, will be Prioritised to ensure visibility during public engagements. Other promotional items, such as eco-friendly bags, pens, folders, or notebooks, will also be considered for use in events and conferences to enhance the strategy's outreach.

Publications

A series of publications will be central to communicating the nuances and successes of the ETSAP:

- **General factsheet or brochure:** An overview document outlining the strategy's goals, processes, and benefits.
- **Sectoral factsheets:** Detailed guides for specific sectors such as renewable energy, clean cooking, and energy efficiency, incorporating infographics and visual data to illustrate progress and key points.
- **Success stories:** Narrative-driven content that showcases the impact of the strategy through real-life examples, highlighting how specific initiatives have transformed energy access and sustainability in Africa. These stories will be adapted for various formats, including web articles and social media content, to maximise reach and engagement.

Videos

Video content will play a significant role in the communication strategy:

- **Overview video:** Introducing the ETSAP and outlining its importance and benefits.
- **Thematic videos:** Focused on specific themes or sectors, these videos will target social media platforms to engage a broader audience.
- **Testimonial videos:** Featuring interviews with stakeholders and beneficiaries, these videos will provide a personalised perspective on the strategy's impact.
- **Event summaries and explainer videos:** Capturing

key moments from conferences and workshops, as well as detailed explanations of complex topics within the strategy.

Events

Events are pivotal for advocacy, networking, and stakeholder engagement:

- **High-level meetings and conferences:** Participation in global and regional platforms, such as the Conference of the Parties and other significant energy and climate-related events.
- **Workshops and information sessions:** Targeted events to engage specific stakeholder groups, such as the private sector, offering updates and fostering collaboration.
- **Media events:** Press conferences or media briefings to highlight milestones and achievements, enhancing media coverage and public understanding of the strategy's progress.

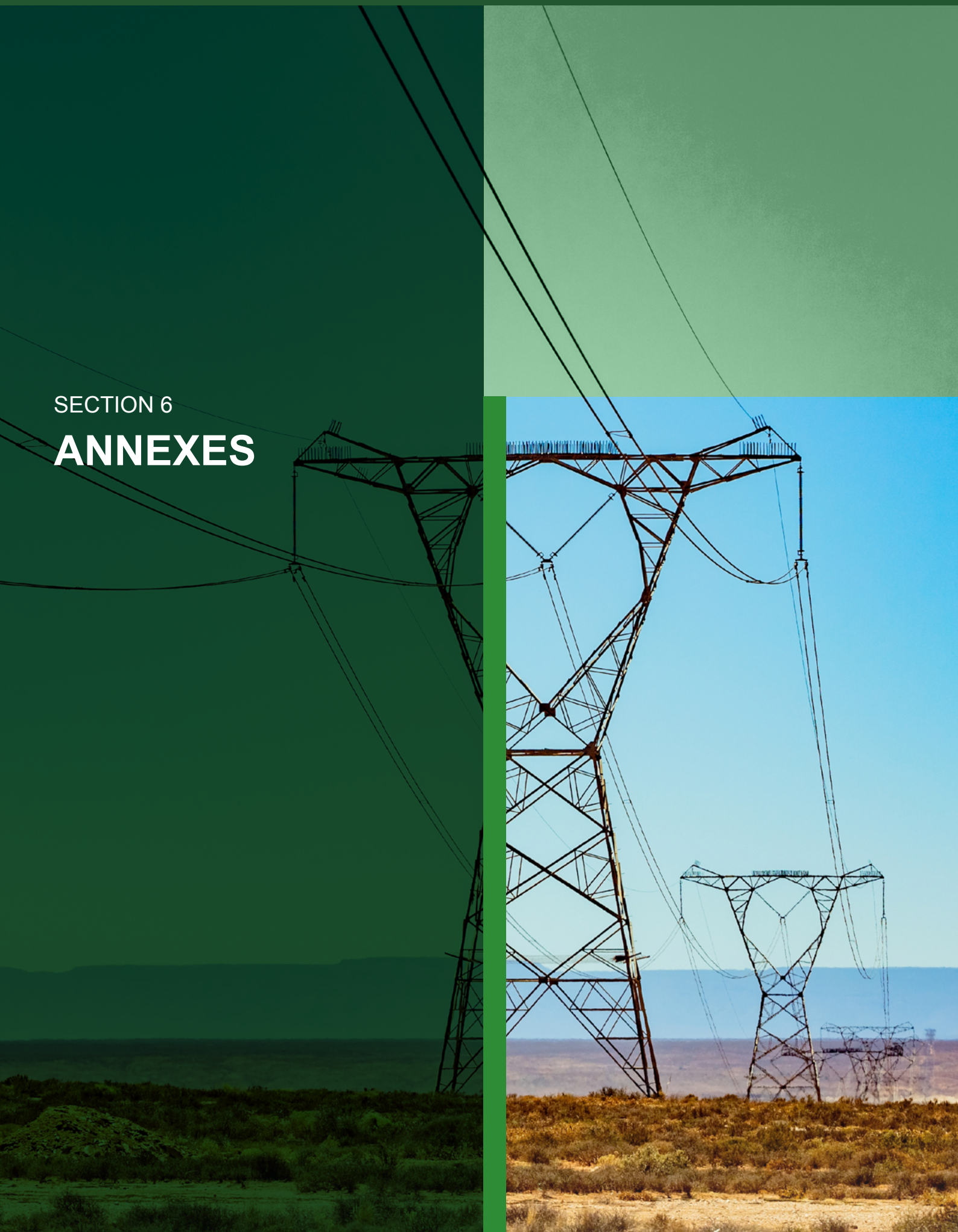
Social media

Social media will be utilised to maintain continuous engagement and provide updates to the public and stakeholders:

- **Social media presence:** Planning regular updates, key announcements, and special events to keep the audience informed and engaged.
- **Integration with partner platforms:** Leveraging existing social media accounts from AU and EU institutions, as well as other partners such as RECs and Power Pools, to maximise reach and visibility.

SECTION 6

ANNEXES



6. ANNEXES

6.1 NDCS TARGETS ANALYSIS

The following table presents an overview of the target analysis of the NDCs conducted by the Netherlands Environmental Assessment Agency (PBL). Detailed graphical representations are available on the website: <https://themasites.pbl.nl/o/climate-ndc-policies-tool/>

The emissions presented refer to total emissions, including or excluding Land Use, Land Use Change and Forestry (LU-LUCF), as indicated in the table below.

Table 51. Overview of Nationally determined contributions of AU Member States

OVERALL EMISSIONS IN MT CO ₂ EQUIVALENT					
			Business as usual (BAU) national projection	2030 NDCs	
Country name	LULUCF	2020	2030	Unconditional Intended Nationally Determined Contributions	Conditional Intended Nationally Determined Contributions
Algeria	Included	257	251	234	196
Angola	Included	156	193	93	82
Benin	Excluded	18			18
Botswana	Excluded	15			19
Burkina Faso	Included	88	118	86	76
Burundi	Included	-10	74	72	60
Cameroon	Included	-230	104	92	68
Cape Verde	Excluded	1	0		
Central African Republic	Excluded	20	153	16	13
Chad	Included	53	85	85	69
Comoros	Included	-7	1		0
Congo, Democratic Republic	Included	291	430	421	340
Congo, Republic	Excluded	27	26		12
Cote d' Ivoire	Excluded	33	34	25	
Djibouti	Excluded	1	4	3	2
Egypt	Excluded	337			496
Equatorial Guinea	Included	6			20
Eritrea	Excluded	7			
Ethiopia	Included	259	404	348	126
Gabon	Excluded	6			
Gambia	Excluded	3			2
Ghana	Included	67	74	63	41

ANNEXES

OVERALL EMISSIONS IN MT CO ₂ EQUIVALENT					
			Business as usual (BAU) national projection	2030 NDCs	
Country name	LULUCF	2020	2030	Unconditional Intended Nationally Determined Contributions	Conditional Intended Nationally Determined Contributions
Guinea	Excluded	31	23	21	19
Guinea-Bissau	Excluded	3			
Kenya	Included	140	143		97
Lesotho	Excluded	4		3	2
Liberia	Excluded	5	5		5
Libya	Excluded	64			
Madagascar	Excluded	35	214		
Malawi	Excluded	15			
Mali	Excluded	81			
Mauritania	Included	10	19	18	15
Mauritius	Included	5	7		5
Morocco	Included	90	142	116	78
Mozambique	Excluded	42			
Namibia	Included	-103	23		-103
Niger	Included	21	96	82	52
Nigeria	Included	381	900	362	240
Rwanda	Excluded	9			
Sao Tome and Principe	Excluded	0	0		0
Senegal	Included	18		40	30
Seychelles	Excluded	1	0		1
Sierra Leone	Excluded	10			
Somalia	Excluded	35			
South Africa	Included	458		420	350
Sudan	Excluded	116			
Swaziland	Excluded	2			
Tanzania	Excluded	94	146	102	95
Togo	Included	48	39	35	27
Tunisia	Excluded	37		41	31
Uganda	Excluded	48	77		60
Zambia	Included	10		90	64
Zimbabwe	Excluded	25			

Source: Infographics PBL NDC Tool March 2024, Published March 26, 2024, Version v1 (<https://zenodo.org/records/10875617>)

ANNEXES

**6.2 STOCKTAKING REPORT AND
GUIDELINES FOR DEVELOPMENT OF
DEEP DECARBONISATION PATHWAYS
AND “LOW HANGING FRUIT AND HIGH
IMPACT ACTIVITIES”**

As mentioned, the development of this strategy document was based on an extensive stocktaking exercise. The results of this exercise were presented in the Stocktaking Report, which serves as a companion document to the ETSAP.



AFREC-AfDB_Stocktaking
Phase_v4_clean_10

A guidelines document for the development of Deep Decarbonisation Pathways (DDPs) and low-cost, high-impact activities has been developed as a companion to this strategy. This document is attached below.



GUIDELINES for
Low Hanging Fruit /

**6.3 REFERENCED PAST AU ADOPTED
STRATEGIES AND FRAMEWORKS**

Below are the full validated documents of AfEES. The Annexes of AfEES also include all previously adopted relevant documents.

AfEES: Strategy and Roadmap



GT104-Regional-Report-Del 3 AfEES and R

AfEES: Action Plan



GT104-Regional-Report-AfEES Detailed Action Plan

It should be noted that Annex 1 of the AfEES document also includes, in embedded form, the following adopted documents:

1. Guidelines for MEPS Energy Labelling and Eco-Design at the Continental Level,
2. Market Surveillance Strategy and Action Plan,
3. Report on existing test laboratories, procedures and facilities,
4. Roadmap for Strategic Test Laboratories,
5. Strategy and Roadmap for Establishing a Market for Energy Efficient Appliances in Africa,
6. Guide for policy makers on developing Quality Assurance frameworks for off-grid appliances in Africa,
7. Guidelines and Strategies for the Reduction of Technical Losses of Transmission and Distribution Lines and Smart Network Management,
8. Strategy and Roadmap for evolving distribution systems to smart distribution grids,
9. AU DAS and implementation Plan 2024 – 2030.

ANNEXES

Stakeholder Reviewers list

N°	NAME	COUNTRY/ INSTITUTION	TITLE
1	Yagouba Traore	African Energy Commission	Head of Policy, Planning & Strategy
2	Mehdi Khouili		Country Support & Capacity Building Officer
3	Bob Felix Ocitti		SPO, Research Oil & Gas
4	Nickson Bukachi Onger		SPO, Renewable Energy & Energy Efficiency
5	Nna Ndong Olui Nicaise		Finance Officer
6	Awa Cheikh		Administrative Assistant
7	Mbeo Calvince Ogeya		Energy Project Assistant
8	KEMO CESAY	GAMBIA	Director of Energy
9	Dr. Adeola Ijeoma Eleri	NIGERIA	Deputy Director, Renewable Energy
10	LINGANI Bakary	BURKINA FASO	Directeur de l'énergie Conventionnelle, ministère de l'Énergie, des Mines et des Carrières
11	Eng. Mahad Abukar	SOMALIA	Renewable Energy Specialist, Ministry of Energy and Water Resources
12	IZIBA MABIALA Jérôme	RDC	Chef de Division au Secrétariat des Ressources Hydrauliques et Electricité
13	Mr. Muso Andreas Raliselo	LESOTHO	Principal Energy Officer
14	Nagache Mohamed Gaas	DJIBOUTI	Chef de service des energies renouvelables
15	Wesley Kipyego	KENYA	
16	ASSAN Todéman Flinso	BENIN	Directeur Général de la Planification énergétique et de l'Electrification rurale (DGPER)
17	Alexis-Léandre OKOUMA	GABON	Directeur Adjoint de la Maitrise de l'Energie, ministère de l'Energie et des Ressources Hydrauliques
18	Sekou Sampane Bangoura	GUINEE	Chef de Division Planification et Règlementation Energétique
19	Damião Victor Namuera	Mozambique	Head of Renewable Energy Department
20	Mohamed Ahmed Mahmoud Wasfy	Egypt	Data Analyst, Technical Office, Ministry of Petroleum and Mineral Resources
21	Roger ANDRIAMPARANY	Madagascar	Chef de la Cellule Environnementale, Ministère de l'Énergie et des Hydrocarbures
22	Nomenjanahary Tantely RAKOTONDRAIBE		Ingénieur Électricien et Énergéticien, Expert junior en inventaire des GES et en scénarios d'actions de mitigation, Ministère de l'Énergie et des Hydrocarbures
23	Christian TOMBO		Ingénieur en Hydraulique – Énergétique, Responsable Accès à l'Électricité
24	Tombo Elson Joelinet VANOMARO		Ag. Secrétaire Exécutif par intérim, Agence de Développement de l'Électrification Rurale de Madagascar
25	YAO Philippe Tanguy Koffi	Cote d'Ivoire	Sous-Directeur de la Valorisation de la Bioénergie et de la Cuisson Propre, Direction des Énergies Renouvelables et de la Bioénergie, Direction Générale de l'Énergie, Ministère des Mines, du Pétrole et de l'Énergie
26	Sambou Kinteh	Gambia	MECCNAR
27	Bafoday Sanyang	Gambia	MoPE

ANNEXES

N°	NAME	COUNTRY/ INSTITUTION	TITLE
28	Burama Badjie	Gambia	NAWEC
29	Yaye Catherine DIOP DIENG	Senegal	Chef de la Cellule Transition Énergétique, Ministère de l'Énergie, du Pétrole et des Mines
30	Mafayo Ziba	Zambia	Assistant Director, Ministry of Energy
31	Juan Francisco MIKO NVONO AVOMO	Guinée équatoriale	Ingénieur et Chef du Département des Énergies Renouvelables, Ministère de l'Électricité et des Énergies Renouvelables
32	Simasiku Titus Mukwaso	Botswana	Ministry of Minerals and Energy/Department of Energy
33	Lesedi David Thiabo Bafetanye	Botswana	Botswana Energy Regulatory Authority
34	Letshego Moeng	Botswana	Botswana Power Corporation
35	Afef Chachi	Tunisia	Cheffe de Cabinet, Ministère de l'Industrie, des Mines et de l'Énergie
36	Mr. Wonder Honondo	Zimbabwe	
37	Mr. Ziyaad Toofany	Mauritius	Engineer/Senior Engineer, Ministry of Energy and Public Utilities
38	Canon Goddy Muhanguzi Muhumuza	EACREEE	Executive Director
39	Augustino Bernard Massawe	EREA	Finance and Administration Lead
40	Mr James Manda	AFUR	Technical Manager
41	Readlay Makaliki	SACREEE	Lead Technical expert
42	Malama Chileshe	COMESA	Energy Economist - Infrastructure Division
43	Dr Mawufemo Modjinou	ECREEE	Principal Programme Officer
44	Stephen Dihwa	SAPP	Executive Director, Southern African Power Pool
45	Therance Ndisanga	AUDA-NEPAD	Programme Officer Energy
46	Haruna Kachalla Gujba	AUC IED	Advisor - Global Energy Transformation Programme
47	Balakiyem Atana KOUDJOWOU	ECOWAS	PO Energy Access
48	Peter Kinuthia	AUC IED	Senior Energy Policy and Strategy Expert
49	Dr. Charly Gatete	African School of Regulation (ASR)	Senior researcher, Key expert
50	Eng. Carol Awuor Ofafa		Associate Researcher, Key Expert
51	Daniella Ngarambe		Associate Researcher
52	Keno Shiferaw Gudeta		Associate Researcher
53	Ibrahim Mike Okumu	Makerere University	Associate Professor
54	Anne Mugure Kiburi	CCG	Energy Modelling, Climate Compatible Growth
55	Prof. Samuel Adams	CEPUR	Associate Professor, Centre of Excellence Public Utility Regulation, Ghana
56	Lanre Shasore	SE4All	Senior Advisor, Energy Transition Planning
57	Gladys Kerubo Ombati	Strathmore University	
58	Hope Nyambura Njoroge	Strathmore University	



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