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Action Plan for Harmonised Regulatory Framework for the Electricity Market in Africa

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Abbreviations

AfDB	African Development Bank
AFREC	African Energy Commission
AFSEC	African Electrotechnical Standardization Commission
AFUR	African Forum for Utility Regulators
AMU	Arab Maghreb Union
APUA	African Power Utilities Association
AU	African Union
AUC	African Union Commission
AWAUR	Association of West Africa Utility Regulators
COMESA	Common Market for Eastern and Southern Africa
DSM	Demand Side Management
EAC	East African Community
EACREEE	East Africa Community Centre for Renewable Energy and Energy Efficiency
EAPP	East African Power Pool
ECCAS	Economic Community of Central African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EE	Energy Efficiency
EREA	Energy Regulators Association of East Africa
ERERA	ECOWAS Regional Electricity Regulatory Authority
ESI	Electricity Supply Industry
IGAD	Intergovernmental Authority on Development (IGAD)
IPP	Independent Power Producer
IRB	Independent Regulatory Board of EAPP
M&E	Monitoring and Evaluation
MEP	Minimum Energy Performance
NEPAD	New Partnership for African's Development
PIDA	Programme for Infrastructure Development in Africa
PPA	Power Purchase Agreement
PPP	Public Private Partnership
QoS	Quality of Service
RAERESA	Regional Association of Energy Regulators for Eastern and Southern Africa
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RE	Renewable Energy
REC	Regional Economic Community
REFITs	Renewable Energy Feed – In Tariffs
RERA	Regional Electricity Regulators Association
SACREEE	SADC Centre for Renewable Energy and Energy Efficiency

SADC	Southern Africa Development Community
SAPP	Southern African Power Pool
SCADA	Supervising, Control and Data Acquisition
STC	Special Technical Committee
UNECA	United National Economic Commission for Africa

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Executive Summary

The significance of an integrated energy market has been highlighted by the World Energy Council (2005), which indicated that the traditional approach of limiting energy planning and service provision to the national level, has contributed negatively to enhancing energy accessibility in Africa. The development of regionally integrated energy markets particularly for electricity, will improve the quality and security of supply at both the national and regional levels, while helping to mobilize private investments. Electricity market interconnections will also create export opportunities for countries which possess comparative advantage with respect to energy resource or energy supply. This is expected to lead to sharing of operational reserves and installed capacity, thus reducing the level of domestic investment in capacity needed to achieve the minimum reserve margin, for system stability and security.

One of the means to achieving regional electricity market integration is through the development of a regional and continental energy infrastructure and market. This calls for *harmonization of policies, legislation, regulatory and institutional frameworks at the regional and continental levels*. It is in this regard that summary document on "Strategy for the Development of a Harmonized Regulatory Framework", was developed to pave the way for harmonization of the regulatory frameworks for the electricity market in Africa, with the view to achieving a fully integrated, competitive and harmonized electricity market. The regulatory harmonization is expected to accelerate Africa's development and improve access to electricity based on the *following six (6) strategic objectives:*

- Developing effective Regional and Continental Electricity markets;
- Improving the operational efficiency and performance of the Electricity Supply Industry;
- Creating stable, transparent and predictable environment to attract investment;
- Enhancing electricity markets frameworks to increase access;
- Enhance Renewable Energy Frameworks;
- Establish norms, standards and frameworks for energy efficiency;

The Strategic Document also identified the following *five pillars*, around which the regulatory harmonization process can revolve, at the national, regional and continental levels:

- Creating a robust Economic Regulatory Framework;
- Establishing a solid Technical Regulatory Framework;
- Creating an Enabling Electricity Market;
- Enhancing Renewable Energy Framework;
- Establishing the norms, standards and frameworks for energy efficiency;

In order to realize the continental regulatory harmonization agenda, this detailed Action Plan has been developed to identity the actions, as well as the key actors required at the national, regional and continental levels, to achieve the continental regulatory harmonization. The Action Plan has been structured into Short term (3-5 years: 2017-2021), Medium term (6-8 years: 2022-2024) and Long term (9-14 years: 2025-2030). The objective is to enable the Actions to be implemented as a set of phase activities, starting from the short to the long-term. It must however be noted that despite this general presentation, the ultimate actions to be implemented will be dictated by

individual needs and regional situations, as well as progress made in each of the five pillars of regulatory harmonization. The Action Plan further identifies the required resources and recommends some key programmes for implementation as "pilot" projects.

For effective and efficient implementation of the Action Plan, and in lieu of a diagnostic needs assessment study (or mapping exercise) of power pools and the countries in each REC, a top-down approach has been recommended in the report. This implies that Guidelines which are developed at the Continental level during the implementation phase, can be adapted to meet the specific needs of each power pool and each state. The Action Plan has also been designed to accommodate the evolving market structure and regulatory frameworks, by ensuring that the Guidelines and Regulations are *reviewed at the end of the short, medium and long terms.*

In developing the detailed Action Plan, it was important to first identify the gaps and barriers to be addressed by the proposed Actions for each of the harmonization pillars, at the national, regional and continental levels. The results of the gap analysis are summarized below.

As part of the monitoring and evaluation framework, the Action Plan has also recommended a Governance and Monitoring structure which takes cognizance of the mandates of each of the key implementing actors identified in the implementation of the short, medium and long term programmes. The monitoring and evaluation framework has been designed as a two tier structure. Tier 1 involves a close collaboration and regular consultative meeting between AUC's coordinating unit, the key Pan – African institutions and the donor partners. The second tier (i.e. Tier 2) which is the "Technical Level", will monitor the progress of the various actions plans. The tier 2 level comprises sub-committees to deal with issues relating to the main pillars of the continental harmonization process. The Monitoring and Evaluation (M&E) framework is thus expected to bring about transparent communication of progress, ensure accountability, and serve as a platform for providing an adaptive feedback process.

In developing the Action Plan, it was important to match the roles and mandates of the different regional and continental institutions vis-à-vis the main actions. The results of this analysis have been attached as Appendix 1 to this report.

Table E. 1 Creating a robust Economic Regulatory Framework: Gaps and Barriers

National	Regional	Continental
Most national regulators are established and backed by law, but fail to meet the minimum requirements of financial, operational and organizational independence.	Regional regulatory Authorities have been established for the power pools, some of which are not fully functional. For instance the Regional Regulatory Authority is yet to be established for the Central African Pool.	Inadequate political commitment and Support; Lack of Strategy and Action Plan for Harmonized Framework.
Lack of transparency in calculation and determination of electricity tariffs.	Absence of harmonized transmission and wheeling charge pricing methodology to facilitate cross-border and regional power trade	Lack of Coordination of regulatory framework; Lack of coordination among the power pools
Existence of Non-Cost reflective and Unbundled Tariffs	Absence of regional co-ordination and dispatch or control centres	Inadequate capacity in regulatory economics. Also lack of professionals in various areas of technical regulation and utility regulation
Inefficient Operation of Power Utilities, which affect financial sustainability. Lack of effective monitoring and evaluation mechanism	Absence of Association of Regional Regulatory Authorities and Power Pools. This affects knowledge sharing and learning from "best" practice regulation	Lack of constant and consistent monitoring of performance of regulatory Authorities, both at the national and regional levels.

Table E. 2 Establishing a robust Technical Regulatory Framework: Gaps and Barriers

National	Regional	Continental
High transmission and distribution system losses (i.e. technical and non-technical) ranging between 15% to 29%, compared to that of a developed country which ranges between 7% - 10%,	Low capacity factor in sub – Saharan African regions. Average capacity factors are as follows: Southern Africa (56%), Eastern African (58%), Western Africa (48%) and Central Africa (34%).	AUC and other continental organizations lack the legislative powers that would bind the RECs and member states.
Quality of Service Regulations developed but effective implementation lacking	Low average load factor for the regions as follows: • Southern Africa: 58%; • Western Africa: 62%; • Eastern Africa: 67%; • Central Africa: 84%.	Mechanisms are needed for enforcement, greater coordination and dialogue between the different levels namely: Regulatory Authorities and Associations, Power Pools etc.
Grid Codes developed but not fully implemented in most countries	High average number of outages per year for the region, as follows: • Southern Africa: 42 outage per year • Eastern Africa: 104 outages per year; • Central Africa: 170 outages per year; • Western Africa: 171 outages per year	
High duration and number of outages and inefficient operation of power utilities	In some of the power pools i.e. EAPP and SAPP, there is no binding regional legal framework. Each utility has to abide by the market rules and grid codes.	
Each state has a bureau of standards and	The Electricity Supply Industry (ESI) lack	

National	Regional	Continental
most technical standards have been adopted that are a very good proxy to international standards. Lack of transparency that has resulted in an unattractive environment for enforcement	robust quality of service standards, regulatory benchmarks for monitoring performance.	
	WAPP and SAPP have steadily worked on the development and improvements of their respective operations manuals. For CAPP and EAPP, the operations codes are still in draft form.	

Table E. 3 Creating an Enabling Electricity Market: Gaps and Barriers

National	Regional	Continental
Lack of model PPAs	Absence of model contracts to facilitate regional electricity trade	Lack of consultative activities among regional authorities and AFUR
Absence of transitional market models for promoting open and third party non-discriminatory access to the transmission network	Inadequate capacity in project development, finance, implementation and monitoring of regional infrastructure power projects	Non-existence of association of power pools to facilitate coordination of activities. APUA can be supported and strengthened to perform this coordinating role under through the Forum of Power Pools
Absence of Market Rules for commercial operation of the electricity market	Lack of strategy and procedures for provision of counterpart funding for energy infrastructure	Inability to secure provision of Technical Assistance to facilitate regional market integration by AfDB and other partners
Lack of Dispute Resolution Procedures for market operation	Inability to secure adequate source of funding or financial assistance for project development risk	
Non-existence of national investment funds for infrastructure development		
Inadequate local capacity in project development, finance, implementation and monitoring		
Absence of project preparation bureaus to package bankable projects and facilitate funding		
Lack of guidelines for domestic funding mobilization		

Table E. 4 Enhancing Renewable Energy Framework: Gaps and Barriers

National	Regional	Continental
Legislation, policies and plans are often not enforced leading to low RE investments.	Low levels and lack of effective policy, regulatory and institutional frameworks at regional level; Apart from ECOWAS and SADC the rest of the RECs need to further develop and adopt RE policies, strategies and Action Plans. Currently, there is no regional centre dedicated to both RE and EE for the Central African Region	Low levels and lack of effective policy, regulatory and institutional frameworks at continental level;
There are many risks for private investors in the RE field, both legal and regulatory which affect investment	Lack of harmonization of RE regulations and technical issues among many countries in the various RECs.	Better and closer coordination among the continental entities is needed
Renewable Energy Acts/Laws have been issued in only a number of countries.	Low technical skills and implementation capacity by regional entities.	Better and closer coordination of synergies between the RECs and regional entities is needed.
Lack of commitment of politicians to carry out reforms to the conclusion. Unattractive market to potential investors due to high investment costs, energy poverty and lack of transparency. Lack of legislative protection for the private sector investors within the primary legislation with clarification in the secondary legislation. Congested grids, compounded by problematic transmission congestion management in many countries.	Most RECs cannot enforce Directives to their member States.	**Non -economic barriers:** • There isn't a One stop shop for authorization • Lengthy processes increases risk and cost. • No clear guidelines for authorization procedures. • No preplanned areas for a targeted level of RES capacity. • Increase of grid capacity and improve manageability of intermittent sources. • No transparent grid connection procedures and cost allocation
Absence of long-term energy planning, with no RES targets. Inefficient administrative procedures (high number of relevant authorities, lack of coordination between relevant authorities, lack of transparency, long lead times etc.). Market structures not prepared for RES.	Limited regional energy infrastructure	
Insufficient consideration of renewable energy in spatial planning. Complex permitting procedures and legal appeal process.		
Lack of stakeholder involvement in decision - making. Lack of experience among decision makers.		
Complex grid access and connection procedures		

Table E. 5 Establishing the norms, standards and frameworks for Energy Efficiency: Gaps and Barriers

National	Regional	Continental
National EE legislation and policies are missing in a considerable number of countries.	Low levels and lack of effective policy, regulatory and institutional frameworks at regional level; Apart from ECOWAS the rest of the RECs need to further develop and adopt EE policies, Strategies and Action Plans.	Low levels and lack of effective policy, regulatory and institutional frameworks at continental scale;
Often, the legislation, policies and plans are not enforced leading to low EE investments	Low technical skills and implementation capacity	The continental entities suffer from capacity shortages both in man power as well as funding.
Few activities both on the supply and on the demand side. Most activities are concerned with the promotion and distribution of CFL lamps.		Better and closer coordination among the continental entities is needed.
Low levels and lack of effective policy, regulatory and institutional frameworks, as well as national targets and corresponding strategies and action plans for EE		Better and closer coordination of synergies between the RECs and regional entities is needed.
Low technical skills and implementation capacity		
Tariffs do not provide appropriate signals for private investors for EE;		

Based on the outcome of the above gap analysis, the detailed Action Plan was developed. The Plan includes cost estimates for implementing flagship projects in each REC, within the short, medium and long terms.

The cost estimates for implementing the selected programmes are based on similar studies carried out by the African Development Bank in other African countries, and for some power pools[1]. The estimated funding requirements for the actionable programmes for implementation within the short, medium and long terms, are provided below. These cover the five pillars of regulatory harmonization at the national, regional and continental levels. In order to prioritize the programmes for implementation, a qualitative analysis was used as follows:

Step 1: Identification of the criteria for selection;
Step 2: Screening Analysis to prioritize the programmes;
Step 3: Implementation plan and cost involved.

The selection criteria used are as follows. Whether the programme:

- Contributes directly to strengthening of regulatory framework at the national and/or regional levels, and also contributes to regulatory framework harmonization;

[1] "Energy Sector Capacity Building Diagnostic and Needs Assessment Study, Volume 2" (2013). Prepared as part of the Power Sector Soft Infrastructure Programme (POSSIP). Also, see the document tilted "Rwanda Energy Sector Review and Action Plan" (2013). See also Business Plan 2012-2015 document for the West African Power Pool

- Contributes to regional market integration;
- Contributes to market opening;
- Contributes to quality of supply;
- Enhances accessibility to electricity;
- Contributes to sustained energy development;
- Is actionable, considering the length of project realization

The summary of the Action Plan and estimated cost is presented below, while the details are elaborated in the report.

Table E. 6 Summary of Cost Implications of Programme Implementation

Period	Harmonization Pillar	Cost (Euros)- Includes cost of dispatch centre – Scenario 1	Cost (Euros)- Excludes cost of dispatch centre – Scenario 2
Short Term	• Economic Regulation Framework • Technical Regulation Framework • Enabling Environment • Framework for RE	204,550,000[2] 2,560,000 8,750,000 1,000,000	4,550,00 2,560,000 8,750,000 1,000,000
Sub-Total		**216,860,000**	**12,310,000**
Medium Term	• Economic Regulation Framework • Technical Regulation Framework • Enabling Environment • Framework for RE	3,000,000 2,100,000 620,000 1,000,000	3,000,000,000 2,100,000 620,000 1,000,000
Sub-Total		**6,720,000**	**6,720,000**
Long Term	• Economic Regulation Framework • Technical Regulation Framework	1,400,000 1,050,000	1,400,000 1,050,000
Sub-Total		**2,450,000**	**2,450,000**
Grand Total		226,030,000	26,030,000

The Action Plan also produced the following as the ranking of priorities for the various programmes, for the short, medium and long terms:

- **Short Term**

Table E. 7 Short Term Priority 1 Programmes

Level	Programme
National	• Establishment of a National Regulator • Tariff Reforms: Accounting Separation, Tariff Guidelines and Methodology, Cost of Service Study, Tariff Unbundling, Determine Cost reflective tariffs. Also RE tariff reforms to include • Establish *RE Feed-In tariffs, Competitive Tendering, Net metering, GETFiT for Grid Connected, Micro*

[2] Apart from infrastructure foreseen and analyzed in the PIDA (power grid and power generation stations), it has to be pointed out that the system control and dispatch centers have to be realized. The amount covers the cost of operationalizing a regional coordination and dispatch centre for **4 power pools**, but *excludes the construction of building for the system control centre.* **It includes data centre hardware and software, control centre data link, telecommunications, tools and test equipment, power network stabilization equipment. It also includes capacity building for staff of dispatch and system control centre.**

Level	Programme
	Grids and Mini Grid Systems • Grid Code development • Develop Market Rules • Develop Minimum Performance Standards and Labelling for EE
Regional	• Establish regional regulatory authority • Develop harmonized transmission system tariff methodology • Develop System Operation Manuals and Codes of Practice • Implement monitoring of power pools • Develop harmonization of EE and labelling standards
Continental	• Implement regulatory performance review mechanism • Monitor and implementation of power pools • Establish Centres of Excellence for capacity building

Table E. 8 Short Term Priority 2 Programme

Level	Programme
Regional	• Establish regional coordination and dispatch centre or upgrade existing system control centres

Table E. 9 Short Term Priority 3 Programmes

Level	Programme
National	• Develop licensing framework for smaller power plants • Develop Rural Electrification Standards • Develop Quality of Service Regulations and Standards • Develop and design roadmap for market model • Develop DSM Guidelines and Standards
Continental	• Monitor progress of power pools through regular meetings

- **Medium Term**

Table E. 10 Medium Term Priority 1 Programmes

Level	Programme
National	• Full operationalization of national regulator • Implementation of Grid Code
Regional	• Full operationalization of Regional Regulatory Authorities • Implementation of Operations Manual and Codes of Practice • Operationalize regional dispatch and coordination centres or upgrade existing area control centres • Support to Centres of Excellence for capacity building
Continental	• Monitoring progress of market integration through regular consultative meetings • Support to the Centres of Excellence for long term sustainability

Table E. 11 Medium Term Priority 2 Programmes

Level	Programme
National	• Implement RE Feed-In tariffs, Competitive Tendering, Net metering, GETFiT for Grid Connected, Mini Grid and Stand-Alone Systems • Implement RE Guidelines and streamline licensing procedure • Complete electricity market opening process, and define the role of market participants.
Regional	• Implement harmonized transmission system tariff methodology, including wheeling charges and cost allocation methodologies • Develop a strategy for implementing flagship infrastructure projects as the "corridors", to support power trade. • Implement Standard Model Contracts

- **Long Term**

Table E. 12 Long Term Priority 1 Programmes

Level	Programme
National	• Implement tariff unbundling and cost reflective tariffs; • Update existing tariff guidelines/regulations and methodology • Revise Grid Code • Implement Market Opening and ensure operational autonomy of transmission system operator
Regional	• Revise/update Market Rules • Full operationalization of dispatch and coordination centre • Implement strategy for implementation of flagship projects
Continental	• Monitoring of progress of power pools and market integration through regular consultative meetings • Undertake performance review of regulators • Progress monitoring of Centres of Excellence

Table E. 13 Long Term Priority 2 Programmes

Level	Programme
National	• Undertake performance monitoring and assessment of power utilities • Implement Quality of Service Regulations and Enforcement

1 Introduction

Energy is crucial for the sustainable development of a country because it is key to the provision of the basic needs of its citizens, and also important for a country's industrialization process. Despite the abundance of the continent's energy resources, these are yet to be fully exploited by African countries to enhance the welfare of the population and also drive economic development. According to the World Energy Council (2005), the traditional approach of limiting energy planning and service provision to the national level, contributes negatively to enhancing energy accessibility in Africa due to the following reasons:

- The geography of energy supply options does not necessary correspond to political boundaries;
- Energy markets at the national level are often too small to justify the needed investment;
- Cross-border energy supply lead to diversification of energy source, and hence energy security;
- Elements of individual country sovereign to own power generation still compete with liberal open market power trade.

The development of regionally integrated energy markets particularly for electricity, will improve the quality and security of supply at the national level, while helping to mobilize private investments. Electricity market interconnections will also create export opportunities for countries which possess comparative advantage with respect to energy resource or energy supply. Electricity market interconnection will also lead to sharing of operational reserves and installed capacity, thus reducing the level of domestic investment in capacity needed to achieve minimum reserve margin for system stability and security.

One of the means to achieving regional electricity market integration is through the development of a regional and continental energy infrastructure and market. This calls for harmonization of policies, legislation, regulatory and institutional frameworks at the regional and continental levels, to facilitate greater coordination and cooperation. It is in this regard that the summary document on "Strategy for the Development of a Harmonized Regulatory Framework" and the Action Plan, identified the following *five pillars* at the national, regional and continental levels, around which the regulatory harmonization process will revolve:

- Creating a robust Economic Regulatory Framework;
- Establishing a solid Technical Regulatory Framework;
- Creating an Enabling Electricity Market;
- Enhancing Renewable Energy Framework;
- Establishing the norms, standards and frameworks for energy efficiency;

In developing the Strategic Document and Action Plan documents, the following basic essential elements which underpin the regulatory harmonization process, were also taken into consideration:

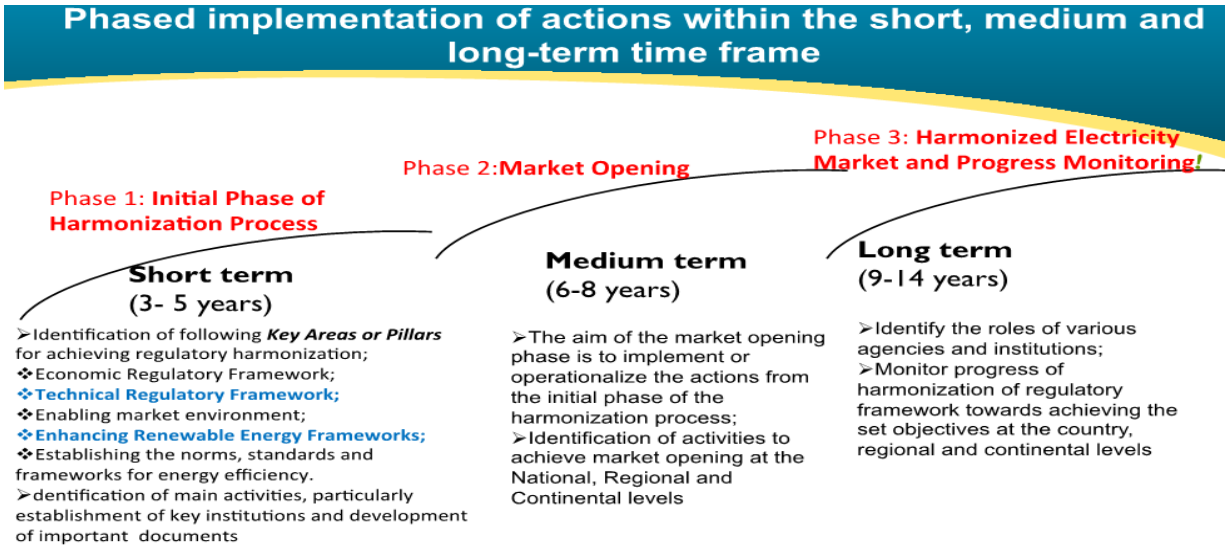
- Access to electricity;
- Price of Electricity band affordability issues;
- Quality of Electricity Supply to customers, including customer services or commercial quality of electricity;
- Impact of the power sector reforms on economic and business development;
- Impact of reforms on public sector finance.

1.1 Objectives

The purpose of this detailed Action Plan is to identity the actions, as well as the key actors required at the national, regional and continental levels to achieve continental regulatory harmonization. The objective is to enable the Actions to be implemented as a set of phase activities, starting from the short term to the long term. It must however be noted that despite this general presentation, the ultimate actions to be implemented will be dictated by individual needs and regional situations, as well as progress made in each of the five pillars of regulatory harmonization. The Action Plan therefore recognizes that individual markets are at different stages of development and hence the development and liberalization of these markets cannot be at the same pace.

The Action Plan has been structured into Short (3-5 years: 2017-2021), Medium (6-8 years: 2022-2024) and Long (9-14 years: 2025-2030) terms, as depicted below in Figure 1.1

Figure 1-1 Three Phases of Action Plan



The Action Plan also identifies the required resources and recommends programmes for implementation as flagship projects. The Plan also highlights the opportunities which would inure to the benefit of countries at the national level, if countries integrate national priorities into larger regional and continental visions.

The Action Plan has been formulated to accommodate the evolving market structure by ensuring that the regulatory Guidelines and Regulations which are developed during the implementation phase, *are revised at the end of the short, medium and long terms.*

2 Pillars of Regulatory Harmonization: National, Regional and Continental

2.1 Economic Regulatory Framework

Most African countries are reforming their power sector by undertaking regulatory reforms, as well as introducing private sector participation and competition, where feasible. At the national level, the stronger the legal mandate that established the regulator, the more credible and sustainable the regulatory framework would be. In order to ensure the creation of a robust regulatory authority, this should be backed by primary law, which fully articulates the regulator's jurisdictional authority, power, responsibilities and duties.

The regulatory body has a very critical role to play to ensure a successful implementation of the power sector reforms, since its decisions are bound to have far reaching implications for consumers, producers and the entire economy. Many African countries that have established regulatory bodies face severe challenges such as lack of professional expertise, inadequate financial resources and obtaining the necessary statutory authority. In that regard, one requires both the legal aspects of regulation (i.e. Regulatory Governance) and actual regulatory practice (i.e. Regulatory Substance), as the key determining factors, of how an effective regulatory environment can support reforms, promote efficiency and fulfil the desired social objectives.

In Africa, government or ministerial interference seemed to have hampered the smooth performance of the regulator's function, especially when it comes to tariff decisions. Political interference has undermined regulatory independence in many developing countries, because most of ministries are reluctant to leave important regulatory functions solely to independent agencies.

A credible regulatory framework must be designed to meet the following two dimensions:

a. **Regulatory Governance**: This refers to the institutional and legal design of the regulatory system;
b. **Regulatory Substance:** This refers to the regulatory content or the actual decisions made by the regulatory Authority.

This means that in practice, a credible regulatory framework should meet the following minimum requirements of regulatory independence

a. Organizational Independence;
b. Financial Independence;
c. Operational Independence

- **Organizational Independence**

This implies that:

✓ The regulatory body should be established by law. This ensures structural independence from all market players, including the sector Ministry;

- ✓ There are clear provisions in the law governing the behavior of the regulatory Authority, as well as a clear mandate with respect to its duties and power;
- ✓ Clearly spelt out appointment criteria and procedure for removal.
- ✓ The mode of appointment of Board Members/Commissioners can further insulate the Regulatory Authority from political interference. The Parliamentary approach of nominating, vetting and appointing Board Members can be effective in reducing the level of political interference, compared to situations where appointments are made by the President or Sector Minister.
- ✓ Clearly spelt out terms of appointment;

- **Financial Independence**

This means:

- ✓ The regulator should have adequate source of funding for their activities from regulatory levies and license fees imposed on the utility companies. This would enhance the independence of its decision making;
- ✓ It also helps eliminate "regulatory capture";
- ✓ Regulators should not rely on central Government budgetary funding;

- **Operational Independence**

This implies that:

- ✓ The Regulator should have the autonomy to recruit its own staff, who possess the requisite skills and expertise;
- ✓ Freedom to offer competitive and attractive salary in order to be retain staff for a long period.
- ✓ Conduct its affairs at an "arm's length" from all stakeholders and perform its duties in an independent and impartial manner.

- **Legal and Institutional Framework**

The sector policies, laws, institutions, and master plans of the states and RECs are currently at various stages of the evolutionary process. The current situation is characterized by varied and fragmented systems-being as many and diverse as the number of member states. Though Africa is steadily emerging from this situation caused by, among others, the cultural and historical antecedents, the common law and civil law legislative and institutional dichotomy, a lot more needs to be done.

A combination of measures are needed to address the current inadequacies. These involve new legislation, policies and plans and the transformation of existing institutions to deliver on their mandates. The other critical interventions are resourcing the capacity constrained underperformers and mustering the political will to implement, complete or re-energize their sector reform agenda.

2.1.1 Current Situation Needs and Gaps to be addressed

a) National Level

At the national level, the objective of building a robust economic regulatory framework, is to ensure the long-term financial sustainability of the sector, and thus provide the needed comfort to independent private producers (IPPs) to invest in the electricity sector.

Table 2-1 Current Situation Needs and the Gap Addressed: Economic Regulatory Framework - National Level

Current Situation Needs	Gaps Addressed
• Most national regulators established and backed by law, but do not meet the requirements of financial, operational and organizational independence. • Adopt electricity law	• To enable regulators to become financially independent to minimize regulatory capture, and be accountable for their decisions; • To make regulators to be more operationally independent • Strengthen the operation of regulatory authorities • Membership of AFUR by national regulators should be made mandatory by the AUC
• Lack of transparency in calculation and determination of electricity tariffs	• Enhance the transparency of the tariff-setting process through: • Development of Tariff Guidelines and Methodology: Grid Connection while taking account of issues related to affordability, reliability and accessibility • Development of Tariff Guidelines and Methodology: Off-grid and Mini Grids
• Existence of Non – Cost reflective Tariffs	• Developing and implementing tariff unbundling for each segment of the Electricity Supply Industry, based on Accounting Separation; • Implement cost reflective tariffs while taking into account, affordability and impact of tariff on the poor and vulnerable • Assess impact of the tariff plan on poverty alleviation and the need to develop and implement a tariff plan to mitigate that • Developing and implementing cost reflective tariff per customer class; • Developing Guidelines for pricing ancillary services; • Developing and implementing Feed – In Tariff Guidelines and Methodology
• Inefficient Operation of Power Utilities, which affect financial sustainability	• Improve operational performance and efficiency of power utilities: • Develop and implement Performance Assessment Framework, using Key Performance Indicators (KPIs); • Develop and implement performance and incentive-based tariff regime

b) Regional Level

Table 2-2 summarizes the current situation and the gaps addressed, at the regional level, under economic regulatory framework.

Table 2-2 Current Situation and Gaps Addressed: Economic Regulatory Framework – Regional Level

Current Situation Needs	Gaps Addressed
• Non-functioning regional regulatory Authorities for the power pools;	• Establish regional regulatory Authorities which meet the following criteria: financial, organizational and operational independence • Establish regional regulator; • Establish regional regulatory associations. • Ensure effective participation of regional regulatory authorities at the continental regulatory • Incentivize private sector involvement • Enhance consumer and stakeholder engagement
• Lack of harmonized Tariff Guidelines and Principles to support power pool operation	• Develop and implement harmonized transmission Pricing Guidelines; • Develop and implement Wheeling Charge Methodology; • Develop and implement network loss allocation methodology • Develop and implement harmonized ancillary pricing guidelines;
• Absence of regional co-ordination and dispatch centres or system control centres	• This is requited to facilitate cross – border trading and power pooling
• Lack of Governance Structure for Power Pools	• Facilitate development of rules for monitoring and surveillance of power pools and power markets;
• Absence of Association of Regional Regulatory Authorities of Power Pools	• If established will facilitate knowledge sharing and enhance learning from "best" practice regulation, for power pool operation

c) Continental Level

Table 2-3 summarizes the current situation and needs, as well as the gaps addressed at the continental level

Table 2-3 Current Situation and Gaps Addressed: Economic Regulatory Framework – Continental Level

Current Situation Needs	Gaps Addressed
• Political Commitment and Support required; • Lack of Strategy and Action Plan for Harmonized Framework.	• Develop a harmonized continental regulatory framework. Lead to harmonization of different legal, regulatory and licensing systems to ensure smooth transactions and facilitate cross – border trade • Ensure operationalization of the Action Plan • Incentivize private sector involvement
• Lack of Coordination of regulatory framework	• Ensure coordination and harmonization of regulatory frameworks across the various RECs, various and at the regulatory

Current Situation Needs	Gaps Addressed
	continental level
• Lack of coordination among regional power pools	• Association of Power Pools will facilitate coordination activities, enhance capacity building as well as experience and information sharing
• Inefficient Operation of Power Utilities	• Enhance power utility performance especially quality of service delivery
• Lack of constant and consistent monitoring of performance of regulatory Authorities	• To ensure measurement of the performance of regulators along the two key dimensions of regulatory performance namely: Regulatory Governance and Regulatory Substance
• Inadequate capacity in regulatory economics and lack of professionals in various areas of utility regulation	• Establish Centres of excellence to facilitate capacity building in regulation such as tariff-setting, utility operations, project management and implementation and in other key areas of the electricity sector • Bridge the human capacity gap on issues of harmonized rules and interconnected power system • Also recognize the capacity and specialist knowledge which exist in the continental bodies

2.1.2 Impact on Strategic Objectives

Developing a robust regulatory framework would no doubt have significant impact on the following strategic objectives identified in the Strategic Plan document. The development of the regional and continental electricity markets hinges on but does not end with the quality of effective, modern and integrated policies and plans, as well as simplified and adequacy of legislation and regulatory bodies created.

The growth of the markets will be positively impacted if the revised framework is complemented with strong coordination from the continental and RECs as well as effective management. Improvements in regulatory governance and the quality of regulation will increase transparency, and the development of common and simplified rules will engender reduction in existing lengthy, ineffective and costly infrastructure deployment needed for the development of the market, with obvious benefits for facilitation of effective internal and external electricity markets.

- **Developing effective Regional and Continental Electricity Markets**

In order to develop effective regional continental electricity markets, it is important to establish regulatory Authorities which can drive the tariff reforms agenda, encourage infrastructure development and attract investment into the electricity sector. Investors want to see transparency in the tariff regulation process. The development of unbundled tariff would further provide market players with more transparency for determining networks tariffs in each country, and how these can be used to determine the wheeling charges, to facilitate cross-border and regional power trade.

- **Improving the Operational Efficiency and Performance of the ESI.**

Regulatory Authorities have an obligation to develop the necessary mechanisms to incentivize power utilities to improve their operational efficiency and ensure that no inefficiencies from utility operations are passed-through the tariff to end – users of electricity. Regulators are therefore required to develop a performance-based tariff regime which takes account of the operational performance of the power utilities covering the following operational areas of utility business: Financial; Commercial; Technical Operations; Quality of Service; Social and Environmental Impact

- **Creating an Enabling Environment to attract Investment**

Investors want to see a credible regulator which operates at "arms-length" from all market players, and is more likely to take consistent, transparent and predictable decisions. The principles of consistency and predictability in the tariff decision process will assure investors that there will not be unexpected changes to the tariff rules or methodology. This gives investors that confidence and assurance to make future investment decisions which are long term, with a high degree of certainty.

A regulatory framework which makes decisions that are inconsistent can affect the level of confidence in the regulatory process, and undermine the size, scope and quality of infrastructure investment. Creating an enabling environment to attract investment is also affected by the market structure. Independent Power Producers (IPPs) want to have some comfort in a market structure which will assure then of non-discriminatory and third party access to the transmission or distribution networks. The regulator has role to play by defining the appropriate market structure which is compatible with the level of development of a country's power sector.

- **Enhancing Electricity Market Frameworks to Increase Access**

Regulators can adopt a two-track approach to enhance electricity accessibility using both the centralized approach (i.e. "grid-connected" electrification) and the decentralized approach "(i.e. off grid electrification, including stand-alone systems) to increase accessibility. This would require that the regulatory Authority develops the necessary guidelines to facilitate the process, and incentivize investment in off-grid systems, to complement grid connected electrification.

- **Enhance Renewable Energy Frameworks**

Credible regulatory frameworks are key to enhancing the RE framework on the continent. Regulators can drive the RE agenda by specifically putting in place guidelines to address the following:

- Tariff Policies to promote off - grid power systems;
- Guidelines for installation of Stand-Alone Systems;
- Competitive Tendering, Feed-in tariff or GETFiT policy for grid connected RE systems;
- Tariff Guidelines for isolated mini-grid systems;

- **Establish Norms, Standards and Framework for Energy Efficiency**

At the national level, regulators can use the tariff mechanism to incentivize consumers, particularly the industries, to adopt EE and DSM practices. A well-designed Increasing Block Tariff (IBT) or a

Volume Differentiated Tariff (VDT) structure can incentivize electricity users to be energy efficient. For the industries, the inclusion of a Power Factor payment as part of the industrial tariff structure can compel industrial customers to operate at power factors above the regulatory standard.

Additionally, the regulatory authority can work with the national Standards agency/body to develop energy efficiency standards and labels, as a means of increasing the efficiency of energy using appliances, equipment and lighting. An effective EE standards and labelling programme can provide the following advantages:

- Generate very large energy savings;
- Serve as a cost-effective way to minimize energy waste;
- Affect changes in the behavior of manufactures;
- Improve product quality, while saving both energy and money;
- Reduce investment in electricity infrastructure;
- Reduce consumer energy bills;
- Reduce, pollution and help achieve climate change objectives

The national standards bodies and regulatory Authorities can work together with the regional regulatory Authorities to achieve harmonization within each REC. To achieve harmonization, countries would have to work together to ensure that test procedures are identical or almost identical in each country. This would imply that countries need to enact common test procedures, and also agree on label design and standards. This should however be backed by a Directive from the AUC[3] at the continental level for Mandatory Energy Labelling of household appliances, as was done by the European Commission under Directive 92/75/EC. This Directive made comparative Labelling compulsory in all the EU member countries. In addition, the EU adopted Directive 2009/125/EU on Eco Design, which requires that mandatory EE standards are developed for electrical appliances, in the member countries.

[3] First there should be a decision of the Energy Ministers after which the AU through its internal processes can then request the RECs to issue a Directive.

Table 2-4 Impact of Economic Regulatory Framework on Strategic Objectives

Strategic Objective	National	Regional	Continental
General Impact	Ensure clarity, effective regulation, reduction in time and cost of sector investor activity	Ensure clarity, effective regulation, reduction in time and cost of sector investor activity	Accelerate the development of regional and continental electricity market
Effective Regional and Continental Electricity Markets	This would imply more transparency in the tariff regulation process, including tariff unbundling at the national level.	Would require harmonization of regional transmission tariff methodology	Ensure the creation of integrated electricity market
Operational Efficiency and Performance of the ESI	Enhance the operational performance of the power utilities in the following areas: Financial, Commercial, Technical Operations and Quality of Service.	Ensure a more stable, secure and more reliable integrated power system, for cross border power exchanges.	Ensure a long term technical and financial sustainability of the power pools and integrated market.
Create an Enabling Environment to attract Investment	Requires a regulator which operates at "arms-length" from market participants, creates a credible tariff regime and implements a market structure which allows a non-discriminatory and third party access to the transmission system.	Requires a regional regulator that develops and implements market rules and harmonized transmission tariff methodology.	Enhance the level of confidence in the regulatory process and increase the size, scope and quality of infrastructure investment.
Enhance Electricity Market Frameworks to Increase Access	Establish mechanisms and regulatory guidelines to support both grid- connected electrification and off-grid electrification.	Will incentivize private sector investment for key regional infrastructure projects.	Accelerate the creation of an integrated regional and hence a continental electricity market
Enhance Renewable Energy Frameworks	Regulator must put in place the following guidelines: • Tariff Policies to promote off-grid power systems; • Guidelines for Stand-Alone Systems; • Tariff Guidelines for isolated mini-grid systems.	Will have a direct impact on increasing the level of RE contribution in the generation mix	Will enhance the scale and scope of utilization of RE technologies for electricity supply.
Establish Norms, Standards and Framework for Energy Efficiency	• Use of tariff mechanism to incentivize consumers, to adopt EE and DSM practices. • Regulators can work with the national Standards body to develop energy efficiency standards and labels.	The national standards bodies and national regulatory authorities, can work with regional regulatory authorities to achieve harmonization within each REC.	Harmonization will enhance the scale and scope of utilization of EE and DSM practices.

2.2 Technical Regulatory Framework

In addition to economic regulatory framework, the regulatory Authority is also required to put the necessary technical rules and regulations in place. At the national level, a good technical regulatory framework should bring about the following benefits, among others:

a. Ensure system stability and reliability through Grid Code development and implementation
b. Enhance the ability to effectively monitor the technical network loss levels in both the transmission and distribution levels, and devise methods to reduce them
c. Effective quality to service monitoring of the following parameters:

- ✓ Power Quality: Power Frequency;
- ✓ Power System Harmonics, Voltage Quality and Power Factor
- ✓ Continuity of Supply at the distribution, transmission and generation Segments;

d. Assess the operational performance of the power utilities using the Key Performance Indicators (KPIs) such as: Plant Availability, Plant Operating Ratio, Network Availability, Capacity Factor, Load Factor, Transmission System Loss, Distribution System Loss, Technical and Non-Technical, System Average Interruptions Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI) and Customer Average Interruption Duration Index (CAIDI).
e. Streamlining of licensing frameworks for both large and small power plants;

At the regional level, a good technical regulatory framework should provide benefits and ensure the development and implementation of harmonized Technical Rules and Regulations comprising:

i. Technical Operations Manual or System Operations Codes of Practice;
ii. Guidelines for technical regulation and standards for cross – border interconnection and power trading
iv. Quality of Service guidelines for cross-border interconnection and power trading;

At the Continental level, a good technical regulatory framework would ensure effective monitoring and assessment of the performance of the power pools.

2.2.1 Current Situation and Gaps to be addressed

The technical performance of the power sector in Africa has been a major source of concern. It is in this regard that the World Bank (2009), introduced the Electric Utility Capacity Assistance Program (EUCAP) for Africa, with the view to using key performance indicators of power utilities in different African countries to measure the major elements of utility day- to-day operation, including technical, operational and financial.

Currently, most African countries record very high total transmission and distribution system losses. While the total system losses in developed countries range between 7% - 10%, they are about 15%-29% in most sub – Saharan African countries. The Capacity factor in sub – Saharan African regions are as follows: Southern Africa (56%), Eastern African (58%), Western Africa (48%) and Central

Africa (34%)[4]. Capacity factor is an important KPI which should be monitored by the regulator and when considered together with load factor and operational ratio, it gives the regulator and in – depth knowledge of the efficiency system.

The current situation with respect to Load factor is as follows:

- **Southern Africa:** 58%;
- **Western Africa:** 62%;
- **Eastern Africa:** 67%;
- **Central Africa:** 84%.

Regulators can use the results of the technical analysis to drive the sector to operate at a higher efficiency level. On quality of service to customers, the number of outages per year is as follows:

- **Southern Africa:** 42 outages per year;;
- **Eastern Africa:** 104 outages per year;
- **Central Africa:** 170 outages per year;
- **Western Africa:** 171 outages per year.

Regulators need to establish a good technical regulatory monitoring mechanism to compel utilities to reduce the number of outages since these are damaging for businesses and households from both the economic and social perspectives.

At the national level, the objective of building a robust technical regulatory framework, is to ensure the long-term technical sustainability of the sector, by developing and operating a stable, secure and reliable power system. Tables 2-5, 2-6 and 2-7 present the current situation needs, as well as the gaps to be addressed, at the national, regional and continental levels.

Table 2-5 Current Situation and the Gaps Addressed: Technical Regulatory Framework –National Level.

Current Situation Needs	Gaps to be Addressed
• High total transmission and distribution system losses (i.e. technical and non-technical)	• Need to undertake system loss study to disaggregate technical loss levels at the distribution system voltage levels • Regulator need to develop a performance-based tariff regime, and link Quality of Service delivery to the tariff-setting. • Put in place the necessary mechanisms to reduce non-technical losses such as electricity theft, illegal connections, meter tampering etc. • Quantify the level of investment required to reduce the loss levels, especially the technical losses
• Low load factors, capacity factors and operating ratios	• Lack of performance monitoring and assessment framework by regulators
• Quality of Service Regulations developed but effective implementation lacking	• Absence of Quality of Service Enforcement Mechanism or Guidelines

[4] Monitoring Performance of Electric Utilities: Indicators and Benchmarking in Sub-Saharan Africa (2009), a report prepared for the World Bank by, Tellapragada, P., Shkaratan, P., Izaguire, A., Helleranta, J., Rahman, S. and Bergman, S.

The total transmission and distribution system losses were also determined by taking account of IEA (2014) document "Africa Energy Outlook".

Current Situation Needs	Gaps to be Addressed
• Grid Codes developed but not fully implemented	• Absence of effective enforcement mechanism to implement the provisions of the Grid Code
• High duration and number of outages	• Need to address non-cost recovery tariff problem in most countries to make the electricity sector financially viable so that the required investments can be made.
• Most African countries have pursued electricity sector reforms and have in place regulatory frameworks • They also have conformity assessment requirements with which compliance is mandatory with regard to safety, health, environmental control and consumer protection • Each state has a bureau of standards and most technical standards have been adopted that are a very good proxy to international standards	• Political drive for change on enforcement remains a major challenge • Inadequate policies, legislation, institutional and governance structures, including procurement and dispute resolution frameworks • Lack of transparency that has resulted in an unattractive environment for enforcement

Table 2-6 Current Situation and the Gaps Addressed: Technical Regulatory Framework -Regional Level.

Current Situation Needs	Gaps Addressed
• Low capacity factor in sub – Saharan African regions	• Lack of performance monitoring framework at the regional level to evaluate the performance of the power utilities within each REC.
• Low average Load factor for the regions :	• Lack of performance monitoring framework at the regional level to evaluate the performance of the power utilities within each REC.
• Generally, high number of outages per year for the regions :	• Lack of investment in generation capacity to meet the minimum reserve margin threshold; • Lack of needed ancillary services to ensure a stable and reliable power system.
• Regarding Regional legislation /regulation and providing a framework for national legislation, only ERERA, under ECOWAS, have adopted a directive introducing obligations for member countries. In EAPP and SAPP, there does not seem to be a regional legal framework, but each utility has to abide to market rules and grid codes. • Other regions are also underway preparing a framework/ 'Energy Protocol' which guides sector development including technical regulation at the regional and member states levels. {Sector policy and development is defined by the Regional Economic Communities- • The Africa's Regional Economic Communities (RECs) include eight sub regional bodies which are the building blocks of the African Economic Community (AMU/UMA; ECOWAS; EAC; IGAD; SADC; COMESA; ECCAS, CEN-	• Apart from the efforts in SADC, no region has the relevant IPP (Independent Power Producer) and model contracts framework in place. • The Electricity Supply Industry (ESI) lack robust quality of service standards, regulatory benchmarks for monitoring performance. • Lack of resource and capacity for RECs example of SADC approach, the agreements are usually reached between pool members, the SAPP and RERA, and proposed rules are then taken to the Council of Ministers. It would seem that RERA's committees play an important role, as RERA itself has very limited resources. For COMESA, RAERESA has been active, but is also constrained by its limited resources. • Most of the RECs lack the legislative powers necessary to enforce decisions.

Current Situation Needs	Gaps Addressed
SAD) all have a regional regulatory body that oversees the technical regulation framework • AFUR has published guidelines on quality of service • On operations of interconnections and transmission networks, WAPP and SAPP have steadily worked on the development and improvements of their respective operations manuals. For CAPP and EAPP, the operations codes are still in draft form.	The purpose and objectives of the association are: i) To improve national energy regulation in member countries; ii) To foster development of stable energy regulators with autonomy and authority; iii) To improve cooperation among energy regulators; iv) To facilitate the exchange of information, research, training and experience among members and other regulators around the world.

Table 2-7 Current Situation and Gaps Addressed: Technical Regulatory Framework - Continental Level.

Current Situation Needs	Gaps and Barriers to be Addressed
• NEPAD/NPCA is promoting a continental harmonization of regulatory policies as a strategy for fast tracking achievement of the Sustainable Development Goals (SDGs), in particular the SDG 7 on energy, with support from UNECA; AUC, NEPAD/NPCA and AfDB • PIDA; AFSEC/AFREC are developing technical standards • (APUA); AFUR supports the development of effective utility regulation in Africa through facilitating, the harmonization of regulatory policies, exchange of information and lessons of experience amongst regulators and supporting its members with framework principles on utility regulation • AFSEC- AFSEC African Electro technical Standardization Commission with regional economic communities and organizations with an interest in the electric power sector UNECA- supports a project of NEPAD Energy Programme, to harmonize laws, policies and regulations.	• AUC and other continental organizations mentioned above lack the legislative powers that would bind the RECs and member states. • Mechanisms are needed for enforcement, greater coordination and dialogue between the different levels.

2.2.2 Impact on Strategic Objectives

a) Effective Regional and Continental Regulatory Framework

A good technical regulatory environment is required to develop an effective regional and continental regulatory framework, since this is crucial for harmonization of technical rules and standards to promote power trade. Other benefits of a good technical framework include:

- Safe and reliable operations of the inter-connected power system;
- Harmonization of codes and standards to support regional market integration;
- Harmonization of technical operation manuals to support power trade;
- Effective information exchange and energy trading

b) Improving the Operational Efficiency and Performance of the ESI.

The Key Performance Indicators for monitoring and assessing the overall operational efficiency of the ESI are partly based on Technical KPIs. Therefore in addition to performance monitoring with respect to Financial, Commercial and Economic, the Technical Performance and Quality of Service delivery to customers are also important. This can be achieved if the regulatory authority puts in

place a robust technical regulatory framework would enable the regulator to define which parameters to use to assess, monitor and evaluate the operational performance of the ESI.

c) Creating an Enabling Environment to incentivize investment

This requires that the necessary Technical Rules and Regulation, Grid Codes, Quality of Service Regulations are developed to ensure the safe and reliable operations of the inter – connected power system, both at the national and regional levels. The technical regulatory framework will also set the rules for electricity balancing including the establishment of principles for procurement and settlement of ancillary service, which are needed to ensure the stability, security and quality of power transmission.

d) Enhancing Electricity Market Framework to Increase Access

A well-established technical regulatory regime can support the electricity market to enhance accessibility. This requires the regulator to develop technical standards to support both grid-connected electrification and off-grid electrifications. Grid Connected electrifications covers both RE and conventional power sources, while off-grid electrification covers stand-alone systems, as well as mini-grids and micro-grids. In addition, it is important for the regulator develop a Grid Connection Code for RE power systems. This code would specify the minimum technical and design connection standards for RE power system, which want to which want to connect to the transmission or distribution networks.

e) Enhance Renewable Energy Framework

The development of Grid Connection Code for RE power Systems which specifies the required technical standards for connection to the transmission and distribution networks would make a positive impact towards enhancing the RE framework, by addressing the following key technical issues, among others:

- Tolerance of frequency and voltage excursions;
- Conditions which define normal and abnormal operation;
- Reactive power requirements and capabilities;
- Power requirements.

f) Establish Norms, Standards and Framework for Energy Efficiency

The establishment of the EE standards would gradually eliminate the least efficient appliances on the market and together will labeling, increase the efficiency of product offered in the market. The EE labels to be developed would provide guidance to consumers at the time of purchase of an appliance, on the level of energy consumption of the product. Table 2-8 summarizes the impact of Technical Regulatory Framework on the strategic objectives, at the national, regional and continental levels.

Table 2-8 Impact of Technical Regulatory Framework on Strategic Objectives

Strategic Objective	National	Regional	Continental
Effective Regional and Continental Electricity Markets	Enhance national benefits in terms of energy export and import options, and ensure overall energy security.	Harmonization of technical rules and standards will promote power trade. It will also ensures the safe and reliable operations of the inter-connected power system;	• Harmonization supports regional market integration; • Harmonization of technical operation manuals support power trade;
Operational Efficiency and Performance of the ESI	Ensures good technical performance and Quality of Service delivery can be achieved. Enable the regulator to define technical Key Performance Indicators (KPIs) for monitoring and evaluating the technical performance of the ESI.	Makes it possible to develop the necessary technical regulation and operators manuals. It leads to stable, secure and reliable inter-connected power system.	Facilitates regional power integration and energy exchange
Create an Enabling Environment to attract Investment	Technical Rules and Regulation, Grid Codes, Quality of Service Regulations ensure the safe and reliable operations of the inter- connected power system	Set the rules for electricity balancing including the establishment of principles for procurement and settlement of ancillary service, Experience shows that regional cooperation becomes more effective by applying a mix of approaches at the same time: bottom up and top down. One may combine demand driven capacity building for local experts and institutions, as well as technical knowhow transfer with regional and national political engagement in policy formulation and implementation.	Enhances power exchanges and thus facilitates cross-border trading and power pooling,
Enhance Electricity Market Frameworks to Increase Access	This requires the regulator to develop technical standards to support both grid-connected electrification and off-grid electrification.	Member countries which are inter-connected can share energy resources and capacity at the least cost	Electricity market interconnection will lead to sharing of operational reserves and installed capacity
Enhance Renewable Energy	• Grid Connection Code for RE power	Enhance the penetration of grid connected RE	Support member countries to enact RE Laws, as part

Strategic Objective	National	Regional	Continental
Frameworks	systems will specify the required technical standards for connection to the transmission and distribution networks • Simplify the licensing process for smaller power plants • Renewable energy targets and support policies continued to be a driving force behind increasing markets for renewable energy, despite some setbacks resulting from a lack of long term policy certainty and stability in many countries.	power systems	of the continental harmonization, to give more comfort to investors. • Despite the substantial decrease in RET's costs and the growth of RET over the past decades, renewables still face many barriers and will require more than just public and private finance to operate at scale. Experiences from numerous countries show that without the creation of a favourable legal and regulatory framework RES will be condemned to remain a small niche market. Studies suggest that further market development is highly sensitive to administrative barriers, grid access and the risk of policy change. • Even if well designed renewables support programmes are in place, bureaucratic procedures and administrative hurdles or difficulties in accessing the electricity grid can prevent market development. • Therefore, a key precondition for the development of renewable energies is the reduction of economic, technical, legal and administrative barriers
Establish Norms, Standards and Framework for Energy Efficiency	EE standards can help eliminate the least efficient appliances on the market and together with labeling, increase the efficiency of products and increase adoption of DSM practices.	Harmonization of standards will reduce electricity wastage Reduce investment in electricity infrastructure Reduce, pollution and help achieve climate change objectives	Enable the continent to achieve climate change objectives

2.3 Enabling Environment

The significance of investor and lender confidence in an economy is trite knowledge. As far as host country business environment is concerned, macro-economic and political and social stability are critical success factors for attracting investments. Despite improvements and some bright spots, the current situation may be described as being between mixed and poor. In addition to a county's economy-wide conditions, respect for the rule of law, due process and access to cost effective justice, as well as a range of sector specific measures are needed to make each jurisdiction attractive. These measures, which must be consistently applied to each entity, can be introduced in parallel with alongside efforts to introduce comprehensive sector legislation.

2.3.1 Current Situation Needs and Gaps Addressed

The following Tables present a summary of the current situation needs and the gaps addressed under the Enabling Environment pillar, at the national, regional and continental levels.

Table 2-9 Current Situation and Gaps Addressed: Enabling Environment-National Level.

Current Situation Needs	Gaps and Barriers to be Addressed
Development of model PPAs	Will complement the definition of the investment environment by establishing procurement and licensing procedures, including PPP and IPP participation in the sector. Model PPAs will define the rights and responsibilities as well as the relationship between the seller, buyer and the government and provide protections for the interest of each of the parties.
Development of transitional market models for promoting open access and third party non-discriminatory access to the transmission network	Will assurance to power plants operators that their plants will be dispatched when available subject to system constraints Primary and secondary legislation must provide the framework for ensuring open access to the transmission network.
Develop Market Rules	Tertiary rules, guidelines and manuals will be required to specify the details of market organization. Will ensure that there are adequate mechanisms for monitoring, enforcement and compensations and settlement regarding trading in a fair manner.
Develop Dispute Resolution Procedures for market operation	Will improve access to justice to speedily deal with issues pertaining to the grant and operation of licenses and land among others. Provide procedures for resolving industry disputes. Must be established and applied as part of the regulatory process as an essential for enhancing regulatory governance. The dispute procedures can take the form of internal reviews by the regulator in the short term but there should be a path for graduating to a system that allows for appeals, challenging the regulatory decisions at independent forums.
Establish national investment funds for infrastructure development	Will provide new financing mechanisms for providing counterpart funds, PPP participation and other investor risk reduction activities, that are undertaken by the host government or its agencies.
Develop local capacity in project	Will provide cutting-edge expertise required and ensure quality assurance, as well as

Current Situation Needs	Gaps and Barriers to be Addressed
development, finance, implementation and monitoring	reduce the time and cost of doing projects in Africa, from conception to implementation.
Creation of project preparation bureaus to package bankable projects and facilitate funding	Will create specialized agencies to perform this function. These can be units within an existing government agency or new organizations created for the purpose
Establish guidelines for domestic funding mobilization	Create a vehicle for getting access to untapped funding sources within the states for infrastructure development. Pensions and other funds are a case in point.

Table 2-10 Current Situation and Gaps Addressed: Enabling Environment-Regional Level.

Current Situation Needs	Gaps and Barriers to be Addressed
Development of model contracts to facilitate regional electricity trade	Will ensure uniformity in contractual documents across the regional electricity markets. PPAs, Connection Agreements and Transmission Service Agreements will be covered.
Development of capacity in project development, finance, implementation and monitoring	Will increase the technical know-how and expertise at all levels of the industry value-chain. This will require investment in training, knowledge and skills development as well as TAs to ensure availability of the needed human resources for implementing energy infrastructure projects.
Provision of financial assistance for project development risk	Legislative and systemic inadequacies both industry specific and the general together territorial unfamiliarity has increased the perception that most of the continent is a high risk place for doing business. Provision of funding and actually implementing some preparatory aspects of projects could mitigate the risks and improve the business attractiveness of the states.
Strengthen procedures for provision of counterpart funding for energy infrastructure	Will enhance the capacity for project preparing, developing, implementation and monitoring. Enable the RECs to improve capacity and strengthen procedures for providing counterpart funding for essential infrastructure.

Table 2-11 Current Situation and Gaps Addressed: Enabling Environment-Continental Level.

Current Situation Needs	Gaps and Barriers to be Addressed
Frequent consultative activities among regional regulatory authorities and AFUR	Constant dialogue among the regional regulatory authorities under the aegis of AFUR will help strengthen coordination for achieving speedy regulatory harmonization. It will ensure that all the states within each REC have simultaneous access to the same information and processes. Ensure information on current trends in fashioning ways of ensuring the comprehensive development and implementation of policies, legislation and regulatory measures for improving certainty, transparency and for simplifying and reducing conditions, terms, requirements and also the administrative layers that hamper smooth project development.
Strengthen and support the Forum of power pools to facilitate coordination of activities	The forum of Power Pools under the umbrella of AFREC and working in tandem with APUA, will achieve ensure speedy harmonization of technical codes and standards.
Provision of TA to facilitate regional market integration by AfDB and other partners	AfDB must take a lead role in provision of TA to facilitate regional market integration. An assessment of what is required, what has been done and what must be done must be prioritized, such as the sector projects under PIDA.

2.3.2 Impact on Strategic Objectives

As the African infrastructure gap and consequently the investment gap widens, competition for financing intensifies. All the measures enunciated in the Action Plan are key to transcending the barriers to investment in Africa. These barriers were aptly described as "... divergence in legal systems; inadequate technical capacity; lack of transparency in procurement...; political instability and insecurity in some parts, inadequate resources for regional institutions... among others"[5] .The proposed policy, legislative, regulatory, market development, technical, financial coordination interventions will enhance the attractiveness of the continent for investment.

At the regional level, model agreements will increase transparency while the measures relating to finance will pave the way for local capacity in project preparation and mobilization of internal funding sources for infrastructure projects. Continental measures will help accelerate harmonization as well as streamline the coordination and leadership role of the AU and continental bodies.

The impact of creating a conducive and an Enabling Environment on the strategic objectives are summarized in Table 2-12, at the national, regional and continental levels.

Table 2-12 Impact of Enabling Environment on Strategic Objectives

Strategic Objective	National	Regional	Continental
Create an Enabling Environment to attract Investment	The proposed policy, legislative, regulatory, market development, technical, financial coordination interventions will enhance the attractiveness of the continent for investment.	• Model agreements will enhance the attractiveness of the continent for investment. • Develop market rules, dispute procedures and establishing investment funds will enhance effective project preparation, risk management and improve efforts for mobilizing funds on the continent	• Streamline coordination role and accelerate consensus building • Synchronise the development of networks • Increased capacity and technical skills

[5] Summarized by UNECA in a 2014 paper – Enhancing Policy, Legal and Regulatory Environment for Infrastructure Financing

2.4 Enhancing Renewable Energy Frameworks

2.4.1 Current Situation and Gaps Addressed

Table 2-13 Current Situation and Gaps Addressed: Enhancing Renewable Energy Frameworks- National Level.

Current Situation and Needs	Gaps to be Addressed
• Most of the national RE legislation, RE policies and plans -where existing- are well thought out having benefited from technical assistance in some form in their preparation and updating. • Often, the legislation/policies/plans are not enforced leading to low RE investments. • Many risks for private investors in the RE field; legal and regulatory (e.g. lack of autonomous regulator or with inadequate capacity, lack of tariff methodology), institutional (e.g. lack of transparent processes), operational or technical (e.g. outdated grid codes, lack of quality of service standards) and financial (e.g. lack of investor protection mechanisms). • Renewable Energy Acts have been issued in only a number of countries.	• Capacity and resource constrains of the entities at the national level; low technical skills and implementation capacity. • Commitment of politicians to carry out reforms to the conclusion. • Unattractive market to potential investors due to high investment costs, energy poverty and lack of transparency. • Lack of legislative protection for the private sector investors within the primary legislation with clarification in the secondary legislation. • Congested grids with problematic transmission congestion management in many countries. • Develop different policy options to promote RE to include Feed-In Tariffs, Competitive Bidding, Net Metering etc.
• Countries have started to develop national energy policies with increased emphasis on renewable energy and energy efficiency. However, in most countries the policies and targets are not translated into concrete actions in the form of laws, regulations, budget allocations or incentives. Moreover, in most cases there is no clear policy and/or strategy for mainstreaming RE • Some of the policies are weakly developed and often lack technical basis. Countries can be divided into three policy groups: ✓ Countries that have succeeded in adopting a RE policy and are making progress in terms of implementing the policies. ✓ countries that are currently making an effort to develop, adopt or implement a RE policy (have passed a renewable energy laws, foresees the establishment of a feed in tariff system, developing a regulatory framework aimed at promoting renewable energy based power generation) ✓ countries where renewable energy is not the focus, but is mentioned as a tool for the diversification of the energy mix in order to reduce fuel dependency or increase access to modern energy services in rural areas. (These countries are generally faced with the challenge of recurrent lack of power capacity and are unfortunately focused on the development of their conventional power system)	• Absence of long-term energy planning, with no RES targets. • Inefficient administrative procedures (high number of relevant authorities, lack of coordination between relevant authorities, lack of transparency, long lead times…). • Market structures not prepared for RES. • Insufficient consideration of renewable energy in spatial planning. • Complex permitting procedures and legal appeal process. • Lack of stakeholder involvement in decision making. • Lack of experience among decision makers. • Complex grid access and connection procedures.

Table 2-14 Current Situation and Gaps Addressed: Enhancing Renewable Energy Frameworks- Regional Level.

Current Situation Needs	Gaps Addressed
• Only ECOWAS seems to have adopted RE policies at regional level, and ECREEE has initiated a number of activities related to the development of RE for electricity generation. In other RECs, framework documents and guidelines confirm the priority given to RE. Supported by The United Nations Industrial Development Organization (UNIDO) and the Austrian Development Agency (ADA), and other funding commitments from international donors • Main focus is to create favorable framework conditions for renewable energy and energy efficiency markets in member states. • AFUR has also published a benchmarking criteria • SADC has an on-going Renewable Energy Support programme. • COMESA is working on a renewable energy cooperation framework for the COMESA region. • Currently, only RCREEE and ECREEE are fully operational. EACREEE and SACREEE are in the process of becoming operational. • Where regional regulators exist, the countries are supported with model policies and technical documents for RE investments (e.g. IPPs, PPAs as well as grid codes etc.)	• Low levels and lack of effective policy, regulatory and institutional frameworks at regional level; Apart from ECOWAS and SADC the rest of the RECs need to further develop and adopt RE policies, Strategies and Action Plans. • Lack of harmonization of RE regulations and technical issues among many countries in the various RECs. • Low technical skills and implementation capacity by regional entities. • Most RECs cannot enforce Directives to their member States. • Limited regional energy infrastructure • Encourage implementation of different policy options including Feed-In Tariffs, Competitive Bidding, Net Metering etc.

Table 2-15 Current Situation and Gaps Addressed: Enhancing Renewable Energy Frameworks- Continental Level.

Current Situation Needs	Gaps Addressed
• Traditional biomass and waste represent the greatest share of total African Energy consumption. • Hydro represents > 18.45%[6] of electricity generation (24 GW of the 75 GW) with other renewables playing an insignificant role) with huge variation from country to country. • RE plants in Africa are generally small, reflecting the fragmented nature of African power systems. • The entities at continental level concerned also with Renewable Energy are AUC-DIE, AFREQ and AFSEC, NEPAD-NPCA, AFUR and APUA. • There is lack of transmission infrastructure at continental level, but many ongoing initiatives	• Low levels and lack of effective policy, regulatory and institutional frameworks at continental scale; • The continental entities suffer from capacity shortages both in man power as well as funding. • Better and closer coordination among the continental entities is needed. • Better and closer coordination of synergies between the RECs and regional entities is needed. **Non -economic barriers:** • There isn't a One stop shop for authorization • .Response periods & approval rates. • Lengthy processes increases risk and cost. • No clear guidelines for authorization procedures. • No preplanned areas for a targeted level of RES capacity.

[6] Taliotis C, Bazilian M, Welsch M, Gielen D, Howells M. Grand Inga to power Africa: Hydropower development scenarios to 2035. Energy Strategy Reviews. 2014;4:1-10.

Current Situation Needs	Gaps Addressed
and programmes aim at developing needed infrastructure.	• Increase of grid capacity and improve manageability of intermittent sources. • No transparent grid connection procedures and cost allocation.

2.4.2 Impact on Strategic Objectives

Table 2-16 Impact of Enhanced Renewable Energy Framework on Strategic Objectives

Strategic Objective	National	Regional	Continental
Enhance Renewable Energy Frameworks	• Improving the operational efficiency and performance of the Electricity Supply Industry (ESI); • Creating stable, transparent and predictable environment to attract investments; • Enhancing electricity markets frameworks to increase access.	Legislative and regulatory changes for facilitating the development of the electricity markets and access to affordable and sustainable electricity for the African economies require strong political commitment. The leaders will ensure that the responsibilities are allocated at the right level, from national to regional and from regional to continental. Such commitment must be supported by	New reforms, legislations and regulations have to support and promote the development of the huge African renewable energy potential for electricity generation. (Strategic objective **to Enhance Renewable Energy Frameworks** will be impacted if appropriate measures not taken

2.5 Norms, Standards and Frameworks for Energy Efficiency

2.5.1 Current Situation and Gaps Addressed

Table 2-17 Current Situation and Gaps Addressed- Norms, Standards and Frameworks for Energy Efficiency – National Level

Current Situation Needs	Gaps Addressed
• National EE legislation and policies are missing in a considerable number of countries. • Many times the legislation/policies/plans are not enforced leading to low EE investments. • Few activities both on the supply and on the demand side – Most activities are concerned with the promotion and distribution of CFL lamps.	• Low levels and lack of effective policy, regulatory and institutional frameworks, as well as national targets and corresponding strategies and action plans for EE • Low technical skills and implementation capacity • Tariffs do not provide appropriate signals for private investors for EE;

Table 2-18 Current Situation and Gaps Addressed- Norms, Standards and Frameworks for Energy Efficiency – Regional Level

Current Situation Needs	Gaps Addressed
• ECOWAS has adopted EE policies at regional level, and ECREEE has initiated a number of activities related to the development of EE. • SAPP in SADC is implementing a Demand Side Management programme. • The rest of the RECs are in the initiation phase for EE activities. • Currently, only RCREEE and ECREEE are fully operational. EACREEE and SACREEE are in the process of becoming operational.	• Low levels and lack of effective policy, regulatory and institutional frameworks at regional level; Apart from ECOWAS the rest of the RECs need to further develop and adopt EE policies, Strategies and Action Plans. • Low technical skills and implementation capacity.

Table 2-19 Current Situation and Gaps Addressed: Norms, Standards and Frameworks for Energy Efficiency– Continental Level

Current Situation Needs	Gaps Addressed
• The installed electricity capacity is not able to cover the needs in most African countries; • The technical losses in the grid and non-technical losses are high; • The production cost of electricity is very high on average (above 0.10 €/kWh and sometimes even above 0.15 €/kWh). • The entities at continental level concerned also with Energy Efficiency are AUC-DIE, AFREQ and AFSEC, NEPAD-NPCA, AFUR and APUA.	• Low levels and lack of effective policy, regulatory and institutional frameworks at continental scale; • The continental entities suffer from capacity shortages both in man power as well as funding. • Better and closer coordination among the continental entities is needed. • Better and closer coordination of synergies between the RECs and regional entities is needed.

2.5.2 Impact on Strategic Objectives

Table 2-20 Impact of Enhanced Renewable Energy Framework on Strategic Objectives

Strategic Objective	National	Regional	Continental
Enhancing Renewable Energy Frameworks	The development of **Norms, Standards and Frameworks for Energy Efficiency** can have a direct impact on the below strategic objectives: • Improving the operational efficiency and performance of the Electricity Supply Industry (ESI) • Creating stable, transparent and predictable environment to attract investments • Enhancing electricity markets frameworks to increase access		

2.6 Synergies with other Continental and regional initiatives

Table 2-21 Continental institutions

		INSTITUTION/PROGRAMME/ACTIVITY & AREA OF SYNERGY							
	Key Areas or Pillars for Harmonization	AUC	NEPAD	NPCA	PIDA	AFSEC	UNECA	AFREC	AFUR
1	Economic Regulatory Framework								
2	Technical Regulatory Framework								
3	Enabling Market Environment								
4	Enhancing Renewable Energy Frameworks								
5	Norms, Standards and Frameworks for Energy								

1. AUC-African Union commission- The Commission is the Secretariat of the Union entrusted with executive functions. The AU Commission is made up of Portfolios. They are: Peace and Security; Political Affairs; Trade and Industry; Infrastructure and Energy; Social Affairs; Rural Economy and Agriculture; Human Resources, Science and Technology; and Economic Affairs. The Commission will be guided the principles of subsidiarity and complementarity with other Organs, Member States and RECs and with close coordination and cooperation with the RECs

2. NEPAD- New Partnership for Africa's Development is an economic development program of the African Union. It aims to provide an overarching vision and policy framework for accelerating economic co-operation. NEPAD's four primary objectives are: to eradicate poverty, promote sustainable growth and development, integrate Africa in the world economy, and accelerate the empowerment of women. NEPAD seeks to attract increased investment, capital flows and funding, providing an African-owned framework for development as the foundation for partnership at regional and international levels. The NEPAD Secretariat is not responsible for the implementation of development programs itself, but primarily implemented at the Regional Economic Community (REC) level. (the building blocks of the African Union). It is widely used by international financial institutions, UN agencies and Africa's development partners as a mechanism to support African development efforts

3. NPCA - NEPAD Planning & Coordination Agency- The core mandate of the NPCA is to facilitate and coordinate the implementation of continental and regional priority programmes, push for partnerships and projects and to mobilize resources and partners in support of their implementation. It also responsible for conducting and coordinating research and knowledge management, monitor and evaluate the implementation of programmes and advocate on the AU and NEPAD vision, mission and core values. The NPCA is in charge of ensuring the implementation of all Programme for infrastructure Development in Africa (PIDA) Priority Action Plan (PAP). Additionally the IPPF Fund, are responsible for implementing all preparatory activities relating to the PIDA Priority Action Plan (PAP).

4. PIDA - (**Programme for Infrastructure Development in Africa**) aims at accelerating socio-economic development and poverty reduction through improved access to integrated regional and continental infrastructure and services .PIDA has 51 cross border infrastructure projects consisting of 400 actionable sub projects covering energy, transport, trans-boundary water and ICT.PIDA has a Steering Committee, a Council for Infrastructure Development (CID, committee of members of the AUC Technical Committees of the focal areas), and Infrastructure Advisory Groups.

5. AFSEC- AFSEC African Electrotechnical Standardization Commission with regional economic communities and organizations with an interest in the electric power sector, Association of Power Utilities of Africa (APUA) , African Energy Commission Membership and **focus/**deals with Systems aspects for electrical energy supply, Electrical energy measurement, tariff- and load control, Power systems management and associated information exchange, Electrical installations and protection against electric shock and Electromagnetic compatibility. It gives Africa's input in IEC International Standards, Adoption and harmonization of IEC standards to meet continental needs, Official representation at IEC General meeting.

6. UNECA- supports a project of NEPAD Energy Programme, to harmonize laws, policies and regulations, particularly to promote private investment. One of the objectives of this project is to resolve constraints related to legislation in cross-border projects, in roads, ICT and energy.

7. AFREC- African Energy Commission- One area of activities of AFREC is the initiation of a program for "Advocacy and Facilitation for the African Energy Sector" with objective to defend and promote the Africa's interests in the regional and global energy and economic contexts with political support from the AUC and member states.

8. AFUR- Operates as a formal association of African regulators, with its own constitution .The objectives of AFUR could be broadly summarized as supporting the development of effective utility regulation in Africa through facilitating, the harmonization of regulatory policies, exchange of information and lessons of experience amongst regulators, and capacity building in support of the socio-economic development of the continent. AFUR exists primarily to meet the needs of African utility regulators (established as autonomous agencies or otherwise).

Sectoral and Geographical Focus: AFUR has a continental mandate with regions serving as building blocks for its activities and focuses on issues associated with the regulation of energy, communications, water and sanitation, as well as transport when sufficient transport regulators would have been established. The forum emphasizes issues that are common across sectors.

Table 2-22 Regional economic communities (RECs)

		INSTITUTION/PROGRAMME/ACTIVITY & AREA OF SYNERGY							
	Key Areas or Pillars for Harmonization	**AMU/UMA**	**ECOWAS**	**EAC**	**IGAD**	**SADC**	**COMESA**	**ECCAS**	**CENSAD**
1	**Economic Regulatory Framework**								
2	**Technical Regulatory Framework**								
3	**Enabling Market Environment**								
4	**Enhancing Renewable Energy Frameworks**								
5	**Norms, Standards and Frameworks for Energy**								

The RECs Africa's Regional Economic Communities (RECs) include eight sub regional bodies which are the building blocks of the African Economic Community established in the 1991 Abuja Treaty which provides the overarching framework for continental economic integration. The AU recognizes eight RECs

1. The Arab Maghreb Union (AMU/UMA) in the north,
2. The Economic Community of West African States (ECOWAS) in the west,
3. The East African Community (EAC) in the east,
4. The Intergovernmental Authority on Development (IGAD) also in the east,
5. The Southern African Development Community (SADC) in the south,
6. The Common Market for Eastern and Southern Africa (COMESA) in the southeast,
7. The Economic Community of Central African States (ECCAS) in the centre, and
8. The Community of Sahel-Saharan States (CENSAD) in the north.

Africa's RECs do not only constitute key building blocks for economic integration in Africa, but are also key actors working in collaboration with the African Union (AU), in various transformative programs of the continent, including the New Partnership for Africa's Development (NEPAD) and essential and instrumental for the effective implementation, financing, monitoring and evaluation of Agenda 2063 and its flagship programmes, at particularly the regional levels.. Beyond this role RECs have the immense challenge of working with governments, civil society and the AU Commission contributing towards the progress and development of the continent through economic growth and social development.

Several of the RECs overlap in membership: for example, in East Africa, Kenya and Uganda are members of both the EAC and COMESA, whereas Tanzania, also a member of the EAC, left COMESA and joined SADC in 2001. This multiple and confusing membership creates duplication and sometimes competition in activities, while placing additional burdens on already over-stretched foreign affairs staff to attend all the various summits and other meetings.

Moreover, there are additional regional economic cooperation bodies not officially recognized by the African Union as RECs, including:

i) Economic and Monetary Community of Central Africa (CEMAC)
ii) West African Economic and Monetary Union (UEMOA/WAEMU)
iii) Economic Community of the Great Lakes Countries (CEPGL)
iv) Indian Ocean Commission (IOC)
v) Mano River Union (MRU)
vi) Southern African Customs Union (SACU)

Table 2-23 Regional POWER POOLS

		INSTITUTION/PROGRAMME/ACTIVITY & AREA OF SYNERGY				
	Key Areas or Pillars for Harmonization	**CAPP**	**COMELEC**	**EAPP**	**SAPP**	**WAPP**
1	**Economic Regulatory Framework**					
2	**Technical Regulatory Framework**					
3	**Enabling Market Environment**					
4	**Enhancing Renewable Energy Frameworks**					
5	**Norms, Standards and Frameworks for Energy**					

As far as regions are concerned, there are primarily five power pools acting as specialized agencies of their respective RECs:

i) The Central Africa Power Pool (CAPP) for the Economic Commission for Central Africa States (ECCAS),
ii) The Comité Maghrébin de l'Electricité (COMELEC) for the Union of Maghreb Arab (UMA),
iii) The Eastern Africa Power Pool (EAPP) for COMESA,
iv) The Southern Africa Power Pool (SAPP) for SADC, and
v) The West Africa Power Pool (WAPP) for ECOWAS.

Their role at regional levels is to create conducive environment for private sector participation in cross-border trade to invest in the African infrastructure development and create a conducive legal and regulatory framework for the private participation. This would include legally empowering the power pools to act on behalf of RECs (and governments), particularly on power deals. Thus, a private sector entity wanting to invest in a regional project would have to deal with one entity instead of a complicated deal-structure with many countries.

- Institutional set up and market rules and regulations have already been implemented in SAPP, are being implemented in WAPP and under design in EAPP. However, CAPP and COMELEC have still to design and develop their power market institutions and rules.
- As for regional projects, all power pools are experiencing concrete achievement in implementing interconnection projects. Up-to-date regional master plans are available for all power pools. Except for COMELEC, the four other power pools have formally adopted their priority projects at the regional level and are mobilizing funding.

Table 2-24 Regional regulatory bodies and associations

		INSTITUTION/PROGRAMME/ACTIVITY & AREA OF SYNERGY					
	Key Areas or Pillars for Harmonization	**ERERA**	**EAPP**	**EREA**	**ERA**	**RAERESA**	**AWAUR**
1	**Economic Regulatory Framework**						
2	**Technical Regulatory Framework**						
3	**Enabling Market Environment**						
4	**Enhancing Renewable Energy Frameworks**						
5	**Norms, Standards and Frameworks for Energy**						

i) ECOWAS Regional Regulatory Authority (ERERA)
ii) Independent Regulatory Board (IRB) of EAPP
iii) Energy Regulators Association of East Africa (EREA)
iv) Regional Electricity Regulators Association (RERA)
v) Regional Association of Energy Regulators for Eastern and Southern Africa (RAERESA)
vi) Association of West Africa Utility Regulators (AWAUR)

The purpose and objectives of the association are:

i) To improve national energy regulation in member countries;
ii) To foster development of stable energy regulators with autonomy and authority;
iii) To improve cooperation among energy regulators;
iv) To facilitate the exchange of information, research, training and experience among members and other regulators around the world.

Membership of these regional energy regulators organizations overlaps and not all members' states within the same region are members of the regional body/association.

Table 2-25 Regional RENEWABLE ENERGY AND ENERGY EFFICIENCY CENTRES

		INSTITUTION/PROGRAMME/ACTIVITY & AREA OF SYNERGY			
	Key Areas or Pillars for Harmonization	ECREEE	RCREEE	SACREEE	EACREEE
1	Economic Regulatory Framework				
2	Technical Regulatory Framework				
3	Enabling Market Environment				
4	Enhancing Renewable Energy Frameworks				
5	Norms, Standards and Frameworks for Energy				

The regional renewable energy and energy efficiency centres are as follows:

i) The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE);
ii) The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE);
iii) The SADC Centre for Renewable Energy and Energy Efficiency (SACREEE);
iv) The East Africa Community Centre for Renewable Energy and Energy Efficiency (EACREEE).

Supported by The United Nations Industrial Development Organization (UNIDO) and the Austrian Development Agency (ADA), the operational unit of the Austrian Development Cooperation, and funding commitments from international donors

The main focus is to create favourable framework conditions for renewable energy and energy efficiency markets in member states and foster the growing sustainable energy market opportunities, as well as from regional cooperation and South-South and North-South technology and knowledge transfer.

3 Action Plan for Short Term

The Action Plan describes and identifies specific actions for the development of a harmonized continental regulatory framework. The Action Plan provides for the following three time frames: Short Term for 3 - 5 years (2017-2021); Medium - Term for 6 - 8 years (2022-2024); and Long - Term for 9 -14 years (2025-2030).

In developing the details of the Action Plan programme, it was also necessary to match the roles and mandates of the different regional and continental institutions and key actors as summarized below, ***with the details attached to this report as Appendix 1.***

- The identified pillars of harmonization need to be owned and supported along with other existing programs undertaken by different institutions;
- As the actions shall generate additional activities beyond what is normally covered by respective Institutions, it is important that every Institution establishes a Special Unit/Personnel within its establishment that will plan, monitor and follow up the implementation of the proposed Actions on the Pillars of Harmonization, especially where the normal activities undertaken are widely divergent from the proposed plan.
- In the course of implementation of the Action Plan, almost all the Institutions at Continental and Regional level will have certain or specific roles to play as the impact of the plan affects almost all the stakeholders, public, private, academia and research, Development Partners, NGOs and civil society, etc.

3.1 Economic Regulatory Framework

In order to achieve the strategic objectives identified in the Strategic Plan document, one of key actions within the short term for the Economic Regulatory Framework is the establishment of regulatory framework to drive the harmonization agenda. The actions required to achieve this at the national, regional and continental levels are elaborated below.

3.1.1 Actions Required

a) National Level

- **Adoption of electricity sector law and regulatory legislation**

The legal framework for the electricity industry is as diverse as the number of member countries. Current individual jurisdictional needs range from new legislation, the revision and upgrade of existing legislation to bring them to speed with modern industry trends, both primary and secondary legislation. The primary laws would specify the industry structure, entry and exit requirements, creation and design of relevant institutions or realignment of roles of existing ones to take charge of specified industry duties as well as the definition of their responsibilities. The secondary laws will focus on giving effect to the main statutes by determining the technical and market regulations as well as third tier guidelines and rules for regulating the evolving sector.

- **Establishment and Designation of a National Regulator**

It is important that a regulatory framework is established. This should be is backed by law and should provide for clear legal authority and separation for policy, sector regulation and utility operation. The Electricity sector Law and/or a Regulatory Act should therefore provide for the establishment of a regulator with the mandate to regulate the electricity sector. The regulator should meet the following minimum requirements of regulatory independence:

- ✓ Organizational Independence;
- ✓ Operational Independence;
- ✓ Financial Independence;

Regulatory independence implies that a credible regulator should be established which is independent from all market participants and also operate at "arms-length" from the sector Ministry or government.

Several countries have made modest gains in establishing a national regulatory authority. Ghana, Kenya, South Africa, Tanzania, Uganda and Zambia have had fully functional regulators in place for several years. . In some of the regions such as Southern Africa, support would be required to upgrade RERA to the status of a regulatory authority. This would require that SADC reviews the SADC Energy protocol and cooperation policy agreement. With regard to Central Africa, a regional regulatory authority is yet to be established for the power pool, while the Independent Regulatory Body of the East African Power Pool would need to be strengthened to develop key regulatory documents, and discharge its obligations.

Critical improvements are needed for transforming the regulatory environment. Institutionalization of the regulatory process whether through dedicated authorities or the utilization of existing organizations by the creation of specialized bodies to manage the development of the industry is a necessity. Such authorities must satisfy at a minimum the requirements of good regulatory governance, in terms of autonomy and transparency in decision making complemented with a board and staff with adequate capacity and equipped or resourced with the tools to establish and implement appropriate methodologies, procedures and rules. The national authorities, no matter their make-up need to be on the cutting edge of sector regulation to elicit the desired results.

- **Corporatization of State-Owned Power Utilities**

Most power utilities in Africa are state-owned, and the Chief Executives or Managing Directors are appointed by political authorities. Corporatization will compel the power utilities, even if state-owned, to be more accountable since they will have a separate shareholding and board of directors. Corporatization will therefore provide the following benefits, among others, to the power utility.

- ✓ Ensure the existence of a separate legal entity;
- ✓ Ensure managerial autonomy;
- ✓ Bring about more transparency and reporting;
- ✓ Ensure appropriate transfer of assets and liabilities;
- ✓ Existence of Board of Directors that represents shareholders interest and also takes account of the utility well-being;
- ✓ Enhance utility's financial status and enable it to become fully accountable;
- ✓ Ensure more financial independence;

- **Electricity Tariff Reforms**

The electricity tariff reforms will involve undertaking the following actions:

- ✓ Development of Tariff Guidelines and Methodology for grid connected large power plants;
- ✓ Carrying out a Cost of Service Tariff Study;
- ✓ Development of Tariff Guidelines and Methodology for grid connected RE Feed-In-Tariff, introduce Competitive Tendering, as well as Net Metering and GeTFiT
- ✓ Development of Tariff Guidelines for off-grid systems including Mini Grids and Stand-alone systems;
- ✓ Undertake Accounting separation of costs for the generation, transmission, distribution/sale segments.

The development of above documents would bring more transparency and credibility to the tariff-setting regime, and give more comfort to investors to commit into making long-term investments. It would incentivize investors to make more commercially driven investments, and encourage competition in the electricity sector.

For the large grid connected power plants, the development of the Tariff Guidelines and Methodology, carrying out Cost of Service Tariff Study, will provide the following benefits to the tariff-setting regime.

- ✓ Provide the rationale for calculating unbundled tariffs for the generation, transmission, distribution/sale segments of the ESI;
- ✓ Develop cost reflective tariff for each segment of the ESI, as well cost reflective tariffs for each customer category;

- **Adoption of integrated resource planning**

Most national master plans are well developed. Situating them within the regional context and for ensuring greater integration poses a challenge. The facilitation of smooth linkages between the power systems of individual contiguous states which is necessary for integration for cross-border trade begins and ends with good plans and the states need to ensure that these plans fit with the regional plans. Resources need to be allocated for providing technical assistance where it is most needed while the best performing states are enjoined to bring up the others.

b) Regional Level

- **Establishment and Operationalization of Regional Regulatory Authorities**

A well-functioning power pool would depend on the robustness of the regional regulatory framework

The full operationalization of regional regulatory authorities is essential for the development and regulation of regional infrastructure. These bodies should have the characteristics of a good regulatory entity with the important ingredients of independence or autonomy, accountability, whether established by statute as is the case in ECOWAS/ERERA or as a voluntary organization as in the case of SADC/ RERA. Each region generally needs support to grow its electricity sector

institutions. Nonetheless, disparities between the development of the legislative and institutional framework for electricity and renewable energy within SADC and ECOWAS frameworks means more needs to be done in the other regions to enable the match-up and takeoff to the next level for assuring faster regional and continental integration. Fully functional regulators are necessary in COMESA, ECCAS and UMA regions.

- **Development of Harmonized Tariff Rules;**

The regional regulatory authorities are required to develop harmonized tariff rules consisting of:

- ✓ Harmonized tariff-setting principles and methodology;
- ✓ Transmission network access rules, including rules for calculating wheeling changes and allocating cost of network losses;
- ✓ Harmonized Pricing Principles for ancillary and balancing services;

The harmonization of the tariff rules will support regional power trade and catalyze private participation in the power pools.

- **Establishment of Regional Coordination and Dispatch Centres**

With the exception of SAPP, all the other power are yet to establish fully functional system control dispatch and coordination centres. The coordination centres are key to ensuring that the interconnected power system can be operated in a safe and reliable manner to support regional power trade and power. ***Within the short term, some of the existing control centres within each power pool, can be identified and upgraded to perform the same function.***

- **Establishment and operationalization regional regulatory associations**

The formation of association of national regulators at the regional level is also an important development and each region is encouraged to establish one, to complement the regulatory authorities. It formalizes the avenue for engagement and dialogue between the regional regulator and the national regulatory authorities, a sort of watchdog's role.

- **Development of Regional Master Plans**

Most of the regional master plans are in place. What is required is the resources and capacity to keep them constantly updated and ensure synchronization with contiguous regions and adequate tie-in with the continental goals.

c) Continental Level

- **Performance Assessment of Regulators in Africa at National and Regional Level.**

It is important that a mechanism is established which allows for periodic assessment of the performance of regulators on the continent. This would require that a study is conducted once every 5 years, to assess the performance of national regulators in Africa and ensure that they

adhere to "best" practice regulation. To complement the Strategy and Action Plan, measurable targets will be developed together with guidelines for performance assessment of the regulatory authorities and power pools. This will involve the establishment of mechanisms for three levels of assessment namely, self-evaluation, peer review and external assessments designed to project the appropriate signals on a continuous basis to the AU, Ministers, RECs on the situation and performance of the states and the regional institutions.

- **Rules for Monitoring and Surveillance of Power Pools**

The purpose of market monitoring and surveillance of the power pools is to find out if the rules are working properly and no market participant is exercising market power. The rules must state clearly who does the monitoring, and what conditions would trigger modification of pool rules.

- **Development of Strategy and Action Plan for the Continental Regulatory Framework**

This is essential for harmonizing the continental regulatory framework for electricity, renewable energy and energy efficiency. This underpins the AU's initiatives for achieving the continental goals in energy which include a harmonized regulatory framework for the electricity sector. It entails the adoption of common rules for developing both internal and external electricity markets and strengthening regulatory oversight of developments within the states and the regions. It will involve greater coordination from the AU and the relevant continental bodies, including AUC, CEMA, STC, AFREC, NEPAD, AfDB, APUA and AFUR, to transform the sector.

3.1.2 Best Practice

In discussing adequacy of regulatory frameworks, it is important to distinguish between Regulatory Governance and Regulatory Content or Substance. A "best" practice regulatory framework must be measured along the above two dimensions of regulation. Regulatory Governance refers to the institutional and legal design of the regulatory system, and therefore forms the basis within which decisions are made. The main characteristics of Regulatory Governance are: Regulatory Independence, Accountability, Transparency, Predictability and Clarity of Roles. Regulatory Substance, which is the second dimension of a "best" practice regulatory framework, refers to the actual decisions made by the regulator and the rationale for those decisions. The main characteristics of Regulatory substance include: Tariff decision and the structures in place, Treatment of Cost pass-through items, Technical Regulation, Quality of Service Regulation, Regulatory Accounting Systems. In order for a regulatory framework to operate effectively, it must possess the attributes of both *Regulatory Governance and Regulatory Substance.*

An empirical assessment of the performance of regulators was carried out for AFUR and the World Bank in 2010 on "best" practice regulation. ***The conclusion from that study indicated that in Africa, no regulatory agency has been able to achieve the Standard Independent Regulator Model (based on the "best" practice regulatory framework). This finding was also confirmed by the results from the African Infrastructure Country Diagnostic (AICD) study which stated among others that "Africa's institutional framework, including the regulatory framework for***

infrastructure, is no more than half – way along the path to best practice[7]***.*** The following has been identified at the Action Plan validation Workshop as some of the success factors which if considered, can enhance the performance of regulators.

- Outsourcing of regulatory activities, if there is no in-house regulatory expertise;
- Extensive collaboration at national and regional levels to maximize use of resources;
- Periodic updating and interfacing of Master Plans at the national and regional levels;
- Continuous and sustained monitoring and evaluation of national regulator's performance.

[7] Overview of Africa's infrastructure and regulatory frameworks: Prospects and Challenges, Gboney, W. A study prepared for AFUR and the World Bank, 2010. Also see details in Foster, V. and Garmendia-Briceno, C., "Africa's Infrastructure: A Time for Transformation", Report prepared for Africa Infrastructure Country Diagnostic (AICD), 2009.

Table 3-1 Short Term Actions – Economic Regulatory Framework

Activity	Actions Required	Key Actors
National Level		
a) Establish and commence operationalizing a National Regulator to meet the minimum requirements of: ✓ Organizational independence; ✓ Operational Independence; ✓ Financial Independence	• Adoption of electricity sector law and regulatory legislation • Establish a national regulatory authority and commence operationalizing • Corporatization of State – owned power utilities required to support the process	• Government and Sector Ministry • Government and Sector Ministry • Ministry of Finance, Economic Planning or Trade • National Regulator • Sector Ministry • Power Utilities • Consumers • Private Sector
b) Tariff Reforms including Tariff Guidelines and Methodology for RE Systems:	• Tariff Guidelines and Methodology: Grid Connected Large Power Plants; • Tariff Guidelines and Methodology for grid connected RE to include: Feed - In - Tariffs, Competitive Bidding, Autonomous Generation, Net Metering and GETFiT. • Tariff Guidelines: Off - Grid System and Mini - Grids, and regulatory policy to clearly pre-specify what regulatory actions will be taken if a mini-grid is engulfed or enveloped, by the national grid in future. • Cost of Service Tariff Study for ESI • Accounting separation of cost. Key to tariff unbundling • Stakeholder engagement process	• Government and Sector Ministry • National Regulator • Sector Ministry • Power Utilities • Consumers • Private Sector
Regional Level		
a) Establish and operationalize a Regulatory Authority or provide support to elevate status of Regulatory Association to a Regulatory Authority		• RECs • Regional Regulatory Authority • National Regulators of member countries for power pools • Power utilities of power pools • Regional Regulatory Associations • APUA

Activity	Actions Required	Key Actors
b) Establish regional regulatory associations for each REC	• Mandatory for all regulatory authorities to become members of the regional associations	• REC • Regional Regulatory Authorities • National Regulatory Authorities
c) Development of Market	• Market Design and Roadmap • Market Rules	• Power Pools • Regional Regulatory Authority • Member utilities of power pools • Private Sector
d) Development of Harmonized Tariff Rules:	• Transmission Network access rules and methodology • Principles for calculating wheeling charges and allocation of network losses; • Indicate the currency to use for transactions for electricity trading • Pricing principle for Balancing and Ancillary Services;	• Regional Regulatory Authority • National Regulators of member countries for power pools • Power utilities of power pools
e) Establishment of *Regional Dispatch or Upgrade existing Control Centres*	• Conduct feasibility study for establishment of regional dispatch or system control centres • Support the establishment of functional Regional Coordination and Dispatch Centres, or *upgrade Control Centres within each REC, based on the needs of each power pool* • Establish regional market platforms • Implement ***synchronization project*** for the interconnected power systems for the power pools	• RECS • Power Pools
Continental Level		
a) Performance Monitoring and Review of Power Pools and regional Regulatory Authorities	• Performance Review and Assessment of Regulators: National and Regional Levels • Monitoring and Surveillance of Power Pool through one of the sub-committees, which is part of the governance structures for the Action Plan implementation • Strategy and Action Plan for a Harmonized Continental Regulatory Framework for the Electricity market • Support- coordination of RECs • Frequent coordination activities of Power Pools • Frequent consultative activities of the Regional Regulators • Capacity building activities targeted at regional and national levels	• AU/AUC • AFUR • Regional Regulatory Authorities of power pools • Regional Power Pools • Consumers • Private Sector

3.2 Technical Regulatory Framework

Technical regulations lay down compulsory requirements for product or service characteristics or their related processes and production methods and have specific administrative provisions and conformity assessment requirements, with which compliance is mandatory with regard to safety, health, environmental control and consumer protection.

3.2.1 Actions Required

a) National Level

- **Develop and Streamline the Licensing Framework**

It is important for regulators to develop separate licensing frameworks for large power plants and smaller power plants, especially isolated mini-grids and Stand-alone systems. A different licensing regime for small power plants using light-handed regulation, will bring about the following benefits:

- ✓ Reduce the amount of information required by the regulator, compared with large grid-connected power plants;
- ✓ Reduce the regulatory processes and decisions, particularly those relating to obtaining licenses or permits;
- ✓ Reduce the cost of regulation to off-grid operators which serve isolated off-grid communities

- **Grid Code Development**

The main objective of developing a Grid Code is to establish the rules and procedures which provide interconnection to the Power System, so that the system can be planned and operated in a safe, reliable, secure and economical manner. A well-developed Grid Code will also help in opening up the electricity market and by promote an open and non-discriminatory access to the interconnected power system.

- **Rural Electrification Standards**

In Africa and most developing countries, the greater percentage of the population stay in the rural areas, where most of the poor are not connected to electricity. In addition to their economic regulatory functions, regulators must also take decisions to enhance access to the population. The technical regulatory framework can therefore be made pro – poor by differentiating between the levels of technical standards to incentivize service providers, without compromising on quality of service requirements.

- **Develop Quality of Service Regulations and Enforcement Guidelines.**

There is the need for regulators to develop Quality of Service Regulations which establishes the requirements which must be met by the power utility to deliver acceptable quality level and reliability. Additionally, there should be monitoring and enforcement guidelines which must be developed through "Quality of Service Reporting" by the regulator, covering the following dimensions of quality of service:

- **Technical quality of electricity, Continuity of electricity supply and Commercial quality.**

To be able to undertake the enforcement aspect of quality of service monitoring, this would require building the capacity of regulatory engineers particularly in analysis of the technical quality of electricity, as well as interpretation of results of reliability or continuity indices, for the distribution and transmission sectors.

b) Regional Level

- **Develop Harmonized Technical Operations Manuals and Codes of Practice.**

Harmonization of technical operations manual for system operations will help facilitate regional power trade. It would ensure safe and reliable operations of the interconnected power system. The Harmonized codes and standards would cover Interconnection, as well as Safety and reliability. The System Operation Manual would include the Codes of Practice" for operations. This is the Operations Manual that would set out the principles, procedures, requirements and criteria to be observed by all market players for the efficient operation of the interconnected network.

- **Establish Regional Coordination and Dispatch or Upgrade Existing Control Centres**

The establishment of a coordination and dispatch centre will facilitate efficient trading in electricity and ensure better cooperation between the various transmission system operators in the member countries. It would also ensure effective information exchange to support electricity trading via Information Exchange protocols for market participants involved in monitoring, managing, operating and conducting commercial or business activities of power trade.

c) Continental Level

- **Develop Protocol for Monitoring and Evaluation of Market Integration**

Effective monitoring and evaluation of the system would require the development of a detailed plan that would address the following:

- ✓ Harmonization of existing monitoring and evaluation reporting systems for each pool;
- ✓ Definition of reporting requirement for each indicator to be monitored, to ensure unimpeded flow of information into the monitoring and evaluation system.

3.2.2 Best Practice

A "best" practice technical regulatory framework ensures that not only the appropriate technical documents are developed, but that the necessary monitoring and enforcement mechanisms are put in place by the regulator for assessing and monitoring the performance of the power utilities. The "best" technical regulatory framework would require issues adherence to technical standards and quality of service delivery. NERSA, the South African energy regulator offers a good example on the continent of how technical performance of a power utility can be linked to economic regulation of the power sector.

Table 3-2 Short Term Actions – Technical Regulatory Framework

Activity	Action Required	Key Actors
National Level		
a) Develop and Streamline Licensing Regime	• Develop Licensing Framework for large power plants; • Develop Licensing Framework for smaller power plants	• National Regulator • Sector Ministry • Power Utilities • Private Sector
b) Grid Code Development	• Develop a comprehensive Grid Code with penalties for non-compliance. Technical regulatory framework compliance requirements applicable to work area/operational unit are identified, confirmed and interpreted • Power utilities to acquire/install Supervisory, Control and Data Acquisition (SCADA) Systems • Feedback and performance indicators on the operation of the technical compliance management processes procedures are reviewed and agreed	• National Regulator; • Sector Ministry • Power Utilities • Private Sector
c) Rural Electrification Standards	• Develop different standards for rural areas which meets the minimum technical and quality standards	• National Regulator • Sector Ministry • Power Utilities • Private Sector • Consumers
d) Quality of Service Regulation	• Develop Quality of Service Regulations, Standards and Enforcement Guidelines. • Structure of the electricity sector is examined to identify roles, authorities, accountabilities and responsibilities of various institutions, in maintaining compliance	• National Regulator; • Power Utilities • Sector Ministry • Consumers • Private Sector •
Regional Level		
a) Harmonized Operations Manual	• Harmonized Codes and Standards for Cross – border	• Regional Regulatory Authority

Activity	Action Required	Key Actors
	Interconnection, Safety and reliability, System Operation Manual to cover: Codes for Practice	• Power Pools • Member Utilities
b) Regional Coordination Centre c) Grid Code Development	• Establish regional coordination and dispatch centre or upgrade existing area control centres • Develop appropriate information Exchange Protocols • Acquire sophisticated software for monitoring and control of system operations, including tie lines • Develop a harmonized Grid Code with penalties for non-compliance.	• Power Pools • Regional Regulatory Authority • Power Pools • Member utilities • Private Sector • Consumers
d) Development of regional strategies and power master plans including studies and engineering of technical coordination centres, and supporting joint work of member utilities; e) Deliver support from Regional PP and Regulators to National regulators and Market operators with respect to: ✓ Issuance of Mandatory rules; ✓ Monitoring the targets and harmonization process; f) Technical regulatory framework components of technical compliance management system are confirmed, and authorized procedures for their implementation are clarified; g) Resources for applying technical regulatory framework compliance management system are accessed and utilized in accordance with country policy and procedures;	• Technical regulatory framework components of technical compliance management system are confirmed, and authorized procedures for their implementation are clarified; • Resources for applying technical regulatory framework compliance management system are accessed and utilized; • Implementation plan and schedule are accessed and applied in collaboration with managers and operations staff; • Essential technical regulatory framework preconditions for any duty, function or activity are confirmed.	• Regional Regulatory Authority • Power Pools • Member Utilities

Activity	Action Required	Key Actors
Continental Level		
• Monitoring and Evaluation • Strategy and Action Plan for a Harmonized Continental Technical Regulatory Framework for the Electricity market • Support- coordination of RECs • Frequent coordination activities of the Power Pools • Frequent consultative activities of the Regional Regulators • Capacity building activities targeted at regional and national levels To achieve the above, the following activities shall be performed: • Prepare for compliance roles and responsibilities • Apply technical compliance management system • Validate individual technical compliance management processes	• Develop Protocol for effective monitoring and evaluation, for power pools • Define of reporting requirements • Specified information on own role and responsibilities within technical compliance management system is gathered from appropriate sources; • Feedback and performance indicator satisfaction data is prepared, reviewed and processed in accordance with agreed workplace practices; • Problems in applying technical compliance management system and in particular, breach of compliance requirements, are identified and appropriate action is initiated to address problems concerned; • Reports on identified breaches of compliance requirements and related action taken are prepared and processed to responsible authority/stakeholder; • Records of technical regulatory framework activities are maintained in accordance with approved systems requirements.	• AU/AUC • Power Pools • Regional Regulatory Authorities. • Private Sector • AU/AUC • Power Pools • Regional Regulatory Authorities. • Private Sector

3.3 Enabling Environment

3.3.1 Actions Required

a) National Level

- **Develop Market Rules**

One of the key conditions for creating an electricity market is the development of the Market Rules. The Market Rules govern the commercial aspect of the electricity market. The Market Rules are therefore the set of commercial rules, regulations and provisions, which market participants must comply with to facilitate and guarantee the proper and efficient operation of the electricity market.

- **Market Design and Models for Market Opening**

It is necessary to develop secondary legislation regarding market models for promoting open access non-discriminatory trade; procedures for gaining network access including -

- ✓ Market Rules for operationalizing the market
- ✓ Market controls and monitoring mechanisms

It is important that as part of creating an enabling electricity market, a market model or structure is defined ex ante, to give comfort to investors. Regulators have adopted a number of regulatory policies or tools to open-up the market and promote feasible and workable competition. It is important to however note that the degree of market-opening by each country should be compatible with the electricity market size and level of market development. In that regard, regulators always insist that countries should adopt a gradual or transitional approach towards market opening. The following common regulatory tools are used:

- ✓ Access Regulation
- ✓ Vertical or ownership Separation;
- ✓ Operational Separation of Transmission System;
- ✓ Accounting Separation;
- ✓ Corporate Separation;

The above approaches have been used to define the following electricity industry market models, for opening up the market:

- ✓ Vertically Integrated Model;
- ✓ Single Buyer Model;
- ✓ Wholesale Competition Model;
- ✓ Retail Competition Model

- **Licensing Regime**

Develop an adequate but simple licensing regime and consistently apply the rules. Cover such areas as environmental protection, taxation and fiscal policy, procurement procedures as well as standardized agreements. These would include:

- ✓ Model PPAs, Connection Agreements, Transmission Service Agreements;
- ✓ Establish PPP Frameworks and IPP procurement rules

- **Dispute Resolution**

Develop Dispute Resolution Procedures for handling both inter licensee disputes and a mechanism for independently reviewing decisions rendered by the national regulatory authority

- **Financing and Guarantees**

Develop local capacity for packaging projects to shorten gestation periods, evolve new initiatives for structuring, funding and securitizing sector projects, including:

Establishment of national investment funds for infrastructure development

- ✓ Developing local capacity in project development, finance, implementation and monitoring
- ✓ Creating project preparation bureaus to package bankable projects and facilitate funding
- ✓ Establishing guidelines for domestic funding mobilization

- **Develop Local Capacity in Project Finance, Project Development Monitoring and Implementation**

Local capacity need to be enhanced to support the financing environment which is crucial to private sector investment. Building the capacity of the policy maker, regulator and the power utilities in project development, implementation and monitoring is very important. This would further enhance support for Public-Private Partnerships (PPPs) for financing of power projects.

b) Regional Level

- **Market Development**

Establish common procedures and rules as well as model agreements, including:

- ✓ Market Rules and Operational Rules;
- ✓ Develop model contracts to facilitate regional electricity trade.

- **Infrastructure Development**

Interventions are needed to speed up infrastructure development to make-up for infrastructure deficiency which is a major constraint to the development and growth of the electricity market. In addition to technical know-how and expertise, the following initiatives are required to raise financing sector projects -

- ✓ Development of capacity in project development, finance, implementation and monitoring;
- ✓ Provision of financial assistance for project development risk;
- ✓ Strengthening procedures for provision of counterpart funding for energy infrastructure.

- **Develop Regional Capacity in Project Finance, Project Preparation and Implementation**

Building the capacity of the regional power pools in project development, implementation and monitoring is crucial for private sector investment. In addition, the ability to undertake due diligence and environment impact assessment of regional projects will incentivize the private sector to commit to long-term investment in the regional power projects. There is therefore the need to build the capacity to ensure better understanding of all aspects of project development and implementation of electricity sector infrastructure in legal, technical, financial and environmental areas. This should be complemented with the establishment of Project Preparation and Development Units (PPDUs), similar to the global infrastructure unit of ECOWAS.

c) Coninental Level

- **Effective Coordination of Regional Regulatory Authorities and Associations**

The establishment of a stable and an enabling electricity market environment would be enhanced if the AUC can put in place mechanisms to ensure regular consultative meetings of the regional pools, the regional regulatory authorities and associations. This would provide the platform for sharing experiences and pooling of resources together. In addition, frequent and structured consultative activities among regional authorities and AFUR will enhance exchanging information, sharing experiences thereby ensuring sustained simultaneous development achieved through maximization of the utilization of resources.

- **Strengthening Coordination of Power Pools**

Establish association of pools to facilitate coordination of activities, including physical developments and harmonization of rules and procedures. This will ensure the accelerated progressive continent-wide convergence of projects and procedures.

- **Technical Assistance from the African Development Bank**

The African Development Bank, under its Energy Sector Capacity Building Diagnostic and Needs Assessment study titled "Power Sector Soft Infrastructure Programme" (2013), has identified the following as key areas of support to the regional power pools for regional power trade.

- ✓ Legal and Regulatory Framework, including strengthening of national regulators;
- ✓ System Operations and Dispatch ;
- ✓ Conducive Finance Environment;
- ✓ Strengthening of member power utilities of power pools.

The AUC can therefore leverage on the above results and collaborate with the AfDB to provide technical support to the continental regulatory harmonization agenda to ensure there is synergy in the implementation of the Action Plan, while preventing duplication of resources. This action will also support the new focus whereby the continent moves towards greater self-reliance rather than the existing paradigm of looking without for solutions. Provision of TA to facilitate regional market integration by AfDB and other partners, will support the new focus and enable the continent move towards greater self-reliance rather than the existing paradigm of looking without for solutions.

- **Establishment of Centres of Excellence**

An essential component for achieving the harmonization agenda is to have well-qualified professionals, both at the national and regional levels to operate whatever systems are put in place. It is therefore imperative that Centres of Excellence are developed to train regulatory experts in various areas of electricity sector regulation. The African Forum for Utility Regulators (AFUR) is aware of the huge human capacity gap which exists. It is in this regard that NEPAD in collaboration with AFUR, and with technical support from Ecole Polytechnique Fédérale de Lausanne and the Africa Business Group, decided in 2015 to establish an African Centre of Excellence in Infrastructure Regulation.

In addition to the African Centre of Excellence in Infrastructure Regulation to be established by AFUR, other Centres can be established technical areas related to power utility operation, system operators, project finance and PPAs. These are key areas which also impact on the performance of both regulatory authorities and power utilities.

There is also the need to identify some educational institutions on the continent which can be supported, to offer Masters and PhD degree programmes in Regulation and other areas in the energy sector, in collaboration with other international universities. These programmes would assist in the training of future leaders and strategic thinkers, and create cutting edge research and analysis of practical issues in the energy sector confronting the continent.

Capacity building should also be extended to the judiciary because of the impact of judiciary on settlement of disputes. Even though such as Kenya, Kenya and Tanzania have energy or competition tribunals, the knowledge gap in the judiciary in energy and infrastructure regulation could affect the quality of decisions emanating from the national legal systems, if this is not addressed as part of the capacity building programme.

3.3.2 Best Practices

A stable and conducive electricity market, at both national and regional levels, is necessary to attract private sector investment. The critical elements to achieving an enabling environment to attract private sector investment from the short to the long terms are:

- ✓ Well-defined electricity market structure;
- ✓ A transparent project development process, which permits project developers to conduct the necessary due diligence in good time;
- ✓ Ability of project developers to identify the risks and devise the risk management measures in good time;

- ✓ Existence of Standardized PPAs;
- ✓ Transparent tariff-setting principles, and methodology.

Generally, private investment in the electricity sector is unrestricted in all the member states. The Department of Energy of South Africa established a RE IPP Unit which successfully broke away from a FIT system to a competitive tender process with major pricing benefits. Nigeria has the Concession Commission for procuring PPPs and adopted the Bulk Electricity Trader model for developing its internal market. At the regional level, progress in SADC/RERA and ECOWAS/ERERA are at appreciable stages.

Table 3-3 Short Term Actions - Enabling Environment

Activity	Actions Required	Key Actors
National Level		
a) Market Rules	• Develop and implement Market Rules for Commercial operation of the market • Define the rights and obligations of market participants	• National Regulator • Policy Maker • Power Utilities • Private Sector
b) Market Opening	• Develop secondary legislation regarding market models for promoting open access non-discriminatory trade; • Define regulatory tools for market opening; • Develop and identify various market models; • Define a transitional period for achieving the market model consistent with the Electricity Law of a country;	• National Regulator • Policy Maker or Sector Ministry • Power Utilities • Private Sector
c) Licensing Regime	• Develop an adequate but simple licensing regime and consistently apply the rules.	• Sector Ministry • National Regulator • Power Utilities • Private Sector
d) Dispute Resolution	• Develop Dispute Resolution Procedures for handling both inter licensee disputes and a mechanism for reviewing decisions rendered by the national regulatory authority	• Sector Ministry • National Regulator • Power Utilities
e) Financing and Guarantees	• Develop local capacity for packaging projects to shorten gestation periods • Consider the use of stock exchange to raise funding for projects	• Sector Ministry • National Regulator • Power Utilities • Private Sector
f) Local Capacity Building in Project Management		• Sector Ministry • National Regulator • Power Utilities
Regional Level		
a) Capacity Enhancement in Project Development and Management b) Market Development c) Infrastructure	• Establish Project Preparation and Dev. Units • Capacity building in: a) Project Finance b) Project Development Monitoring and Implementation c) PPPs • Building capacity in the following: a) Project Finance	• REC • Regional Power Pools; • Regional Regulatory Authorities • RECS • Power Pools • Regulatory Authorities

Activity	Actions Required	Key Actors
Development	b) Project preparation, monitoring and implementation c) Environmental Impact Assessment and incorporate environmental management into regional projects • Establish common procedures and rules as well as model agreements, • Interventions required to speed up infrastructure development to make-up for infrastructure deficiency	• Private Sector • RECS • Power Pools • Regulatory Authorities • Private Sector
Continental Level		
a) Increase coordination of regional Bodies	• Create a platform for regular consultative meetings of Regional Power Pools through the Forum of Power Pools • Create "Association of regional Regulatory Authorities" to ensure regular consultative meetings • Frequent and structured consultative meetings between AFUR and regional regulatory Authorities	• AUC • Regional Power Pools; • Regional Regulatory Authorities • AFUR
b) Technical Assistance from the AfDB and donor partners	Technical Assistance in the following areas: • Legal and Regulatory Framework; • System Operations and Dispatch • Creating a conducive and enabling market environment; • Strengthening of member utilities of power pools	• AUC • AfDB • Regional Power Pools • Regional Regulatory Authorities
c) Establishment of Centres of Excellence	Identify and Create Centres of Excellence in: d) Infrastructure Regulation, including Regulatory Economics and Technical regulation e) Power plant operations for the utilities, at least one per region; f) Accredited System Operation course to cover power pool and control centre operations, at least one REC	• AUC • AFUR • Regional Power Pools

3.4 Enhancing Renewable Energy Frameworks

3.4.1 Actions required

Taking in consideration the situation across the continent with low access to electricity, which is further worsened in rural areas, Renewable Energy can play an important role in providing electricity at an affordable cost to people residing both in urban and in rural areas. The current technological status coupled with the decreasing cost especially for photovoltaics and storage solutions make renewable energy low hanging fruits and as such it ought to be utilized significantly.

a) National Level

- **Establish and strengthen autonomous national regulatory agencies**

Autonomous regulators are responsible for creating the needed enabling environment for Renewable Energy investments to take place. The necessary legislation, both in terms for Public

Private Partnerships and for Independent Power Producers, can facilitate investment in Renewable energy from large to small scale and from interconnected to autonomous renewable energy microgrids/minigrids for rural electrification

- **Establish and strengthen separate RE agencies/units**

A Renewable Energy agency or a functioning unit inside a Ministry can coordinate effectively activities in relation to renewable energy.

- **Set national RE targets for on-grid and off-grid renewable energy**

Setting a target can facilitate the deployment of the relevant strategies and policies in order to accomplish them.

b) Regional Level

- **Establish and operationalize a Regional Renewable Energy and Energy Efficiency Center**

A Regional Renewable Energy and Energy Efficiency center can play a crucial role in the development of Renewables at regional level. In close cooperation with the REC it can take the needed steps in order to mainstream Renewable Energy and Energy Efficiency in the REC's policies and activities.

- **Develop and adopt a Renewable Energy Policy at REC level**

The REC in close cooperation with the RE and EE center and participation of the Regional Regulators Association and Power Pool have to develop a policy at REC level and adopt it in order to set the strategy and action plan for the REC.

- **Develop a regional implementation framework for the preparation of National Renewable Energy Action Plans (NREAPs) and Policies (NREPs)**

In order to promote the preparation and adoption at National Level of National Renewable Energy Action Plans and Policies the Regional RE and EE centre can prepare an implementation framework and also provide technical support to the countries for the actual preparation of NREAPs and NREPs.

c) Continental Level

- **Frequent consultative activities of regional RE and EE centres**

Since the RE and EE centres around Africa were/are not created at the same time, experience from the longer operating ones can be transferred to the newer ones for faster progress. Moreover, harmonization activities can be streamlined in this manner.

Table 3-4 Short Term Actions - Enhancing Renewable Energy Frameworks

Activity	Actions Required	Key Actors
National Level		
g) Establish and strengthen autonomous national regulatory agencies h) Establish and strengthen separate RE agencies/units	• Develop and implement Electricity and/or Regulatory legislation • Establish a regulatory authority which is operationally, financially and organizationally independent.	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available) • Regional RE & EE centre • Sector Minister or Policy Maker
Regional Level		
a) Establish and operationalize a Regional RE and EE centre. b) Develop and adopt a Renewable Energy Policy at REC level Develop a regional implementation framework for the preparation of NREAPs and NREPs	• Create and operationalize an RE and EE centre with the proper mandates and powers. • Develop the relevant strategy and action plan at the REC level and adopt it. • Develop the needed framework and support the countries for the preparation and adoption of NREAPs and NREPs	• REC • REC • Regional RE & EE centre • Regional Regulators Association • Power Pool • Regional RE & EE centre • REC
Continental Level		
Frequent consultative activities of regional RE and EE centres	Organize frequent meetings of the regional RE & EE centers	• Regional RE & EE centres

3.4.2 Best Practices

ECOWAS with the aid of ECREEE has made considerable progress in the last years in relation to Renewable Energy frameworks by setting a regional policy, aiding the states in developing and adopting NREAPs and NREPs and promoting harmonization among the countries.

RECREEE has also been very active in the Arab countries, a considerable number of which are in the African continent. In the same manner as ECREEE, it has aided the countries in developing and adopting NREAPs and NREPs and promoting harmonization among the countries.

3.5 Norms Standards and Frameworks for Energy Efficiency

3.5.1 Actions required

Energy Efficiency can be considered as an unexploited energy source providing more energy without new power stations. In this train of thought, it can be identified as the least cost approach to minimize the gap between demand and supply. Energy Efficiency approaches can be realized both in the demand and supply sides.

a) National Level

- **Develop Minimum Performance Standards and Labelling for Appliances**

Minimum energy performance standards (MEPS) and Energy Labeling are two of the most commonly used measures worldwide in Energy Efficiency programmes. MEPS in essence facilitate a market transformation, which leads to the market phasing out of low efficiency appliances.

It has been observed in many parts of the world that the consumers' willingness to pay more for energy efficient devices is low (e.g. in China only 10 % more in relation to 44-50% observed in Europe[1], in Saudi Arabia 15% [2]). On the other hand many studies have found that this barrier can be easily overcome since higher efficiency in many types of appliances is achieved with lower prices [3].

Energy Labels is a way to provide the consumer with an easy way to be informed about the energy efficiency performance of a product. This way the consumer is able to compare and in the end make a better choice in choosing new devices. Labelling and MEPS are usually developed in tandem.

As a first step, a life cycle analysis and benefits analysis on costs, benefits and the environment needs to take place. Experience from many areas around the world has shown that the above analyses need to be complemented with a stakeholders' analysis. The role of the stakeholders is crucial, since a poorly designed policy might not be able to be implemented [4]. Open consultation with the stakeholders from this initial phase can become one of the success factors. The stakeholders include consumer associations and industry.

The second step includes the development of the technical aspect of the standards. In most cases this requires high expertise and testing facilities. In order to overcome this barrier, utilization of international cooperation programmes and activities, as well as regional and continental coordination through the REC's Renewable Energy and Energy Efficiency Center and AFREC and AFSEC can facilitate this process. In essence this technical standard will describe the test procedure, as well as specify how the performance is measured. International standards can also be used directly or modified to address better the country's local characteristics and needs.

The activities concerned with the development of the technical standards for MEPS can be expanded in order to facilitate a labelling scheme for the appliances. Apart from the energy class and the yearly energy consumption the label can also include key technical data of the appliance (e.g. storage volume and noise level for refrigerators).

It is important to note that developed MEMS and labelling schemes need to be maintained and updated regularly, since the technological evolution is fast.

- **Develop DSM Monitoring Guidelines and Standards**

Demand Side Management (DSM) approaches have been proposed in order to reduce the peak electricity demand. They can be classified into energy efficiency activities and demand response activities. Using DSM can reduce the overall load of the grid increasing system stability and reliability, mitigating grid emergencies and reducing blackouts. DSM can also play a critical role in the planning of upgrades to the electricity system on a whole (generation, transmission, distribution). DSM measures can be deployed at residential, commercial, industrial as well as the

generation level. The consumer can also benefit from DSM through a reduction of the electricity bills. Concluding, DSM benefits can be summarized in two main categories; cost reduction and environmental motives and reliability and network motives [5].

DSM activities can be classified in three broad categories: Energy Reduction Programmes, which aim to reduce the demand with the application of more efficient processes, equipment and appliances, Load Management Programmes which aim at changing the pattern of the load and decreasing peaks and finally load growth and conservation programmes.

There is a very big number of possible activities that can fall under Demand Side Management. This implies that as a first step an initial study needs to be made at national level to be used as an inventory of possible actions. At the same time it would be good to prepare a baseline inventory of consumption, in order to be able to assess the different activities better.

Some of the DSM actions need the development of technical documents initially to act as guidelines and corresponding awareness raising activities to the target audiences for the dissemination of the guidelines. For example, for residential users guidelines can be prepared for more efficient lighting practices and for commercial buildings guidelines can be prepared for power factor correction.

For more complicated activities, business models need to be developed. These business models need to take into account production and consumption costs, users consumption habits, the socio-economic environment etc. [6].

DSM activities in industry usually imply larger Programmes, that need a number of activities like stocktaking the target industrial sector, preparation of audit guidelines, preparation of decision support schemes in order to evaluate the various DSM options available for each industrial user, and preparation of facilitation schemes for the implementation of the DSM activities.

b) Regional Level

- **Develop and adopt an Energy Efficiency Policy at REC level**

The REC in close cooperation with the RE and EE center and participation of the Regional Regulators Association and Power Pool have to develop a policy at REC level and adopt it in order to set the strategy and action plan for the REC.

- **Develop a regional implementation framework for the preparation of National Energy Efficiency Action Plans (NEEAPs)**

In order to promote the preparation and adoption at National Level of Energy Efficiency Action Plans (NEEAPs) the Regional RE and EE centre can prepare an implementation framework and also provide technical support to the countries for the actual preparation of NEEAPs.

- **Develop Energy Efficiency roadmap for the supply side**

Since the technical losses of the African grids are extremely high, action in this field can increase the available energy, lower the cost and increase access. Coordinated activities at regional level can

present economies of scale and facilitate action both at transmission and distribution part of the grids at regional and national levels.

Table 3-5 Short Term Actions – Norms, Standards and Frameworks for Energy Efficiency

Activity	Actions Required	Key Actors
National Level		
a) Develop minimum performance standards and labelling for appliances	Energy Labels and standards have to be created and adopted.	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available) • Regional RE & EE centre • Consumers
b) Develop DSM Monitoring Guidelines and Standards	• Energy Efficiency Activities • Demand Response Activities • Industrial Energy Efficiency programmes	• Ministry of Energy • Ministry of Development • Power System Operator • Players in the Electricity Supply Industry in the country • Regional RE and EE centers • Associations of electricity consumers
Regional Level		
a) Develop and adopt a Renewable Energy Policy at REC level	• Develop the relevant strategy and action plan at the REC level and adopt it.	• REC • RE & EE centre • Regional Regulators Association • Power Pool
b) Develop a regional implementation framework for the preparation of NEEAPs	• Develop the needed framework and support the countries for the preparation and adoption of NEEAPs	• RE & EE centre • REC
c) Develop Energy Efficiency roadmap for the supply side	• Develop an Energy Efficiency roadmap for the supply side	• Power Pool

3.5.2 Best Practices

a) National Level

- **MEPS and Labelling program in Ghana**

✓ Air Conditioners: estimated savings of at least 7 mil €, reduced emissions of 132,000 tons of CO_2 and power generation capacity savings of approximately 29 MW by 2010
✓ Refrigerators: save 63 mil € per year
✓ Lighting: Compact Fluorescent Lamps (CFL) result to household income savings of 2.5% for Ghanaians in larger cities

- **Industrial Energy Efficiency Improvement Project in South Africa**

Ultimate Goal:

Demonstration of the positive impact of energy management as a means of reducing carbon-dioxide emissions and the effectiveness and financial impact of in-plant energy management

- ✓ Implementation in 54 industry plants
- ✓ Energy savings of 571 GWh
- ✓ Financial saving of ~23.5 mil €
- ✓ GHG emissions savings ~568,000 ton of CO_2

b) Regional Level

RCREEE has been very active in the Arab countries, a considerable number of which are in the African continent. It has helped the countries develop and adopt NEEAPs.

ECOWAS with the aid of ECREEE has made considerable progress in the last years in relation to Energy Efficiency by developing a Regional strategy and by aiding the countries to implement activities at the national level. Moreover it has produced guidelines and implemented flagship initiatives.

SAPP along with UNEP have partnered up and created a road map on implementing energy efficient lighting and equipment technologies. This action has been adopted by the SADC Energy Ministers.

4 Action Plan for Medium Term

4.1 Economic Regulatory Framework

The action plan for the medium term looks at implementing most of the actions which commenced started during the short term. The specific actions required for creating a robust Economic Regulatory Framework are described below:

4.1.1 Actions Required

a) National Level

- **Ensure Full Operationalization and Strengthening of a National Regulator**

A fully functional National Regulatory Authority which operates at "arms-length" with all stakeholders, and which can be held accountable and answerable for all its decisions will no doubt enhance the credibility and reliability of regulatory decisions. The operational independence of a regulator is enhanced and bolstered, if the regulator possess the needed technical, economic and legal expertise for decision making. It is important to enhance regulatory governance by ensuring total independence in the areas of decision making and funding and demanding greater accountability and transparency from regulators.

The regulators must be empowered to enforce regulatory decisions and must provide the rationale or reasoning underpinning regulatory decisions, implement cost reflective tariffs and unbundling and also Implement FITs and other incentives to promote integration of RE. A fully functional regulator should be staffed with professional which possesses the core competencies. The financial independence is achieved if the regulator has a secured source of finding from levies, license fees or regulatory charges. This gives the regulator the required flexibility to deploy the needed resources to deal with the electricity sector problems.

- **Implement Tariff Reforms: Cost Reflective Tariffs, Tariff Unbundling and RE Tariffs**

The financial sustainability of the sector depends on the commercial and financial viability of the power utilities. One of the key steps towards achieving that is to determine the cost service tariff for the electricity sector. The system cost reflective tariff is best undertaken by carryout a cost of service study. For the sake of tariff unbundling, the cost of service tariffs study should determine separates tariffs for the following segment of the following segment: Generation, Transmission, Distribution and Sale. In addition, cost reflective tariffs should be determined for each customer category. This approach will make it easy quantify any subsidies that may exist in the sector, as well as which class of customers are "subsidy contributors", and which class are "subsidy recipients".

With regard to RE procurement, depending on each case, the states must implement the FITs, GETFiT and a competitive tender process together with other incentives to promote integration of RE. Egypt and South Africa have used the tender process to obtain relatively competitive rates. ***In addition, the***

framework for competitive procurement process by tender could be extended to conventional technologies, including the IPP and PPP arrangements

b) Regional Level

- **Implement Harmonized Transmission Pricing Rules**

One of the key steps for establishing a regional electricity market is to develop and implement a harmonized Transmission Tariff Methodology. The development of the tariff methodology will facilitate the creation of a regional electricity market, while contributing towards attracting investment for regional power projects. The adoption of a harmonized tariff regime would also cover the following:

i. Wheeling charges;
ii. Allocation of cost of network losses;
iii. Balancing and ancillary services

- **Implement Guidelines for Harmonized Dispute Resolution Procedures**

Establish regional procedures for handling disputes arising from the cross-border electricity trade. This will cover licensee disputes as well as an appeals process for challenging regulatory decisions firstly through an internal review process.

- **Implement Guidelines for Monitoring and Surveillance of Regional Market**

A best practice surveillance and market monitoring system should at cover the following elements:

i. The monitoring organization should have no financial ties to any of the market participants;
ii. The market monitoring and surveillance programme should:

- ✓ Be on an on-going monitoring programme;
- ✓ Carry out Investigation of specific complaints;
- ✓ Monitor should possess the authority to obtain any information it needs from the pool participants, subject to the terms of confidentiality of commercially sensitive information;
- ✓ Be able to recommend structural changes, provided such changes will eliminate the underlying problem;

- ✓ Ensure that Regional regulator should receive reports and recommendations of market monitor
- ✓ Ensure that the Regulator should have the power to order the market monitor to undertake specific duties;

- **Increase Authority of Regulators**

This phase will involve a more rigorous implementation of the rules, guidelines and procedures, after testing them in the short term. This will be duly complemented with enhancement of the regulator's powers of enforcement.

c) Continental Level

- **Monitor the Operation of Power Pools**

Although the pools are regional in nature, continental oversight is necessary for ensuring their smooth development, operation and a seamless evolution to the continental market. In line with the Governance and Implementation structure, the monitoring and evaluation framework will occur at two levels namely:

- **Tier 1,** which would involve the AUC and other continental bodies;
- **Tier 2,** which would be at the sub-committee level for the technical regulation pillar of the regulation harmonization

Under this activity, should request the regional power pools will be requested to submit reports on the market surveillance and monitoring programme which will be, to be discussed at the sub-committee level (i.e. Tier 1 level) during the periodic consultative meeting. The aim is to find out if there are any problems hampering the achievement of the market integration agenda and reported to the Tier 1 level institutions for the necessary action to be taken. The AUC will utilize a reporting format prepared by AFREC, AFSEC, and AFUR for this coordination function.

- **Review Mechanism of Performance of Regulators**

Periodic review of the performance of regulators in the RECs, should be carried and measured along the two key dimensions of regulation: Regulatory Governance and Regulatory Substance. The performance of regulators on the continent should be quantified and represented in a league-table format. This approach will tend to "simulate" competition among regulators and compel them to strive for regulatory excellence.

4.1.2 Best Practices

A best practice regulatory framework at the regional level, should in addition to satisfying best practice regulatory frameworks of Regulatory Governance and Regulatory Substance, be able to achieve the following:

- ✓ Strengthen the performance of national regulators;
- ✓ Implement harmonized tariff rules and methodologies.
- ✓ Implement pricing principles for wheeling charges and ancillary service
- ✓ Implement Market Rules, Electricity Trading, Operationalize the short-term Financial Markets and Settlement Systems.

On the continent, the SAPP has made significant strides in implementing most the afore-mentioned issues, including operationalizing the Short Term Electricity Market. ERERA and WAPP are also making efforts to operationalize some of the documents mentioned above.

Table 4-1 Medium Term Action – Economic Regulatory Framework

Activity	Action Required	Key Actors
	National Level	
a) Full Operationalization and Strengthening of National Regulator	• National regulator outside the sector Ministry. • Complete recruiting staff for all positions, in the line with organizational structure; • Develop all the necessary internal rules and procedures; • Implement all policies, procedures and methodology for tariff – setting • Implement regulatory policy for evaluating and assessment of performance of power utilities • Achieve Independence in the following areas; ✓ Financial; ✓ Organizational; ✓ Operational	• National Regulator; • Sector Ministry; • Ministry of Finance, Economic Planning and Trade • Power Utilities, • Representatives of customer classes and other main stakeholders such as the private sector
b) Implement Cost Reflective Tariffs and Tariff Unbundling	• Implement cost reflective tariff for each segment of the ESI and for each end-user tariff category • Define a tariff plan for achieving cost reflective tariffs.	• National Regulator; • Sector Ministry; • Ministry of Finance, Economic Planning and Trade • Power Utilities, • Customers • Private sector
c) Implement ***RE Tariff (FIT) System and other regulatory policy options such as Competitive Tendering, Net Metering***	• ***Implement REFITs, Competitive Tendering, GeTFiT*** for grid Connected RE technologies for: ✓ Large Power Plant; ✓ Small Power Plants • ***Implement FIT, Competitive Tendering, GeTFiT, Net Metering etc***. for off -grid Systems to cover: ✓ Mini – grid systems that might want to connect to the national grid; ✓ Stand – alone systems that might want to sell excess power into the national grid ✓ Define and implement polices to promote off – grid power systems ✓ Develop and Implement Tariff Guidelines for isolated mini – grids, when the main – grid	• National Regulators, • Sector Ministry; • Private Investors/Sector

Activity	Action Required	Key Actors
	envelopes the mini – grid ✓ Develop and implement policy for regulation off – grid system with respect to: licensing, tariff – setting and other processes.	
Regional Level		
a) Implement Transmission Pricing Rules	• Ensure implementation of harmonized transmission system pricing • Implement harmonized wheeling charge pricing methodology • Implement network loss allocation pricing methodology • Implement principles for balancing and ancillary services	• Regional Regulatory Authorities • National Regulators • Member unities of power pools • Power Pools
b) Implement Guidelines for Dispute Resolution Procedures	• Implement dispute resolution procedures • Implement External dispute resolution or arbitration resolution procedures	• Regional Regulatory Authorities • Power Pools • Member utilities of power pools
c) Implement Guidelines/Protocols for Monitoring and Surveillance of Regional Markets	• Identify the monitoring unit or entity; • Define the rules for the monitoring, as well as the functions, powers and duties of the monitoring entity; • Identify sources of finance for the market monitoring unit • Establish the governance structure of the monitoring and surveillance	• Regional Regulatory; Authorities • Power Pools
Continental Level		
a) Monitor Operation of Power Pools	• Regional Regulators to submit periodic reports on market monitoring and surveillance for discussions;	• AUC • Regional Regulatory Authorities and Associations
b) Performance Review of Regulators on the Continent	• Define ToR for the assignment • Quantity Performance of regulators • Establish a league table of regulatory performance	• AUC • AFUR • Regional Regulatory Authorities • National Regulators

4.2 Technical Regulatory Framework

4.2.1 Actions Required

a) National Level

- **Implement Grid Code**

The regulator should ensure the implementation of the Grid Code in its entirety. The implementation should cover the following key areas:

- ✓ Grid Governance;
- ✓ System Operations for system reliability, Security and Safety;
- ✓ Network Operations' and Connection to the System
- ✓ Metering Requirement;
- ✓ Information exchange and communication between market participants.

- **Implement a Streamlined Licensing Framework**

A robust technical regulatory framework can be achieved if the licensing regime is streamlined and separated for large power plants and smaller power plants used for rural electrification. This can be achieved through the implementation of light-handed regulation for isolated mini-grid and off-grid systems as follows:

- ✓ Granting exemption to small power plants, below a certain threshold, of installed capacity from applying for licenses
- ✓ Defining the administrative procedure for registering the small power plants;
- ✓ Implement Tariff Guidelines for isolated grids used in rural areas and in off – grid communities.

- **Implement Quality of Service Enforcement Guidelines**

The implementation of the QoS enforcement guidelines would enable the regulator to monitor the quality of service delivery by the power utilities. The QoS Enforcement Guidelines would specifically address the following issues: On power quality monitoring, it is imperative that the power utility installs the necessary monitoring devices to monitor the power quality characteristic in the system:

- ✓ Power Frequency;
- ✓ Supply Voltage Variations;
- ✓ Voltage Unbalance;
- ✓ Harmonic Voltages;
- ✓ Voltage Dip and Swells.

An effective QoS monitoring regime must be accompanied by an Auditing Framework. In this regard, it important that the regulator develops an Auditing Framework which enables the

regulator to carry out periodic audit of the underlying processes and data used to calculate the quality of service and reliability indices.

- **Implement Technical Connection Code for Renewable Energy Technologies.**

The development and implementation of the RE Connection Code is to facilitate connection of RE power plants to the national grid. The RE Connection Code or Guidelines therefore provides the technical framework for incorporating RE into the inter-connected power System, to ensure the safe and reliable operation of the interconnected system. The RE Connection code becomes crucial as share of grid connected increases as a percentage of the total system generation capacity mix.

b) Regional Level

- **Implement Technical Operations Manual and Codes of Practice**

The implementation of the Operations Manual will ensure effective technical coordination between the power systems which are part the power pools. The Manual sets out the procedures and criteria to be followed by pool members for efficient and secure operation of the connected system. The main action required for implementation include:

- ✓ Develop technical norms and standards;
- ✓ Purchase necessary tools and software for system studies and analysis;
- ✓ Operationalize the operation instruction manual and procedures
- ✓ Build the capacity of system operators of the power pools

- **Operationalize Power Pools and Electricity Market**

In order to operationalize the power pools and the electricity market, the following actions are required:

- ✓ **Development or update of a Master Plan:** This provides a rational basis for investment and also ensure effective integration of short, medium and long term strategies for development of generation and transmission infrastructure
- ✓ Development of Market Rules and Market Design
- ✓ Development of Standard Contracts
- ✓ Development of harmonized transmission system tariff methodology
- ✓ Development of Technical Operations Manual, including how to **synchronize** the interconnected systems

- **Operationalize the Regional Coordination and Dispatch or Control Centres**

The implementation of the regional coordination centre will facilitate operational coordination between the transmission system operators in the member countries of the power pools. The main actions required for its implementation include:

- ✓ Carry out feasibility studies;
- ✓ Define the technical specification of equipment to be used, including the software;

- ✓ Undertake construction and commission the project;
- ✓ Capacity building programme for technical staff of the coordination of dispatch centres;
- ✓ Implement the necessary measures for efficient operation of the interconnected system;
- ✓ Coordinate and collaborate with the system control centres of member countries to create a reliable regional operation system;

- **Implement Priority Power Grid Infrastructure Projects**

In order to operationalize the regional market integration, there should be a strategy for implementation of priority regional infrastructure projects. The strategy should aim at how to finance, construct, operate and maintain the priority interconnection project, using Public-Private-Partnership (PPPs) or other project finance approaches. The aim of implementing the priority power grid infrastructure projects is to create a robust inter-connection link and "corridor" for regional power exchanges among the countries of the regional power pools.

c) Continental Level

- **Monitor Operation of Regional Coordination and Dispatch Centres**

The AUC can do this by ensuring that the decisions emanating from the periodic meeting with the regional power pools are implemented. The main action to achieve that is to set up a technical coordinating unit within the AUC to monitor the implementation of the recommendations from the power pool Monitoring and Surveillance Unit.

4.2.2 Best Practices

During the medium term, in line with the best practice technical regulatory framework, it is important to create a regional integrated market through the implementation of technical operations manual. The implementation of the key technical documents. This would further lead to supply of secure and reliable electricity and also to promote regional cooperation among all the market players.

On the continent, SAPP has operationalized most of the key technical documents and could work in close collaboration with the other power pools to shorten their "learning curve", through the Association of Power Pools.

Table 4-2 Medium Term Actions – Technical Regulatory Framework

Activity	Action Required	Key Actors
National Level		
a) Implement Grid Code b) Operationalize the Power Pools and Electricity Market	• Establish Grid Code Governance Structure to start the implementation process • Establish system of monitoring all aspects of Grid Code • Develop Master Plan • Develop Market Rules and Design Market • Develop Standard Contracts • Develop harmonized transmission system tariff methodology, including wheeling charges rules for loss allocation	• National Regulator • Sector Ministry • Power Utilities • Private Sector • Customers • National Regulator • Sector Ministry • Power Utilities • Private Sector
c) Implement a streamlined Licensing Framework	• Implement a licensing framework for large power plants • Implement a licensing framework for small power plants and electrification	• National Regulator • Sector Ministry • Power Utilities • Private Sector
d) Implement Quality of Service Regulations	• Implement Quality of Service Regulations or Code • Develop and implement Quality of Service Enforcement and Compliance Regulations • Implement QoS Enforcement for operational efficiency Guidelines • Stakeholder Validation • Approval by national regulator	• National Regulator • Sector Ministry • Power Utilities • Customers • Private sector
e) Implement Technical Connection Code for RE Technologies	• Prepare the ToR • Recruit a Consultant • Develop RE Connection Code to facilitate integration of grid connected RE • Stakeholder validation process • Approval by national regulator	• National regulator • Power Utilities • Private Sector
f) Develop a national data base	• Establish a data collection unit or centre • Procure the necessary hardware and software • Train staff operate and manage system	• Regulatory Authority • Power utilities

Activity	Action Required	Key Actors
Regional Level		
• Implement Technical Operations Manual and Codes of Practice	• Implement technical norms and standards • Implement operation instruction and procedures • Acquisition of necessary tools and software • Implement codes of Practice	• Regional Regulatory Authorities • Power Pools • Member Utilities of power pools
• Operationalize Regional Coordination and Dispatch Centres	• Complete feasibility studies, construct and commission project • Define technical specifications of equipment • Purchase equipment • Purchase necessary software; • Coordinate and collaborate with system operator of member utilities • Build technical capacity of system operators	• Power Pools • Regional Regulatory Authorities • Member Utilities
• Implement Priority Power Grid Projects	• Identify priority projects • Define the strategy for implementation of grid infrastructure for grid infrastructure projects • Develop a mechanism for PPP or project finance to implement priority projects to create interconnection link and "corridor"	• Power Pools • Member power utilities • Regional Regulatory Authority and Associations
Continental Level		
• Monitor the Operation of Coordination and Dispatch Centres	• Establish a coordination unit within the AUC • Implement regular and periodic meetings to discuss the progress ad challenges, of operation of coordination centres	• AUC • Power Pools • Regional Regulatory Authority and Associations
• Framework for power exchanges between power pools; • Preparation of continental standards and codes; • Establish Monitoring and Evaluation Mechanism and "Compliance Scorecard"	• Clarify the scope and level of technical regulatory framework activities • Identify compliance requirements • Document and communicate compliance requirements • Implement technical compliance management system • Monitor implementation of the technical compliance management system	

4.3 Enabling Environment

4.3.1 Actions Required

a) National Level

- **Completion of Market Opening Process**

One of the key actions required to enhance the market reforms is to open-up the market by identifying the roles of the following entities.

- ✓ The transmission system operator;
- ✓ The Market/System Operator;
- ✓ The Balancing Market;
- ✓ Bulk Purchaser or Single Buyer.

There are various models for establishing a transmission system operator, depending on the level of legal and functional unbundling of the transmission from the generation and distribution segments. The models for establishing the transmission system operator, which can be adopted, are as follows:

Table 4-3 Transmission System Operator Models

Model	Real – time control	Maintenance of Facilities	Investment Responsibility	Owner of Trans.
Independent System Operator Model (ISO)	✓		Shared Responsibility	
"WIRECO" Model		✓	Shared responsibility	✓
TRANSCO or GRIDCo Model	✓	✓	✓	

Irrespective of which model is adopted by a member country, what is important for is that the Transmission System Operator (TSO), must be independent and impartial in its dealing with all market participants. The market opening would therefore be facilitated if the appropriate model of the TSO is adopted, and its role properly identified.

The following models can be adopted by countries to open-up the market, even though in practice countries have adopted a hybrid characteristics of two models.

- ✓ Model 1 – Vertically Integrated Utility

Requirements: There must be accounts separation entailing a functional separation of generation, transmission and distribution segments of the business, as well as rules for access to the transmission network, of the vertically integrated company by IPPs.

- ✓ Model 2 – Single Buyer Model

Requirements: Legal separation of transmission system and the competitive segment of the market, as well as separate transmission tariff.

- ✓ Model 3 – Wholesale Competition Model

Requirements: Legal separation of distribution companies which can buy electricity from generators under PPAs

- ✓ Model 4 – Retail Competition Model

Requirements: Bulk customers can buy electricity from generators under separate access tariffs for transmission and distribution systems.

b) Regional Level

- **Development Banks to support Needed Capacity in Project Finance**

In order to create a conducive and an enabling environment to support regional power trading the pool secretariats are required to develop their capacities in project finance, as well in the area of project planning and implementation of regional electricity infrastructure. The start-up capital for development capacity can therefore be sought from African Development Fund. The Bank can however partner with other development partners to mobilize in project finance, project preparation, design of PPA's, project financing, project monitoring and implementation.

c) Continental Level

- **Development of Centres of Excellence to support Capacity Building**

Coordinated capacity building programmes will be instituted for building capacity sustainably, and optimizing the available resources instead of the piece-meal approach thereby avoiding costly duplication. Furthermore, criteria guidelines will be prepared for establishing or strengthening centres of excellence for various aspects of the sector. Separate Centres of Excellence should be designed with specialization in the following areas:

- ✓ **Infrastructure Regulation.**

This would cover Economic and Technical regulation, of the electricity sector, as well as the other infrastructure sectors.

- ✓ **Accredited courses for system operators.**

The course will involve delivering a specialized system operators certification course. The course will also enable system operators to understand the technical rules and standards for interconnection, as well as the details of power trading and operation of short term markets.

- ✓ **Project Finance.**

The course will cover project preparation and implementation, PPAs, Risk Mitigation, Currency hedging, PPPs, strategies for implementing PPPs to support regional power project, among others;

- ✓ **Strengthening Operation of Generation, Transmission and Distribution of Electricity**

These centres will aim at institutional strengthening of the national utilities, who are also members of the regional power pools. Some of the actions required to achieve this include:

i. Identification and upgrading of four of at least 4 of the current training centres owned by the utilities, to the status of Centres of Excellence;

ii. Develop of business plan to ensure long-term sustainability of the centres;

iii. Purchase of needed equipment for laboratories and training workshop;

- **Develop continental level dispute resolution procedures**

This will involve a continental appeals structure for determining appeals from sector investment disputes emanating from the regional Courts or relating to continental flagship projects.

- **Measures for supporting continental integration of power system by flagship projects**

Simplified guidelines will be prepared to cover the fast tracking of flagship projects. This can be achieved through such mediums as special purpose vehicles with strong coordination from the AU and the relevant continental sector organizations.

- **Innovative Project Finance mechanisms for promoting, implementing and securitizing sector projects.**

These will include -

- ✓ DBs to design and promote common guarantee instruments for mobilizing investments
- ✓ DBs to promote mobilization of African Institutional Investors in electricity sector

4.3.2 Best Practices

During the medium term, member countries should aim at achieving the required level of market opening, which is compatible and consistent with the electricity market size and level of development. For best practice, the following activities should have been carried out during the medium term:

- ✓ Implement the Market Rules and Grid Code;
- ✓ Complete the design of modalities of the reformed/unbundled electricity market;
- ✓ Define the transmission system model as well as the role of the transmission system operator;
- ✓ Define the Role of the System/Market Operator;

- ✓ Complete the design of the balancing market and define its role;
- ✓ Establish Centres of Excellence to support of capacity building.

On the continent, countries such as Ghana, Nigeria, Kenya and Uganda have made significant efforts to open-up the market and grant operational to permit third party access to the transmission network, and grant operational autonomy to the transmission system operator.

Table 4-4 Medium Term Actions – Creating an Enabling Environment

Activity	Actions Required	Key Actors
National Level		
Complete Market Opening Process	• Implement Market Rules • Implement design of appropriate market model • Enforce roles and responsibilities of each market participant • Define and implement the role of key players	• National Regulators • Power Utilities • Sector Ministry • Private Sector
Regional Level		
Support for Capacity Building Model Contracts	• Contact AfDB; • Contact other Development Partners • Identify Key areas of capacity: i. Infrastructure Regulation ii. System Operations iii. Project Finance v. Power Utility Operations • Implement model or standard contracts for regional projects;	• AUC • AFUR • Regional Power Pools • Regional Regulatory Authorities/Associations • AUC • AFUR • Regional Power Pools • Regional Regulatory Authorities/Associations • Private Sector
Continental Level		
Implement Capacity Building Programme	• Establish Centres of excellence; • Engage AfDB and other donor partners; • Ensure long-term financial; sustainability of the centres.	• AUC • AFUR • Regional Power pools • Regional Regulatory Associations

4.4 Enhancing Renewable Energy Frameworks

4.4.1 Actions required

a) National Level

- **Develop and adopt a National Renewable Energy Action Plan and related policies**

The countries with the aid of the framework that has been created at a REC level will have to develop and adopt a National Renewable Energy Action Plan and related policies. This means the

country has to detail its targets in relation to Renewable Energy, formulate the action plan and begin its implementation.

b) Regional Level

- **Develop and implement a monitoring framework at Regional level**

In order to follow up on the national activities and have reliable and accurate renewable energy information a framework for the monitoring has to be developed and implemented.

c) Continental Level

- **Develop and implement a RE monitoring framework at Continental level**

In order to have reliable data at Continental level a framework will be developed and implemented in cooperation with the RECs and Regional RE&EE centres.

Table 4-5 Medium Term Actions - Enhancing Renewable Energy Frameworks

Activity	Actions Required	Key Actors
National Level		
Develop and adopt a National Renewable Energy Action Plan and related policies	Based on the created frameworks at regional level the national NREAPs and NREPs are to be created	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available) • Regional RE & EE centre
Regional Level		
Develop and implement a RE monitoring framework at Regional level	A monitoring framework has to be implemented in order to facilitate the collection and analysis of accurate and reliable renewable energy information from the countries	• RE & EE centre • REC
Continental Level		
Develop and implement a monitoring framework at Continental level	A monitoring framework has to be implemented in order to facilitate the collection and analysis of accurate and reliable renewable energy information at Continental level	• AUC • AFREC • Regional RE & EE centres • RECs

4.4.2 Best Practices

ECREEE has developed the ECOWAS Observatory for Renewable Energy and Energy Efficiency (ECOWREX). ECOWREX provides decision makers, project developers, investors and other stakeholders with tailored information and planning strategies. It aims to boost knowledge management, networking, advocacy and strengthening of capacities on renewable energy and energy efficiency.

Similar activities are taking place by RCREEE for the Arab countries. RCREEE is publishing on a yearly basis, the Arab Future Energy Index (AFEX) for Renewable Energy.

4.5 Norms, Standards and Frameworks for Energy Efficiency

4.5.1 Actions required

a) National Level

- **Develop and adopt a National Energy Efficiency Action Plan (NEEAP)**

The countries with the aid of the framework that has been created at a REC level will have to develop and adopt a National Energy Efficiency Action Plan (NEEAP). This means the country has to detail its targets in relation to Energy Efficiency, formulate the action plan and begin its implementation.

- **Implement minimum performance standards and labelling for appliances**

This action essentially includes the implementation of the MEPS and Labelling schemes for appliances developed during the Initial Phase. The MEPS and Labelling scheme that have been developed need to be implemented in a national policy and finally in a corresponding legislation. One of the most critical decisions to be made at this point is to whether make the MEPS obligatory or voluntary, or design a roadmap with voluntary implementation in the beginning followed by obligatory implementation in a set time horizon. It is always productive to try to combine standards and labelling with other policy instruments as well as financing incentives. Usually a combination of regulations and market based programmes can lead to very positive results.

b) Regional Level

- **Develop and implement a monitoring framework at regional level**

In order to follow up on the national activities and have reliable and accurate energy efficiency information a framework for the monitoring has to be developed and implemented.

- **Harmonization of energy efficiency and labelling standards**

The harmonization of energy efficiency and labelling standards can pose significant benefits for the countries. The most important benefit identified worldwide is the decreased cost of compliance for industry, which can accelerate the replacement of older and less efficient appliances.

The three main categories for harmonization are:

- ✓ MEPS
- ✓ Testing Procedure

- **Labels**

Practice has shown that usually there are no major differences and harmonization can, thus, be facilitated in the short to medium term.

c) Continental Level

- **Develop and Implement an EE monitoring framework at Continental Level**

In order to have reliable data at Continental level a framework will be developed and implemented in cooperation with the RECs and Regional RE&EE centres.

Table 4-6 Medium Term Actions - Norms, Standards and Frameworks for Energy Efficiency

Activity	Actions Required	Key Actors
National Level		
• Develop and adopt a National Energy Efficiency Action Plan (NEEAP)	Based on the created frameworks at regional level the national NREAPs and NREPs	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available) • Regional RE & EE centre
• Implement minimum performance standards and labelling for appliances	This action essentially includes the implementation of the MEPS and Labelling schemes for appliances developed during the Initial Phase.	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available) • Regional RE & EE centre • Consumers
Regional Level		
• Develop and implement a monitoring framework at regional level	A monitoring framework has to be implemented in order to facilitate the collection and analysis of accurate and reliable energy efficiency information from the countries	• RE & EE centre • REC
• Harmonization of energy efficiency and labelling standards	Harmonization at REC level is accomplished with the aid of the regional RE and EE center	• RE & EE centre • REC
Continental Level		
• Develop and implement an EE monitoring framework at Continental level	A monitoring framework has to be implemented in order to facilitate the collection and analysis of accurate and reliable renewable energy information at Continental level	• AUC • AFREC • Regional RE & EE centres • RECs

4.5.2 Best Practices

ECREEE has developed the ECOWAS Observatory for Renewable Energy and Energy Efficiency known as ECOWREX. ECOWREX provides decision makers, project developers, investors and other stakeholders with tailored information and planning strategies. It aims to boost knowledge management, networking, advocacy and strengthening of capacities on renewable energy and energy efficiency.

Similar activities are taking place by RCREEE for the Arab countries. RCREEE is publishing each year the Arab Future Energy Index (AFEX) for Energy Efficiency.

5 Action Plan for Long Term

5.1 Economic Regulatory Framework

a) National Level

5.1.1 Actions Required

- **Operationalize Tariff Unbundling**

In the long term, the member countries should have completed the Cost of Service Tariff Study and implemented tariff unbundling, to bring more transparency into the tariff-setting process and ensure long-term financial sustainability of the sector. This should also include operationalizing unbundling of the distribution network tariff from the sale segment.

- **Update Tariff Methodology: Key Issues to be Addressed**

The update of the tariff methodology should address the following, among others:

- ✓ Developing pricing guidelines for ancillary services;
- ✓ Unbundling the transmission System Operator cost from the transmission network cost, to bring more transparency into transmission system tariff setting;
- ✓ Unbundle the System tariff into distribution network and sale segment tariffs,
- ✓ Quantify subsidies and cross – subsidies to ensure targeted administration to the poor and vulnerable electricity customers
- ✓ Implement Short Term Electricity Market (STEM); to bring more liquidity into the market and define the rules for operating the market.

- **Implement Performance Assessment and Monitoring Mechanism**

In addition to the core function of tariff-setting, regulators have a duty to ensure that the power utilities are operating efficiently, and that no inefficient costs are passed-through the tariff to end-user. During this phase of the harmonization process, the national regulators should implement Performance Assessment and Evaluation Mechanism. This would enable the regulator constantly monitor the utility's performance and enable the regulator to implement a performance-based tariff.

b) Regional Level

- **Full Power System Integration**

In order to achieve full power system integration in the long term, the following key activities or actions are required.

- ✓ Implementation of Market Rules;
- ✓ Development and implementation of standard contracts/PPAs;
- ✓ Development and implementation of harmonized transmission system tariff methodology;
- ✓ Operationalization of regional dispatch and coordination centre
- ✓ Ensure sustainability of the electricity market by procuring the necessary software and hardware
- ✓ Devise mechanisms for dealing with the financial transactions, such as the use of Financial Institutions as is currently done in SAPP.

- **Implement Projects to Facilitate Regional Power Trade**

As part of establishing a regional electricity market, it is imperative that a regional strategy is devised and implemented for the implementation of regional priority infrastructure projects. These are projects which form the grid "corridors" to allow continental power transfers. The strategy for implementing the projects should aim at incentivizing the private sector to participate in the financing of priority regional power projects.

c) Continental Level

The focus at the continental level would be for the AUC to monitor the progress of the power pools, and working in collaboration with AFUR, also monitor the performance of the national and regional regulators. Some of the actions required include:

- ✓ Implementation of performance review of regulators;
- ✓ Study of performance of power utilities on the continent;
- ✓ Coordinate regular meetings of regional regulatory authorities and associations,
- ✓ Coordinate meetings to discuss recommendations of the Market Monitoring and surveillance Unit
- ✓ Implement and monitor model contracts.

5.1.2 Best Practices

To ensure a consolidation of a robust economic regulatory framework, the following practices should guide the harmonization process:

- ✓ Need to implement the tariff reforms and rationalization process;
- ✓ Update the key tariff documents to bring more transparency into the tariff - setting process;
- ✓ Implement performance review and assessment process, for power utilities;
- ✓ Implement performance review of regional and national regulators
- ✓ Review the operation of regional electricity markets

Specific Actions required in the long-term are summarized in the Table below

Table 5-1 Long Term Actions - Economic Regulatory Framework

Activity	Action Required	Key Actors
National Level		
• Full Operationalization of Tariff Unbundling	• Implement separate tariffs for each segment of the ESI; • Unbundle transmission network cost from system operator cost; • Determine and implement cost reflective tariff for each customer class; • Determine and quantify the level of subsidies for tariff transparency, and identify sources of funding the subsidies.	• National Regulator • Power Utilities • Customers, • Private Sector including IPPs.
• Update/Revise Tariff Methodology	• Develop the ToR; • Update existing electricity tariff methodology to reflect changing market structure • Stakeholder consultation process • Approval by National Regulator	• National Regulator • Power Utilities • Customers • Private Sector
• Implement Performance Assessment and Monitoring Mechanism for operational efficiency	• Identify the Key Performance Indicators (KPIs) to be monitored; • Utilities to submit periodic performance reports to cover all areas of operations, as per the Performance Monitoring framework • Feedback to utility by the regulator	• National Regulator • Sector Ministry • Power Utilities • Customers, • Private Sector
Regional Level		
• Achieve full Power System Integration	• Implement the Market Rules; • Develop and implement of standard contracts/PPAs; • Develop and implement harmonized transmission system tariff methodology; • Operationalize regional dispatch and coordination centre for regional power integration and cross-border exchanges.	• Regional Regulatory Authority; • Power Pools and Member Utilities;
• Implement Projects to Facilitate Regional Power Trade • Implement Regional Control and Dispatch Centre	• Implement a strategy for implementing priority regional infrastructure projects; • Identify the priority projects for implementation • Install the necessary data centre hardware and software	• Regional Power Pools; • Regional Regulatory Authorities; • Member utilities of the Power Pools. • Power Pools
Continental		
• Monitor the progress of the power pools, and the performance of the national and regional regulators.	• Undertake performance review/assessment of power pools and regulatory authorities • Present the results to regulators • More regular consultative meetings with the regional regulatory Authorities and the Power Pools	• AUC; • AFUR; • Regional Regulatory Authorities and Associations; • Regional Power Pools.

5.2 Technical Regulatory Framework

5.2.1 Actions Required

a) National Level

At this stage, the focus is on consolidating the technical regulatory framework which was developed and implemented during the short and medium terms respectively. The actions required are:

- ✓ Full implementation and reinforcement of technical regulations through the Grid Code;
- ✓ Revision of the Grid Code to be consistent with prevailing market structure and cross – border trade responsibilities;
- ✓ Full Implementation of Quality of Service Regulation Guidelines;
- ✓ Implement Quality of Service Enforcement Regulations or Guidelines;
- ✓ Implement differentiated technical standards for rural electrification;
- ✓ Implement separate licensing regime for off - grid power system and for rural areas;

b) Regional Level

During this phase of the harmonization process, the key actions required under the technical regulatory framework are:

- ✓ Implement the System Operation Manual;
- ✓ Update/review the System Operation Manual;
- ✓ Ensure full operation of the dispatch and coordination centre;
- ✓ Establish and implement a synchronization project. This would ensure effective synchronization of the interconnected power systems, after commissioning of power projects.

c) Continental Level

The focus at the continental level is to ensure that the harmonized technical regulatory framework is working effectively. Some of the actions required to achieve this that include:

- ✓ Coordinating regular meetings by the AUC of the power pools and monitor market integration and power pools
- ✓ Coordinating regular technical meeting by the AUC of the Market Monitoring and Surveillance Unit of the power pools;
- ✓ Ensure implementation of priority projects to facilitate regional and continental power transfers;
- ✓ Monitor and ensure properly operation of the Centres of Excellence, and support for their long-term financial and technical sustainability

5.2.2 Best Practices

The actions which would enhance the achievement of the harmonization agenda is to institute an effective Monitoring and Evaluation Framework to ensure that all the set objectives and key actions for each of the pillars of regulatory harmonization achieved . The following constitutes the key performance Indicators (KPIs) for measuring the progress at the long-term phase of the harmonization process.

- ✓ Strengthening of economic and technical regulatory frameworks (National and regional) for market integration
- ✓ Enhancing Renewable Energy and Energy Efficiency framework;
- ✓ Creating a conducive an enabling electricity market to attract investment;
- ✓ Establishment at least four Centres of Excellence to build the regulatory and technical capacity on the continent.

Table 5-2 Long Term Actions – Technical Regulatory Framework

Activity	Action Required	Key Actors
National Level		
• Grid Code Implementation	• Implementation and reinforcement of technical regulations through Grid Code • Revision of Grid Code to reflect market structure	• National Regulators • Power Utilities • Stakeholders
• Quality of Service Regulation Implementation	• Implement QoS Regulations • Revise QoS Regulations • Implement QoS Enforcement Guidelines	• National Regulator • Power Utilities • Stakeholders
• Rural Electrification Guidelines	• Implement separate licensing regime for rural electrification and off-grid systems • Implement different technical standards for rural electrification and off-grid systems • Implement RE technical connection code	• National Regulator • Power Utility • Stakeholder • Sector Ministry or Policy Maker
Regional Level		
• Implement Technical Manuals	• Implement System Operations Manual • Update system operation Manual • Full operation of system control and dispatch centre • Implement synchronization project	• Power Pools • Regional Regulatory Authorities • Member Utilities
Continental Level:		
• Continuous monitoring for market integration	• Monitor progress of market integration • Ensure effective operation of Market surveillance Unit • Ensure implementation of priority infrastructure projects • Monitor operation of Centres of Excellence • Monitor regulatory performance of national and regional regulators	• AUC • AFUR • Power Pools • Regional Regulatory Authorities and Associations

5.3 Enabling Environment

5.3.1 Actions Required

a) National Level

In order to ensure a conducive and an enabling environment which will incentivize private sector investment, the following actions are required:

- **Implementation of the electricity market governance documents comprising:**

✓ Market Rules, which govern the commercial aspects of the market;
✓ Grid Code which establishes the technical requirements for interconnection of the power system;

ii. The design of the electricity market and preparation of the roadmap for transiting to the appropriate market model.

iii. Build capacity in the regulatory authority and power utilities in the following areas:

✓ Market Models and the design principles;
✓ Economic merit order dispatch in electricity markets;
✓ Effective implementation of the Market Rules and Grid Code;

b) Regional Level

The main activities which are required to establish an enabling environment at the regional level are those which are key to establishing the market.

✓ Implementation of harmonized market rules;
✓ Implementation of harmonized Grid Codes, technical operations manual and codes of practice for system operators;
✓ Implementation of harmonized transmission system pricing rules, and principles for wheeling charges;
✓ Implementation of a regional strategy for implementation of priority regional infrastructure projects;

c) Continental Level

At the continental level, the actions required to ensure a long-term sustainability of the gains achieved in the short and medium terms are:

✓ Provide support to the regional power pools, and help to secure funding for the key regional projects to provide the "corridor" for regional power trade;
✓ Continue to provide support to the regional power pools, the regional and national regulatory authorities, and regional regulatory associations;

- ✓ Support the Centres of Excellence created during the medium term, to ensure their long term technical and financial sustainability.

5.3.2 Best Practices

The best practice actions require that all main market governance documents are fully implemented. The technical manuals, grid codes, market rules and tariff methodology could be revised to be consistent with the evolving market structure.

Table 5-3 Long Term Actions – Enabling Environment

Activity	Action Required	Key Actors
National Level		
• Implementation of Market Governance Documents	• Implement the Market Rules which has been developed • Implement the Grid Code which has been developed • Revise Market Rules and Grid Code • Complete design of electricity market structure and transit to appropriate model; • Operational autonomy for transmission system operator • Capacity Building for regulatory authority and power utilities	• National Regulator • Sector Ministry or Policy Maker • Power Utilities • Private Sector
Regional Level		
• Establish a regional and integrated electricity market	• Implement harmonized market rules which were developed during the short term • Implement harmonized grid code, system operation manual and codes of practice which has been developed • Implement harmonized transmission system methodology and pricing principles for wheeling charges which was developed during the short term • Implement strategy for implementation of regional power infrastructure projects	• Regional Power Pools • Regional Regulatory Authorities and Associations • Member power Utilities • Private Sector
Continental Level		
• Provide support for long-term sustainability of regional market integration	• Support to the regional power pools with implementation of priority infrastructure projects • Support to AFUR and regional regulatory authorities and associations; • Support and coordinate regular meetings of power pools • Ensure long – term sustainability of Centres of Excellence • Monitor implementation of market governance documents	• AUC • AFUR • Regional Regulatory Authorities and Associations • Power Pools

5.2 Enhancing Renewable Energy Frameworks

5.3.3 Actions Required

a) National Level

- **Monitor the progress and update the National Renewable Energy Action Plan and related policies**

The NREAPs ought to be seen as a live document subject to constant updating as progress is made along the developed roadmap. Monitoring of the progress is needed in order to collect reliable data with which the updating can take place.

- **Enhance the penetration RE technology for electricity generation**

Ambitious, full-scale roll-out of nationally determined policies, programmes and incentives as initiated under Phase I. Continuous project identifications, assessments and revisions for further scaling up to at least 300 GW new and additional generation capacity of renewable energy at continental level.

b) Regional Level

- **Monitor the progress and update the Renewable Energy Policy at REC level**

In the same manner as the national NREAPs need to be updated, the REC policy also has to be updated in order to reflect the new formed reality.

c) Continental Level

- **Update Renewable Energy targets**

Based on the achieved results the African Union will set the targets for the future in relation to Renewable Energy.

Table 5-4 Long Term Actions - Enhancing Renewable Energy Frameworks

Activity	Actions Required	Key Actors
National Level		
a) Monitor the progress and update the National Renewable Energy Action Plan and related policies	• Monitoring and updating of the NREAPs	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available)
b) Enhance the penetration RE technology for electricity generation	• Ambitious, full-scale roll-out of nationally determined policies, programmes	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities

Activity	Actions Required	Key Actors
	• and incentives as initiated under • Phase I.	• Renewable Energy Agency (if available) • Private Sector
Regional Level		
Monitor the progress and update the Renewable Energy Policy at REC level	• Monitoring and updating of the REC Renewable Energy Policy	• REC • RE & EE centre • Regional Regulators Association • Power Pool
Continental Level		
Update Renewable Energy targets	• Set new targets for the African Union	• AUC • AFREC • NEPAD • AFUR • APUA

5.4 Norms, standards and frameworks for energy efficiency

5.4.1 Actions Required

a) National Level

- **Monitor the progress and update the National Energy Efficiency Action Plan**

The NEEAPs ought to be seen as a live document subject to constant updating as progress is made along the developed roadmap. Monitoring of the progress is needed in order to collect reliable data with which the updating can take place.

b) Regional Level

- **Monitor the progress and update the Energy Efficiency Policy at REC level**

In the same manner as the national NEEAPs need to be updated, the REC policy also has to be updated in order to reflect the new formed reality.

c) Continental Level

- **Update Energy Efficiency targets**

Based on the achieved results the African Union will set the targets for the future in relation to Renewable Energy.

Table 5-5 Long Term Actions - Enhancing Renewable Energy Frameworks

Activity	Actions Required	Key Actors
National Level		
Monitor the progress and update the National Energy Efficiency Action Plan	• Monitoring and updating of the NEEAPs	• Sector Minister or Policy Maker • Regulatory Authority • Power Utilities • Renewable Energy Agency (if available)
Regional Level		
Monitor the progress and update the Energy Efficiency Policy at REC level	• Monitoring and updating of the REC Energy Efficiency Policy	• REC • RE & EE centre • Regional Regulators Association • Power Pool
Continental Level		
Update Energy Efficiency targets	• Set new targets for the African Union	• AUC • AFREC • NEPAD • AFUR • APUA

6 Required Resources

6.1 Criteria for Selection of Programme

In order to prioritize the programmes for implementation, it is important to set the criteria for the screening process. This has been done using a qualitative analysis through the following three-step approach:

Step 1: Identification of the criteria for selection;

Step 2: Screening Analysis to prioritize the programmes;

Step 3: Implementation plan and cost involved.

6.1.1 Step 1: Identification of Selection Criteria for Programme

The selection criteria used for screening the programmes for implementation as "pilot projects" are as follows: Whether the programme:

- ✓ Contributes directly to strengthening of regulatory framework both at the national and regional levels, and regulatory framework harmonization;
- ✓ Contributes to regional market integration;
- ✓ Contributes to market opening;
- ✓ Contributes to quality of supply;
- ✓ Enhances accessibility to electricity;
- ✓ Contributes to sustained energy development;
- ✓ Programme is actionable, considering the length of project realization.

In order for a programme to be selected and considered for implementation a "pilot project", it must attain a *minimum threshold mark of 6*, when measured against the selection criteria, as shown below in In tables 6-1 to 6-10. In the tables, a programme under a harmonization pillar, is awarded a mark of 1.0 if it has a direct impact on a selection criteria element, a mark of 0.0 is awarded if the programme has no impact, while a mark of 0.5 is awarded if the programme has an indirect impact.

a) Screening Analysis – Short Term

Table 6-1 Screening Analysis – Economic Regulatory Framework

Pillar: Economic Regulatory Framework	Regulatory Framework Strengthening	Market Integration	Market Opening Up	QoS Improvement	Improve Access	Sust. Energy Development	Length of Progr.	Total
National								
a) Establishment of a National Regulator	1	1	1	1	1	1	1	**7**
b) Tariffs Reforms: Developing Tariff Methodology, Cost of Service Study, Cost Reflective Tariffs	1	1	1	1	1	1	1	**7**
Regional Level								
a) Develop and operationalize Regional Regulatory Authority	1	1	1	1	1	1	1	**7**
b) Harmonized Transmission System Pricing Methodology, wheeling charges	1	1	1	1	1	1	1	**7**
c) Regional Coordination and dispatch center	0.5	1	1	1	1	1	1	**6.5**
Continental								
a) Regulatory Performance Review	1	1	1	1	1	1	1	**7**
b) Monitoring and surveillance of Power Pools	1	1	1	1	1	1		**6**

Table 6-2 Screening Analysis – Technical Regulatory Framework

Harmonization Pillar: Technical Regulatory Framework	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust Energy Dev.	Length of Progr.	Total
National								
Develop licensing framework for smaller plants	1		1	1	1	1	1	**6**
a) Grid Code Development	1	1	1	1	1	1	1	**7**
b) Rural Electrification Standards	1		1	1	1	1	1	**6**
c) QoS Regulations and Enforcement	1		1	1	1	1	1	**6**
Regional Level								
Develop Harmonized Operations Manual and Codes of Practice	1	1	1	1	1	1	1	**7**
Continental Level								
Monitoring and Evaluation of Power Pools	1	1	1	1	1	1	1	**7**

Table 6-3 Screening Analysis – Creating an Enabling Environment

Harmonization Pillar: Enabling Environment	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust Energy Dev.	Length of Progr.	Total
National Level								
a) Implement the Market Rules for the commercial regulations	1	1	1	1	1	1	1	7
b) Implement a Roadmap for Market Model	1	1	1		1	1	1	6
Continental								
a) Coordinate regulator meetings	1	1	1	1		1	1	6

Harmonization Pillar: Enabling Environment	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust Energy Dev.	Length of Progr.	Total
b) Technical Assistance to Develop Centres of Excellence	1	1	1	1	1	1	1	7

Table 6-4 Screening Analysis – Enhancing RE Frameworks

Harmonization Pillar: Enhancing RE Frameworks	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust Energy Dev.	Length of Progr.	Total
Strengthen RE Agencies	1	1		1	1	1	1	**6**

Table 6-5 Screening Analysis – Norms, Standards and Frameworks for EE

Harmonization Pillar.EE Framework	Regulatory Framework Strengthening	Mkt. Integration	Mkt. Opening	QoS Improve	Improve Access	Sust Energy Dev.	Length of Program.	Total
National								
a) Develop Minimum Performance Standards and Labelling	1	1	1	1	1	1	1	**7**
b) Develop DSM Monitoring Guidelines and Standards	1	1		1	1	1	1	**6**
Regional Level								
Harmonization of EE and Labelling Standards	1	1	1	1	1	1	1	**7**

b) Screening Analysis: Medium Term

Table 6-6 Screening Analysis – Economic Regulatory Framework

Pillar: Econ. Regulatory Framework	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improv.	Improve Access	Sust. Energy Dev.	Length of Progr.	Total
National								
a) Full operationalization of national regulator	1	1	1	1	1	1	1	**7**
b) Implement all Feed – In Tariff systems for grid connected mini – grid and stand – alone systems	1		1	1	1	1	1	**6**
Regional Level								
a) Implement Harmonized Transmission Tariff Methodology and Wheeling charge	1	1	1		1	1	1	**6**
b) Operationalize Regional Regulatory Authorities	1	1	1	1	1	1	1	**7**
c) Implement Standard Contracts	1	1	1		1	1	1	**6**
Continental Level								
a) Monitoring Progress of Market Integration and Power Pools	1	1	1	1	1		1	**6**
b) Continue with regulatory performance review	1	1	1	1	1	1	1	**7**

Table 6-7 Screening Analysis – Technical Regulatory Framework

Pillar: Technical Regulatory Framework	Regulatory Framework Strengthening	Market Integr.	Market Opening	QoS Improv.	Improve Access	Sust. Energy Dev	Length of Progr.	Total
National Level								
• Implement Grid Code	1	1	1	1	1	1	1	**7**
• Implement RE Guidelines and Streamlined licensing regime	1		1	1	1	1	1	**6**
• RE Connection Code	1		1	1	1	1	1	**6**
Regional Level								
• Implement Technical Operations Manual and Codes of Practice	1	1	1	1	1	1	1	**7**
• Operationalize Regional coordination Centres	1	1	1	1	1	1	1	**7**
• Develop a strategy for implementing priority infrastructure projects		1	1	1	1	1	1	**6**
Continental Level								
Continue Monitoring progress of power Pools and market integration	1	1	1	1	1	1	1	**7**

Table 6-8 Screening Analysis – Creating an Enabling Environment

Harmonization Pillar: Enabling Environment	Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust. Energy Develop.	Length of Progr.	Total
National Level								
Complete Market Opening Process and implement. Also Define the roles of market participants		1	1	1	1	1	1	**6**
Regional Level								
Support for Centres of Excellence for capacity building	1	1	1	1	1	1	1	**7**
Continental								
Ensure long – term sustainability of centres of excellence	1	1	1	1	1	1	1	**7**

Table 6-9 Screening Analysis – Norms, Standards and Frameworks for EE

Harmonization Pillar: Frameworks for EE	Regulatory Framework Strengthening	Market Integration	Mkt. Opening	QoS Improve.	Improve Access	Sust. Energy	Length of Program.	Total
Implement the minimum performance standards and labelling for appliances	1	1		1	1	1	1	**6**

c) Screening Analysis – Long Term

Table 6-10 Screening Analysis – Long Term

Harmonization Pillar		Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust. Energy Development	Length of Program.	Total
Economic Regulatory Framework									
National Level	a) Implement Tariff Unbundling	1	1	1	1	1	1	1	7
	b) Update tariff methodology	1	1	1	1	1	1	1	7
	c) Implement Performance Monitoring and Assessment of power utilities	1	1		1	1	1	1	6
Regional Level	a) Revision of Market Rules	1	1	1	1	1	1	1	7
	b) Implement dispatch and coordination centres	1	1	1	1	1	1	1	7
Continental Level	a) Performance and review of regulators	1	1	1	1	1	1	1	7
	b) Coordinate regular meetings of regional regulators and power pools	1	1	1	1	1	1	1	7
Technical Regulatory Framework									
National	a) Quality of service Regulation and Enforcement	1	1		1	1	1	1	6
	b) Revise Grid Code	1	1	1	1	1	1	1	7

Harmonization Pillar		Regulatory Framework Strengthening	Market Integration	Market Opening	QoS Improvement	Improve Access	Sust. Energy Development	Length of Program.	Total
Regional Level	a) Operationalize system control or dispatch	1	1	1	1	1	1	1	**7**
Continental Level	a) Effective monitoring of progress of power pools and integrations	1	1	1	1	1	1	1	**7**
	b) Performance monitoring of regulators	1	1	1	1	1	1	1	**7**
	c) Monitoring Progress of Centres of Excellence	1	1	1	1	1	1	1	**7**
Enabling Environment									
National Level	a) Ensure operational autonomy of transmission operator	1	1	1	1	1	1	1	**7**
Regional and Continental Levels	b) Strategy for Implementation of priority infrastructure projects	1	1	1	1	1	1	1	**7**

6.2 Cost of Implementation

The results of the screening analysis have been used to select priority programmes for implementation as pilot projects. The cost estimates for implementing the selected programmes are based on similar studies carried out by the African Development Bank in other African countries and for some power pools[8]. The *estimated or indicative* funding requirements for the actionable programmes for implementation in at least five countries in five RECs, for the short, medium and long terms, are provided below and these cover the five pillars of regulatory harmonization at the national, regional and continental levels.

6.2.1 Short Term

Table 6-11 Implementation Cost - Economic Regulatory Framework

Level	Actionable Programmes	Amount (Euros)
National:	• Establish a National Regulator • Tariffs Reforms: ✓ Accounting Separation ✓ Cost of Service Study, ✓ Cost of Service tariff determination ✓ Determination of unbundled tariff for each segment of the ESI. ✓ Ancillary Services Pricing	750,000 1,000,000
Regional:	• Develop and Operationalize a regional Regulatory Authority for 3 power pools • Develop Harmonized Transmission System Pricing Methodology and wheeling charges for 4 power pools • Support to power pools to operationalize a regional coordination and dispatch centre for ***4 power pools***. Excludes the construction of building for the system control centre, ***but includes data centre hardware and software, control centre data link, telecommunications, tools and test equipment, power network stabilization equipment. Also includes capacity building for staff of dispatch and system control centre.***	600,000 1,600,000 200,000,000 (50,000,000 per power pool)
Continental:	• Regulatory Performance Review, including power pools progress monitoring through regular meetings	600,000
Total	**Includes "software" cost of dispatch centre**	**204,550,000**
Total	**Excludes cost of dispatch centre**	**4,550,000**

[8] "Energy Sector Capacity Building Diagnostic and Needs Assessment Study, Volume 2" (2013). Prepared as part of the Power Sector Soft Infrastructure Programme (POSSIP). Also, the document tilted "Rwanda Energy Sector Review and Action Plan" (2013). Also see Business Plan 2012-2015 document for the West African Power Pool (WAPP).

Table 6-12 Implementation Cost - Technical Regulatory Framework

Level	Actionable Programmes	Amount (Euros)
National:	• Grid Code Development • Streamline licensing framework and develop Rural Electrification Standards • Develop Quality of Service Regulations and Enforcement Guidelines	600,000 320,000 240,000
Regional:	• Develop Harmonized Operations Manual and codes of Practice for System Operators for 3 power pools	1,200,000
Continental:	• Monitoring and Evaluation of Power Pools	200,000
Total		**2,560,000**

Table 6-13 Implementation Cost - Creating an Enabling Environment

Level	Actionable Programmes	Amount (Euros)
National:	• Develop the Market Rules • Develop a Roadmap for market structure reforms	1,500,000 250,000
Continental:	• Develop 5 Centres of Excellence, one in each sub – region	7,000,000
Total		**8,750,000**

Table 6-14 Implementation Cost – Norms, Standards and Framework for Energy Efficiency

Level	Actionable Programmes	Amount (Euros)
National:	• Develop Minimum performance standards and Labelling for Appliances • Develop DSM Monitoring Guidelines and Standards	500,000 500,000
Total		**1,000,000**

6.2.2 Medium Term

Table 6-15 Implementation Cost - Economic Regulatory Framework

Level	Actionable Programmes	Amount in Euros
National:	Full operationalization of national regulator. All regulatory documents developed and implemented, including operationalizing tariff reforms. Also, full complement of staff in place.	1,000,000
Regional:	• Implementation of harmonized transmission tariff methodology and wheeling charges • Full operationalization of regional regulatory Authority, with full complement of staff, for 4 regional regulatory authorities. All key regulatory documents developed	800,000 800,000
Continental:	• Regulatory performance review • Review of progress of market integration and power pools	200,000 200,000
Total		3,000,000

Table 6-16 Implementation Cost - Technical Regulatory Framework

Level	Actionable Programmes	Amount (Euros)
National:	• Grid Code implementation • Implementation of RE Connection Code	200,000 200,000
Regional:	• Implement Technical Operations Manual and Codes of Practice for 4 power pools • Operationalize Regional Dispatch and Coordination Centres for 4 power pools • Implement Strategy for implementation of priority infrastructure projects	200,000 1,000,000 500,000
Total		2,100,000

Table 6-17 Implementation Cost - Creating an Enabling Environment

Level	Actionable Programmes	Amount (Euros)
National:	• Implement Market Rules developed during the Short – term. Define roles of market participants	50,000
Regional and Continental	• Implement Centres of Excellence concept for long – term sustainability. • Implement Standard Contracts	250,000 320,000
Total		620,000

Table 6-18 Implementation Cost - Norms, Standards and Framework for Energy Efficiency

Level	Actionable Programmes	Amount (Euros)
National:	• Implement minimum performance standards and labelling for appliances	500,000
Regional:	• Implement Harmonization of energy efficiency and labelling standards	500,000
Total		1,000,000

6.2.3 Long Term

Table 6-19 Implementation Cost - Economic Regulatory Framework

Level	Actionable Programmes	Amount (Euros)
National:	• Revise/update tariff methodology • Implement Performance Monitoring Programme • Implement Market Rules	250,000 200,000 250,000
Regional:	• Update Market Rules	250,000
Continental:	• Performance monitoring programme of regulators • Progress monitoring of power pools and market integration • Monitoring Centres of Excellence	250,000 100,00 100,000
Total		1,400,000

Table 6-20 Implementation Cost - Technical Regulatory Framework

Level	Actionable Programme	Amount (Euros)
National:	• Quality of Service Regulations Enforcement • Update Grid Code	250,000 250,000
Regional	• Operationalize regional dispatch and coordination centres for 4 power pools	400,000
Continental	• Monitor progress of market integration • Monitor progress of Centres of Excellence	100,000 50,000
Total		1,050,000

Table 6-21 provides a summary of the cost implications of the actionable programmes.

Table 6-21 Summary of Estimated Cost Implications of Programme Implementation

Period	Harmonization Pillar	Cost (Euros)- Includes "software" cost of dispatch centre – Scenario 1	Cost (Euros)- Excludes "software" cost of dispatch centre – Scenario 2
Short Term	• Economic Regulation Framework • Technical Regulation Framework • Enabling Environment • Framework for EE	204,550,000 2,560,000 8,750,000 1,000,000	4,550,000 2,560,000 8,750,000 1,000,000
Sub-Total		**216,860,000**	**16,860,000**
Medium Term	• Economic Regulation Framework • Technical Regulation Framework • Enabling Environment • Framework for RE	3,000,000 2,100,000 620,000 1,000,000	3,000,000,000 2,100,000 620,000 1,000,000
Sub-Total		**6,720,000**	**6,720,000**
Long Term	• Economic Regulation Framework • Technical Regulation Framework	1,400,000 1,050,000	1,400,000 1,050,000
Sub-Total		**2,450,000**	**2,450,000**
Grand Total		**226,030,000**	**26,030,000**

6.2.4 Financing Activities: Role of Governments and Development Partners

The Action Plan would require a lot of funding as shown above in Table 6-21, and also present some challenges in the areas of project finance, implementation and monitoring. Even though most governments would want to take the lead in implementing the national infrastructure projects, the implementation of the Action plan would require a joint collaboration involving the government, development partners and the private sector.

Most of the investments in the national programmes are likely to be financed by governments with support from the development partners. Both the governments and the development partners would have to put in place strategies to mobilize private sector investment at the national level. This would require creating a conducive and enabling electricity market environment including, reducing risks related to project development, and bringing more transparency and confidence to the tariff-setting process. In others words, a robust regulatory framework would have to co-exist with all the key elements required for creating an enabling environment, including political and economic stability. At the country level, there is therefore the need to reduce the regulatory risk and political risks. The latter can be mitigated through:

- Government guarantees of utility's obligation under a PPA;
- Insurance of investor equity by a reputable international agency;
- Guarantee by the World Bank and/or the AfDB of repayment obligations of the private project entity to its lenders.

The use of Guarantees has recently been used in Kenya to leverage private sector investment for the Menengai Geothermal Project, through the use Partial Risk Guarantee (PRG). That is a good example of how governments can collaborate with the private sector to catalyze private sector investment.

On the role of the private sector in the financing of the action plan programmes, this would require that the private sector mobilizes support from commercial sources, and this would certainly involve debt and equity finance. At the regional level, key infrastructure projects need to be implemented to create grid "corridors" to support regional trade. This can be achieved by using Project Finance where a special project company can be established to finance, and construct the infrastructure under PPP. The PPP approach could thus be used to address the low regional self – financing capacity of power pools.

This model has been used in WAPP to finance some priority infrastructure projects. The implementation of this approach would however require the development and implementation of the following documents:

a. Treaty to be executed by the countries affected by the infrastructure project;
b. Shareholders Agreement and International Project Agreement;
c. Power Purchase Agreement;
d. Transmission Service Agreement.

As part of mobilizing financing for the Action Plan, governments or power utility owners could consider listing the power companies on the stick exchange to help raise the needed capital for capital expansion.

7 Implementation

7.1 Implementation Actors per Action

- **AUC**

The AUC's mandate includes among others, developing the AU Energy Policy, and Coordinating activities for establishment of a continental energy market, and harmonization of the legal and regulatory framework. One of the key factors which drive the successful establishment of regional power pools is the extent to which the various countries and their transmission system operators, are able to define a common legal and regulatory framework, towards achieving a robust harmonized regulatory framework. This coordination role for achieving the harmonized framework could be under the purview of the AUC. The core building blocks which must be present before continental harmonization can take place, based on best industry practice, involves the preparation, negotiation and adoption of the following key documents.

- ✓ **Intergovernmental Memorandum of Understanding:** This document grants permission for the member utilities to make a contract and provide guarantees arising from an interconnection contract. This includes guarantees to deal with currency risk, binding arbitration and applicable law.
- ✓ **Inter-utility Memorandum of Understanding:** This MOU is signed among the participating national power utilities, and it defines ownership of assets and other rights such as the principles to be followed to establish and enforce rules of practice related to technical planning and operation, as well as the commercial aspects of the regional power integration.

- **AFUR**

AFUR was established to promote regulatory harmonization on the continent, and encourage the application of sound, robust and transparent regulatory principles. Specifically, AFUR aims to achieve the following objectives, among others:

- ✓ Provide a forum for the exchange of information and ideas among members and other relevant organizations;
- ✓ Work with international donors to influence international decision making to catalyze continental energy integration;
- ✓ Provide the platform for building regulatory capacity among members.

There is no doubt that AFUR has an important role to play by deepening its collaboration with the NEPAD and national regulators and the regional regulatory authorities, to develop principles of best practice regulation and monitor the level of performance by the regulators.. AFUR also has a role to play to build the human capacity of regulators on the continent. AFUR has been doing this by organizing short – term executive training programmes on special topics. Currently, AFUR is working in collaboration with NEPAD to deepen its efforts to build the regulatory capacity on the continent, through establishment of the African Centre of Excellence in Infrastructure Regulation.

Additionally, AFUR could also work in collaboration with the AUC to implement the periodic regulatory performance review mechanism, to measure the level of progress being made by various countries to move towards achieving "best" practice regulation.

- **APUA**

APUA's main objectives include among others, the need to promote the development and integration of Africa's power system through interconnections and regional market integration. APUA also aims to enhance the electricity accessibility of countries on the continent, promote the exchange of experience and knowledge, as well as build the capacity of its members.

Regarding the implementation of the Action Plan, APUA can work to coordinate the forum of the African regional pools, by working in close collaboration with the African Energy Commission and the AUC.

- **Regional Regulatory Authorities.**

The role of the Regional Regulatory Authorities is crucial for achieving a harmonized regulatory framework. The Regional Regulator is required to work in collaboration with the regional power pools to develop and implement the harmonized market rules, to be adhered to by all the inter-connected member utilities. The Market Rules are the "Commercial Rules of Practice" which achieve the following:

- ✓ Define the commercial framework within which energy exchanges are conducted;
- ✓ Provide the harmonized pricing principles;
- ✓ Oversee and settle transaction;
- ✓ Ensure the enforcement of technical standards for metering;
- ✓ Deal with dispute resolution procedures.

The Regional Regulatory is also required to work with the regional power pool to develop and implement the transmission system pricing, including harmonized pricing of wheeling charges and allocation of cost of losses, incurred through wheeling. Additionally, the regional regulator would be required to work with the power pools to develop and implement the harmonized rules and Technical standards.

- **Regional Power Pools**

The operation of interconnections implies that disturbances in any of the constituent grids can affect the whole interconnected power system. It is therefore imperative that clear, transparent and harmonized set of technical "Operation Rules of Practice" are developed and implemented by the Power Pools, working in collaboration with the regional regulatory authorities and the member utilities. These Rules of Practice should at least cover the following:

- ✓ Operation of inter – connections;
- ✓ Coordination of maintenance;
- ✓ Ensuring that supply and demand are in equilibrium;
- ✓ Determining and allocating losses

The regional power pools are also required to acquire the needed hardware and software to enable them implement both bilateral and multilateral electricity exchanges at the regional dispatch and coordination centre. The acquisition of the software and hardware would ensure that the individual national power grids would be able to operate as one inter-connected system, based on a common operational and commercial platform, to facilitate the exchange of energy across borders.

They are also required to build the "Soft" capacity of system operators by working with the AUC to establish regional Centres of Excellence to offer System Operator's courses.

- **National Power Utilities**

Within the framework of the continental harmonization agenda, the transmission system operators of the member power utilities would have to work with the power pools, to identify the potential cross-border inter-connection projects vis-a-vis the national and regional least- cost power expansion plans, within the short, medium and long-terms. In order to achieve this, the following system planning tasks must be undertaken:

- ✓ Transmission System Market Plan;
- ✓ Power dispatch system plan ;
- ✓ Evaluation of existing SCADA and associated telecommunication facilities, for replacement and/or enhancement;
- ✓ Planning and coordinating the development of the interconnected system

- **National Regulatory Authority/Commission**

The national Regulatory Authority is the "policy implementer", and is therefore responsible for implementing the government policies, as spelt out in the Electricity Law and/or the Regulatory Act, by working in collaboration with the sector Ministry, the power utilities and key stakeholders. The role of the national regulator includes:

- ✓ Developing a transparent and credible tariff – setting regime which would contribute towards creating a conducive and an enabling electricity market to catalyze private sector investment;
- ✓ Put in place mechanisms to enhance the operational and technical performance of the power utilities;
- ✓ Ensure the long-term financial sustainability and commercial viability of the power utilities; through transparent and cost reflective tariffs;
- ✓ Put in the necessary regulatory mechanisms to improve access to electricity;

- **Sector Ministry**

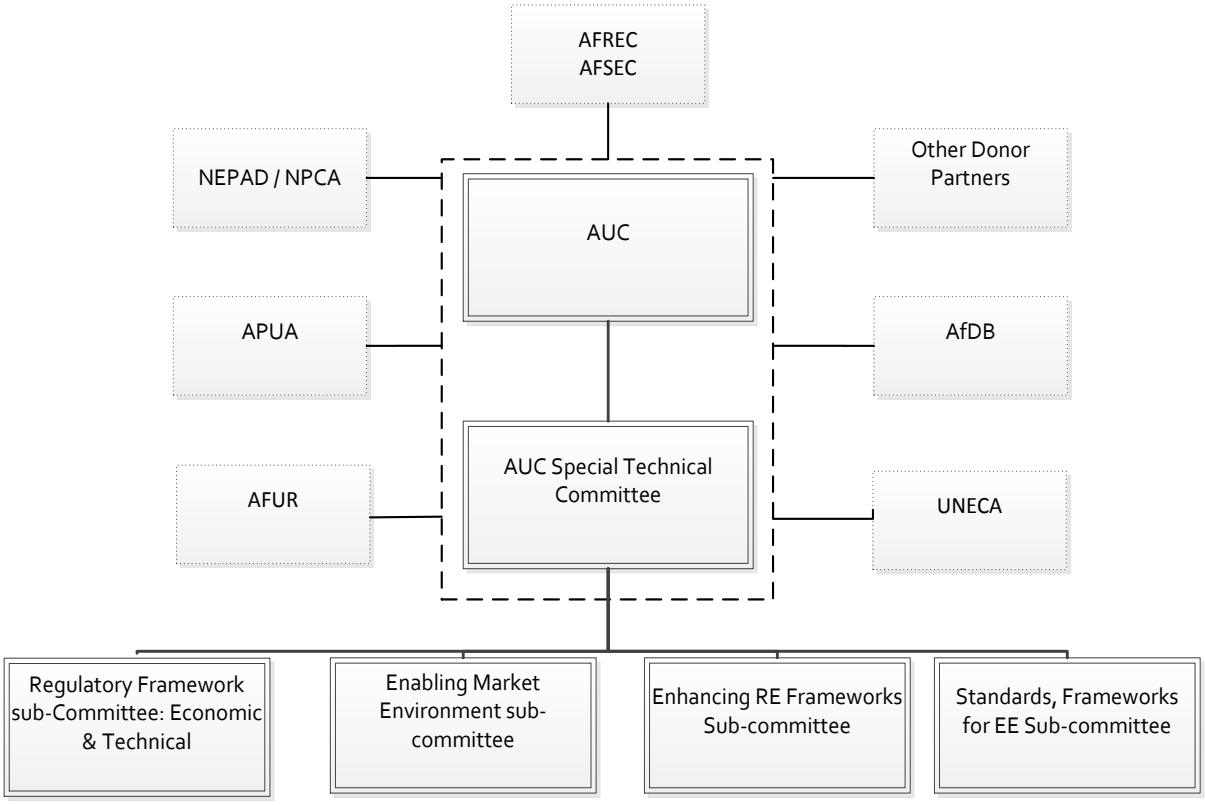
The Sector Ministry is the "Policy Maker", which translates government mission and objectives for the energy sector, into a National Energy Policy. The policy covers various areas including the regulatory framework, the power utilities, the market structure to promote entry of IPPs, and measures to enhance the scope and diffusion of RE and EE technologies. In order to attain the objectives spelt out in the Energy Policy, the Sector Ministry is required to work in collaboration with all the stakeholders, including the regulator, the power utilities, development partners, the private sector and the stakeholders.

7.2 Coordination, Governance, Monitoring and Evaluation Frameworks

In accordance with its mandate, a coordinating unit could be established within the AUC to monitor and evaluate the progress of the programmes and actions. The monitoring and evaluation framework could be designed as a two tier structure. Tier 1 would involve a close collaboration and regular consultative meeting between AUC's coordinating unit and key Pan – African institutions and the donor partners. The second tier (i.e. Tier 2) can be described as a "Technical Level", where the progress of the various actions plans are evaluated and any bottlenecks identified. The tier 2 level could comprise sub – committees to deal with issues relating to the main pillars of the continental harmonization process at the national, and regional levels.

The Monitoring and Evaluation (M&E) framework is also expected to bring about transparent communication of progress made at each level, ensure accountability and also serve as a platform for providing an adaptive feedback process. The results emanating from the tier 2 meetings would be discussed at the Tier 1 level and communicated with all stakeholders. The evaluation of the programme outcomes, would also describe what actions or measures must be undertaken by the key implementing actors. The proposed coordinating and governance structure is depicted in Figure 7-1 below.

Figure 7-1 Coordination and Governance structure



8 Conclusions, Recommendations and Ranking of Priorities

This study rests on other previous work's argument that one of the means to alleviate the situation of energy accessibility in Africa is achieving a regional electricity market integration through the development of a regional and continental energy infrastructure and market, that in turn calls for harmonization of policies, legislation, regulatory and institutional frameworks at the regional and continental levels, to facilitate greater coordination and cooperation. The summary document on "Strategy for the Development of a Harmonized Regulatory Framework" identified *five pillars*, around which the regulatory harmonization process revolve and therefore the conclusions, at the national, regional and continental levels as:

- Creating a robust Economic Regulatory Framework;
- Establishing a solid Technical Regulatory Framework;
- Creating an Enabling Electricity Market;
- Enhancing Renewable Energy Framework;
- Establishing the norms, standards and frameworks for energy efficiency

Regarding the establishment of a robust regulatory framework, the study argues that the stronger the legal mandate that established the regulator, the more credible and sustainable would be the regulatory framework. In order to ensure the creation of a robust regulatory authority, a necessary prerequisite should be a primary law, which fully articulates the regulators jurisdictional authority, power, responsibilities and duties. A credible regulatory framework must be designed to meet the following two dimensions: Regulatory Governance which refers to the institutional and legal design of the regulatory system; and Regulatory Substance that refers to the regulatory content or the actual decisions made by the regulatory Authority. This implies that in practice, a credible regulatory framework should be independent and meet the minimum requirements of organizational, financial and operational independence.

The report also makes a case that a good technical regulatory environment is required for harmonization of technical rules and standards to promote power trade. Other benefits of a good technical regulatory framework include: Safe and reliable operations of the inter-connected power system; Harmonization of codes and standards to support regional market integration; Harmonization of technical operation manuals to support power trade; Effective information exchange and energy trading

The regulatory Authority is required to put the necessary technical rules and regulations in place at the national regional and regional levels. At the national level this may include among others, Grid Code development and implementation, effective monitoring of the technical network loss levels in both the transmission and distribution levels, and devising methods to reduce them plus effective quality of service monitoring of parameters such as Power Quality: Power Frequency; Power System Harmonics, Voltage Quality and Power Factor among others. At the regional level this may include developing and implementing Technical Operations Manual or System Operations Codes of Practice; Guidelines for technical regulation and standards for cross-border interconnection and

power trading that includes quality of service guidelines for cross-border interconnection and power trading;

On the creation of an enabling environment, at the National level, each country proportionately to the electricity market size and level of market development, should prepare a Market Design and Model for Market Opening. This should be supported by the need to establish a secondary legislation regarding market models for operationalization, control and monitoring mechanisms for promoting open access and non-discriminatory trade procedures to give comfort to investors. At the regional level there is the need to establish common procedures and rules as well as model agreements, including: market Rules and Operational Rules; and develop model contracts to facilitate regional electricity trade.

At the continental level, AUC, AFUR and other regional authorities can put in place mechanisms to ensure regular consultative meetings and strengthen the coordination of the regional power pools and the regional regulatory associations. This would provide the platform for sharing experiences and pooling of resources together, towards creating a continental harmonized regulatory framework and regional electricity market integration.

A critical part or achieving the harmonization agenda is the need to have well-qualified professionals, both at the national and regional levels to operate the systems that will be put in place. It is therefore imperative that Centres of Excellence are developed to train regulatory experts in various areas of electricity sector regulation.

The report also bring to the fore the need for a Renewable Energy Framework that provides a clear process for development of renewable energy by establishing short, medium and long-term goals as well as identifying roles and responsibilities. Policy recommendations and associated guidelines for all technologies and offer guidance to manage expectations from the community about different renewable energy technologies. The development of Grid Connection Code for RE power Systems which specifies the required technical standards for connection to the transmission and distribution networks would make a positive impact towards enhancing the RE framework.

Regarding the Norms Standards and Frameworks for Energy Efficiency, countries should develop minimum performance standards and labelling for appliances and Demand Side Management (DSM) approaches in order to reduce the peak electricity demand Monitoring Guidelines and Standards are also necessary

The Action Plan describes and identifies specific actions for the development of a harmonized continental regulatory framework. The Action Plan provides for the following three time frames: Short Term for 3 – 5 years (2017-2021); Medium – Term for 6 – 8 years (2022-2024); and Long – Term for 9 – 14 years (2025-2030). The results of the analysis showed that to achieve a harmonized continental regulatory framework, significant investment would be needed within the short, medium and long terms. This means that public, private and donor funding would have to be mobilized. This report has however shown that there are still significant barriers which must be surmounted, to make investments in the power sector more attractive to private investors and donors. The main barriers identified at the national level include the following, inter alia:

- Lack of transparent tariff-setting principles or guidelines and methodology in most countries which are required to give the needed comfort and confidence to investors in the tariff-setting regime, to commit funds into long-term investment;

- Non-cost reflective tariffs and inability of national regulatory authorities to unbundle the tariffs, as well as determine the cost reflective tariffs for each customer category;
- Inability to devise innovative financing mechanisms to incentive private sector investment, other than often relying on grants and concessionary funding from donors;
- Most countries are still operating a vertically integrated/monopolistic electricity market structure, which does not permit non-discriminatory and third party access to the transmission system ;
- Absence of access rules which must be developed by national regulators, to enable IPPs to have equal, fair and non-discriminatory access to the transmission network;
- Absence of a regulatory framework which meets the minimum requirements of financial, operational and organizational independence in most countries in most countries. In that regard, there are still gaps in the areas of Regulatory Governance and Regulatory Substance, even though some modest gains have been made by countries;
- Lack of enforcement mechanism by regulators to ensure that there is effective technical regulation of the electricity sector. This has had adverse effect on the technical, quality of service and operational performance of the power utilities;
- Regarding RE frameworks, often the legislative policies are not enforced, leading to low RE investments;
- Most countries are yet to publish RE Acts/Laws, even though REFITS have been published;
- Existence of complex permitting and licensing procedures arising from not separating licensing procedure for large power plants from the smaller plants.

At the regional level, the following were identified as the main barriers which could affect investment and the harmonization agenda:

- Absence of fully functional regional regulatory authorities, which meets the "best" practice for regional power integrations;
- Absence of harmonized Transmission Tariff Rules and Methodology for power trading and support the power market integration;
- Yet to operationalize regional dispatch and coordination centres;
- Absence of or yet to fully operationalize Technical Manuals for system operations and Codes of Practices;
- Absence of a regional strategy to incentivize private sector investment in priority infrastructure power projects, to serve as the "corridors" for power trading and energy exchanges.

At the continental level, the following have been identified as the barriers:

- The absence of a framework which could ensure effective coordination of the regulatory frameworks both at the regional and national levels. This could delay the regulatory harmonization process;
- Lack of a coordination between the regional power pools which could affect the sharing of experiences and knowledge and thus slow down the "learning curve" towards achieving best practice and also adversely affect the pace for achieving the continental regulatory harmonization agenda.
- As can be gleaned from the report, a number of actions have been identified for overcoming the afore-mentioned barriers, within the short, medium and long terms. In that regard, the following recommendations have been made to guide the implementation phase of the "pilot" programme:

- ✓ The implementation phase should focus on priority programmes based on their ranking, details of which are shown below in section 8.1;
- ✓ The programmes should be actionable ones, meaning each programme should be started and completed within the selected time (i.e. short, medium and long terms);
- ✓ The programme should meet the needs of the country or the region, and should be key to achieving the regional market integration, as well as contributing towards the continental regulatory harmonization agenda.

8.1 Ranking of Priorities

Qualitative analysis method was used to prioritize the programmes for implementation and to set the criteria for the screening process. A three step method was used as follows

Step 1: Identification of the criteria for selection;

Step 2: Screening Analysis to prioritize the programmes;

Step 3: Implementation plan and cost involved.

The selection criteria used for screening the programmes for implementation as "pilot projects" is as follows. Whether the programme:

- Contributes directly to strengthening of regulatory framework both at the national and regional levels, and regulatory framework harmonization;
- Contributes to regional market integration;
- Contributes to market opening;
- Contributes to quality of supply;
- Enhances accessibility to electricity;
- Contributes to sustained energy development;
- Programme is actionable, considering the length of project realization.

The ranking of priority programmes have therefore been categorized based on the results of the screening analysis and also classified as national, regional and continental.

- **Short Term**

Table 8-1 Short Term Priority 1 Programmes: Screening Mark of 7

Level	Programme
National	• Establishment of a National Regulator • Tariff Reforms: Accounting Separation, Tariff Guideline and Methodology, Cost of Service Study, Tariff Unbundling, Determine Cost reflective tariffs • Grid Code development • Develop Market Rules • Develop Minimum Performance Standards and Labelling for EE

Level	Programme
Regional	• Establish regional regulatory authority • Develop harmonized transmission system tariff principles and methodology • Develop harmonized system operation manuals and Codes of Practice • Implement monitoring of power pools • Develop harmonization of EE and labelling standards
Continental	• Implement regulatory performance review mechanism • Monitoring of power pools through regular consultative meetings • Establish Centres of Excellence

Table 8-2 Short Term Priority 2 Programme: Screening Mark of 6.5

Level	Programme
Regional	• Establish regional coordination and dispatch centre

Table 8-3 Short Term Priority 3 Programmes: Screening Mark of 6.

Level	Programme
National	• Develop licensing framework for smaller power plants • Develop Rural Electrification Standards • Develop Quality of Service Regulations and Standards • Develop and design roadmap for market model • Develop DSM Guidelines and Standards
Continental	• Monitor progress of power pools through regular meetings

- **Medium Term**

Table 8-4 Medium Term Priority 1 Programmes: Screening Mark of 7.

Level	Programme
National	• Full operationalization of national regulator • Implementation of Grid Code
Regional	• Full operationalization of Regional Regulatory Authorities • Implementation of Operations Manual and Codes of Practice • Operationalize regional dispatch and coordination centres • Support to establish/operationalize Centres of Excellence
Continental	• Monitoring progress of market integration through regular consultative meetings • Support to the Centres of Excellence for long term sustainability

Table 8-5 Medium Term Priority 2 Programmes: Screening Mark of 6.

Level	Programme
National	• Implement Feed-In tariff for Grid Connected RE, Tariff Guidelines for Mini Grid and Stand-Alone Systems • Implement Rural Electrification Guidelines and streamline licensing procedure • Complete electricity market opening process, and define the role of market participants
Regional	• Implement harmonized transmission system tariff methodology, including wheeling charges and loss allocation methodologies • Develop a strategy for implementing priority infrastructure projects as the "corridors" to support power trade. • Implement Standard Contracts

- **Long Term**

Table 8-6 Long Term Priority 1 Programmes: Screening Mark of 7.

Level	Programme
National	• Implement tariff unbundling and cost reflective tariffs; • Update existing tariff guidelines and methodology • Revise Grid Code • Implement Market Opening and operational autonomy of transmission system operator
Regional	• Revise/update Market Rules • Full operationalization of dispatch and coordination centre • Implement strategy for implementation of priority infrastructure projects
Continental	• Monitoring of progress of power pools and market integration through regular consultative meetings • Undertake performance review of regulators • Progress monitoring of Centres of Excellence

Table 8-7 Long Term Priority 2 Programmes: Screening Mark of 6.

Level	Programme
National	• Undertake performance monitoring and assessment of power utilities • Implement Quality of Service Regulations and Enforcement

8.2 strategic analysis of KEY CHALLENGES, THREATS AND RISKS

For Africa, the immediate challenge for achieving a continental harmonized regulatory framework is to design a path which would take each country and region from its current status to the desired solution, in a systematic manner, by adopting a phased approach through Short, Medium and Long term Action Plans. It is however important to note that achieving market integration through regional inter- connection, will involve a number of significant risks and challenges related to:

- Investment and Finance;
- Private Sector Participation;
- Regional Interconnection Projects;
- Regulatory and Institutional Capacity;

Regarding investment and finance, the action plan will no doubt face challenges in project finance, monitoring and implementation. At the national level, even though national governments are expected to take the initiative, ultimately the implementation of the Action Plan is expected to be a collaboration between governments, development partners and the private sector, and therefore the total funding requirements would come from governments, development partners and the private sector. *The main challenge and risk however is that there is uncertainty about the contribution coming from both the private sector and development partners.*

In order to encourage private sector participation in the financing of the Action Plan, it is important that governments should work to improve the business environment. Some of the risks which could reduce private sector financing include those related to business risks such as insufficient project development capacity (i.e. technical risk) and political interference in the tariff – setting process, which tends to affect the financial viability and sustainability of the ESI in most African countries (i.e. political and regulatory risks). In order to mitigate these risks, governments would have to work with the development partners, to implement risk reduction instruments. *Governments would therefore need to request development partners for Partial Risk guarantee to leverage funding mobilization from the private sector.*

In order to catalyze private sector participation, the states would have to establish the necessary mechanisms to provide transaction support and ensure better coordination of the different stakeholders in the power sector to reduce transaction costs and bureaucracy. As part of creating an enabling environment to attract investment, the Action Plan recommends the development and implementation of standard or model contracts, including the need to establish transparent procedures for competitive bidding.

The successful implementation of the Action Plan would also depend on the availability of skills and capacity building. The absence of appropriate skills in regulatory economics and other areas of utility regulation is of general concern to AFUR and the AUC. It is in this regard that this report has recommended the establishment of at least five Centres of Excellence in Economic and Technical Regulation, and in other energy related areas. Capacity building in the energy sector is a high priority and therefore in addition to the Centres of Excellence, degree programmes could be established at the Masters and PhD levels in regulatory economics and other energy related areas. In order to achieve market integration, this would also require the development of institutional capacity for cross-border trade, and this must be done to be compatible with the evolving power sector and introduction of independent power producers (IPPs).

Market integration and harmonization of the regulatory framework cannot be achieved if the regulatory authorities and other relevant institutions do not possess the core skills and required manpower, as well as other resources, necessary to carry out their expected responsibilities. As the electricity sector in African countries undergo rapid transformation and restructuring, and as competition policy issues become relevant to the sector, it is important that a critical mass of professionals are trained to address regulatory, competition, as well as technical operational issues in the sector. *This is a challenge and a threat which if not addressed can derail the attainment of the objectives of the continental regulatory harmonization agenda.*

Additionally, one of the key requirement towards achieving market integration is the availability of cross – border interconnections and infrastructure projects. This would require a lot of funding and could pose a key challenge to the various RECS. The absence of regional dispatch and coordination centres or system control centres, and inability to establish the necessary grid "corridors" in a timely manner, could have an adverse effect on operationalizing the market integration agenda.

A summary of the strategic analysis of the Strengths, Weaknesses, Threats and Risks is presented in the table 8-8 below:

Table 8-8. Matrix of Strengths, Weaknesses, Threats and Risks

Strength	Weaknesses	Threats and Risks
Growing political will among RECs to achieve market integration	The Action Plan will require significant financing, but there is a low financing capacity from the RECs and governments	Inability to meet the energy needs of the population leading to unavailability of supplies and poor reliability of supply
A future long term vision to achieve regional integrated electricity market	Inadequate capacity in regional market development, national and regional regulatory frameworks and system operation	Unfavourable economic and social crises on the continent, which is exacerbated by unavailable energy supplies
Establishment of key institutions within each REC to deal with strategic needs and issues. Examples include regional regulatory authorities, regional RE and EE centres etc.	Inefficient operation of national power systems by power utilities that are members of the regional power pools	Conflicts on the continent, especially within regions which could affect securing financing for key projects
Willingness of member countries within the RECs to develop common interconnected projects	Lack of awareness on the part of member utilities on the need to establish significant regional electricity market	Lack of regulatory and institutional capacity
Adequate energy resources if harnessed can be used to meet the continental energy needs through market integration		

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Appendix 1

Matching the Roles and Mandates of Different Regional and Continental Institutions

A1.1 Continental institutions

I. AUC: African Union commission;

The Commission is the Secretariat of the Union entrusted with executive functions. The AU Commission is made up of Portfolios. They are: Peace and Security; Political Affairs; Trade and Industry; Infrastructure and Energy; Social Affairs; Rural Economy and Agriculture; Human Resources, Science and Technology; and Economic Affairs. The Commission will be guided by the principles of subsidiarity and complementarity with other Organs, Member States and RECs and with close coordination and cooperation with the RECs: This activity falls under the Infrastructure and Energy

Pillar of Harmonization	Activity	Actor
1. Economic Regulatory Framework 2. Technical Regulatory Framework 3. Enabling Market Environment 4. Enhancing Renewable Energy Frameworks 5. Norms, Standards and Frameworks for Energy	• Review Framework for power exchanges between power pools; • Monitor Preparation of continental standards and codes; • Establish Monitoring and Evaluation Mechanism • Monitor the Operation of Coordination and Dispatch Centres	• AUC along with other relevant Institutions as shall be deemed fit by AUC • Regional Power Pools • APUA • AFUA

I. NEPAD

NEPAD- New Partnership for Africa's Development which is an economic development program of the African Union shall aims to provide an overarching vision and policy framework for accelerating economic co-operation. NEPAD's four primary objectives are: to eradicate poverty, promote sustainable growth and development, integrate Africa in the world economy, and accelerate the empowerment of women. NEPAD seeks to attract increased investment, capital flows and funding, providing an African-owned framework for development as the foundation for partnership at regional and international levels. The NEPAD Secretariat is not responsible for the implementation of development programs itself, but primarily implemented at the Regional Economic Community (REC) level (RECs are the building blocks of the African Union). It is widely used by international financial institutions, UN agencies and Africa's development partners as a mechanism to support African development efforts

NPCA - NEPAD Planning & Coordination Agency - The core mandate of the NPCA is to facilitate and coordinate the implementation of continental and regional priority programmes, push for partnerships and projects and to mobilize resources and partners in support of their implementation. It also responsible for conducting and coordinating research and knowledge management, monitor and evaluate the implementation of programmes and advocate on the AU and NEPAD vision, mission and core values. The NPCA is in charge of ensuring the implementation of all Programme for infrastructure Development in Africa (PIDA) Priority Action Plan (PAP). Additionally, the IPPF Fund, are responsible for implementing all preparatory activities relating to the PIDA Priority Action Plan (PAP).

II. UNECA

ECA's mandate is to promote the economic and social development of its member states, foster intra-regional integration, and promote international cooperation for Africa's development.

UNECA's strength derives from its role as the only UN agency mandated to operate at the regional and sub-regional levels to harness resources and bring them to bear on Africa's priorities. To enhance its impact, ECA places a special focus on collecting up to date and original regional statistics in order to ground its policy research and advocacy on clear objective evidence; promoting policy consensus; providing meaningful capacity development; and providing advisory services in key thematic fields.

UNECA supports a project of NEPAD Energy Programme, to harmonize laws, policies and regulations, particularly to promote private investment. One of the objectives of this project is to resolve constraints related to legislation in cross-border projects, in roads, ICT and energy.

S/No	Pillar of Harmonization	Activity	Actor
1.	Economic Regulatory Framework	• Performance Monitoring and Review of Power Pools and regional Regulatory Authorities	• AUC, • NEPAD: NPCA • UNECA • RECs • APUA • AFUR
2.	Technical Regulatory Framework	• Monitoring and Evaluation • Strategy and Action Plan for a Harmonized Continental Technical Regulatory Framework for the Electricity market • Support- coordination of RECs • Frequent coordination activities of the Power Pools • Frequent consultative activities of the Regional Regulators • Capacity building activities targeted at regional and national levels • To achieve the above, the following activities shall be performed: • Prepare for compliance roles and responsibilities	• AUC, • NEPAD-NPCA • UNECA • RECs • APUA • AFUR

S/No	Pillar of Harmonization	Activity	Actor
		• Apply technical compliance management system • Validate individual technical compliance management processes	
3. Enabling Market Environment 4. Enhancing Renewable Energy Frameworks 5. Norms, Standards and Frameworks for Energy		• Increase coordination of regional Bodies	• RECs • RPP • UNECA • RRE & EE • Academia and Research

III. AFREC

African Energy Commission - One area of activities of AFREC is the initiation of a program for "Advocacy and Facilitation for the African Energy Sector" with objective to defend and promote the Africa's interests in the regional and global energy and economic contexts with political support from the AUC and member states.

AFSEC - AFSEC African Electrotechnical Standardization Commission with regional economic communities and organizations with an interest in the electric power sector, Union of Producers, Transporters, Distributors of Electric Power in Africa (UPDEA), African Energy Commission Membership and **focus/**deals with Systems aspects for electrical energy supply, Electrical energy measurement, tariff- and load control, Power systems management and associated information exchange, Electrical installations and protection against electric shock and Electromagnetic compatibility. It give Africa's input in IEC International Standards, Adoption and harmonization of IEC standards to meet continental needs, Official representation at IEC General meeting.

AFREC Convention: Article 4 on the Functions of AFREC, Point b; states that AFREC shall: « Design, create and set up an energy continental database and facilitate rapid dissemination of information and exchange of information among Member States, as well as among the Regional Economic Communities around Africa

S/No	Pillar of Harmonization	Activity	Actor
1. Economic Regulatory Framework 2. Technical Regulatory Framework 3. Enabling Market Environment 4. Enhancing Renewable Energy Frameworks 5. Norms, Standards and Frameworks for Energy		• Design, create and set up an energy continental database and • facilitate rapid dissemination of information and exchange of information among Member States, as well as among the Regional Economic Communities around Africa	• AFREC • RECs • Regional Power Pools • Private Sector • AfDB and Other Development Partners • Academia & Research

IV. PIDA - (Programme for Infrastructure Development in Africa)

PIDA aims at accelerating socio-economic development and poverty reduction through improved access to integrated regional and continental infrastructure and services. PIDA has 51 cross border infrastructure projects consisting of 400 actionable sub projects covering energy, transport, trans-boundary water and ICT. PIDA has a Steering Committee, a Council for Infrastructure Development (CID, committee of members of the AUC Technical Committees of the focal areas), and Infrastructure Advisory Groups.

S/No	Pillar of Harmonization	Activity	Actor
1. Economic Regulatory Framework 2. Technical Regulatory Framework 3. Enabling Market Environment 4. Enhancing Renewable Energy Frameworks 5. Norms, Standards and Frameworks for Energy		• Take all measures at national and regional levels to accelerate the implementation of these Pillars of Harmonization	• PIDA • NEPAD-NPCA • UAC • RECs • AfDB & other Development Partners

V. RECS

The developed pillars of harmonization need to be supported along with other existing programs of RECs. The RECs Africa's Regional Economic Communities (RECs) include eight sub regional bodies which are the building blocks of the African Economic Community which provides the overarching framework for continental economic integration. The AU recognizes eight RECs:

- The Arab Maghreb Union (AMU/UMA) in the north,
- The Economic Community of West African States (ECOWAS) in the west,
- The East African Community (EAC) in the east,
- The Intergovernmental Authority on Development (IGAD) also in the east,
- The Southern African Development Community (SADC) in the south,
- The Common Market for Eastern and Southern Africa (COMESA) in the southeast,
- The Economic Community of Central African States (ECCAS) in the centre, and
- The Community of Sahel-Saharan States (CENSAD) in the north.

Africa's RECs do not only constitute key building blocks for economic integration in Africa, but are also key actors working in collaboration with the African Union (AU), in various transformative programs of the continent, including the New Partnership for Africa's Development (NEPAD) and essential and instrumental for the effective implementation, financing, monitoring and evaluation.

A1.2 REGIONAL institutions

I. REGIONAL POWER POOLS

The developed pillars of harmonization need to be supported along with other existing programs of the Regional Power Pools

As far as regions are concerned, there are primarily five power pools acting as specialized agencies of their respective RECs:

- The Central Africa Power Pool (CAPP) for the Economic Commission for Central Africa States (ECCAS),
- The Comité Maghrébin de l'Electricité (COMELEC) for the Union of Maghreb Arab (UMA),
- The Eastern Africa Power Pool (EAPP) for COMESA,
- The Southern Africa Power Pool (SAPP) for SADC, and
- The West Africa Power Pool (WAPP) for ECOWAS.

Their role at regional levels is to create conducive environment for private sector participation in cross-border trade to invest in the African infrastructure development and create a conducive legal and regulatory framework for the private participation. This would include legally empowering the power pools to act on behalf of RECs (and governments), particularly on power deals. Thus, a private sector entity wanting to invest in a regional project would have to deal with one entity instead of a complicated deal-structure with many countries.

- Institutional set up and market rules and regulations have already been implemented in SAPP, are being implemented in WAPP and under design in EAPP. However, CAPP and COMELEC have still to design and develop their power market institutions and rules.
- As for regional projects, all power pools are experiencing concrete achievement in implementing interconnection projects. Up-to-date regional master plans are available for all power pools. Except for COMELEC, the four other power pools have formally adopted their priority projects at the regional level and are mobilizing funding

II. REGIONAL REGULATORY BODIES AND ASSOCIATIONS

The developed pillars of harmonization need to be supported along with other existing programs of

- ECOWAS Regional Regulatory Authority (ERERA)
- Independent Regulatory Board (IRB) of EAPP
- Energy Regulators Association of East Africa (EREA)
- Regional Electricity Regulators Association (RERA)
- Regional Association of Energy Regulators for Eastern and Southern Africa (RAERESA)
- Association of West Africa Utility Regulators (AWAUR)

The purpose and objectives of the association are:

- To improve national energy regulation in member countries;

- To foster development of stable energy regulators with autonomy and authority;
- To improve cooperation among energy regulators;
- To facilitate the exchange of information, research, training and experience among members and other regulators around the world.

Membership of these regional energy regulators organisations overlaps and not all members' states within the same region are members of the regional body/association.

III. REGIONAL RENEWABLE ENERGY AND ENERGY EFFICIENCY CENTRES

The developed pillars of harmonization need to be supported along with other existing programs. The regional renewable energy and energy efficiency centres are as follows:

- The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE);
- The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE);
- The SADC Centre for Renewable Energy and Energy Efficiency (SACREEE);
- The East Africa Community Centre for Renewable Energy and Energy Efficiency (EACREEE).

Main focus should be to create favourable framework conditions for renewable energy and energy efficiency markets in member states. Foster the growing sustainable energy market opportunities, as well as from regional cooperation and South-South and North-South technology and knowledge transfer

S/No	Pillar of Harmonization	Activity	Actor
1. Economic Regulatory Framework 2. Technical Regulatory Framework 3.Enabling Market Environment 4. Enhancing Renewable Energy Frameworks 5. Norms, Standards and Frameworks for Energy		• Establish and operationalize a Regulatory Authority or provide support to elevate status of Regulatory Association to a Regulatory Authority • Development of Harmonized Tariff Rules • Harmonized Operations Manual • Development of regional strategies and power master plans including studies and engineering of technical coordination centres, and supporting joint work of member utilities; • Deliver support from Regional PP and Regulators to National regulators and Market operators with respect to: ✓ Issuance of Mandatory rules; ✓ Monitoring the targets and harmonization process; • Technical regulatory framework components of technical compliance management system are confirmed, and authorized procedures for their implementation are clarified; • Resources for applying technical regulatory framework compliance management system are accessed and utilized in accordance with country policy and procedures; • Capacity Enhancement in Project Management • Market Development • Infrastructure Development • Establish and strengthen separate RE agencies/units	• RECs • Regional Power Pools • Regional Regulatory Bodies and Associations • Regional Renewable Energy and Energy Efficiency Centres • AfDB & Other DPs • Private Sector