STRATEGIC PLAN (2019-2023)

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East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE)
P.O. Box 16775, Kampala, Uganda, E-Mail: info@eacreee.org

FOREWORD

Low access to clean energy is the greatest challenge faced by all the East African Community (EAC) Partner States. In addition, the region has to contend with the issues of energy security and climate change mitigation and adaptation. It is therefore a priority of each of the EAC Partner State to increase access to clean, sustainable, affordable, competitive, reliable and secure energy services at least cost while protecting the environment. The deployment of renewable energy and energy efficiency technologies are considered the most effective tools to support industrial productivity and competitiveness, enhance energy security, access and affordability, and minimize negative externalities of conventional energy systems (e.g. GHG emissions, local pollution).

The East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) draws its mandate from the decision taken at the 33rd Meeting of the EAC Council of Ministers, which designated it as a regional Centre to promote renewable energy and energy efficiency in collaboration with other institutions. EACREEE is committed to promote an integrated and inclusive energy market as an engine for socio-economic development and improved livelihoods.

This EACREEE Strategic Plan provides a roadmap for our work, highlights the Centre's major priorities for the next five years (2019-2023). The Strategic Plan is aligned with the UN Sustainable Development Goals (SDGs), particularly SDG 7 ("Ensure access to affordable, reliable, sustainable and modern energy for all") and SDG 9 ("Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation"), SDG 13 ("Take urgent action to combat climate change and its impacts") as well as the Paris Agreement on climate change.

In the next five years and beyond, EACREEE will pursue new initiatives as well as complement the on-going initiatives in the EAC Partner States to promote renewable energy and energy efficiency. The Centre seeks to work towards the creation of an integrated and inclusive EAC market for sustainable energy and clean technology products and services. Working with different partners, EACREEE will develop and implement Programme to accelerate deployment of a number of renewable energy and energy efficiency technologies including solar, biomass, wind, and geothermal technologies. This will involve supporting development of regionally-harmonized standards and regulations, conducting training, awareness, sensitization and research, formulating policy and policy implementation instruments, and promoting investment in renewable energy and energy efficiency. In addition, the Centre will pursue initiatives toward reducing gender inequalities in energy access, energy entrepreneurship and workforce through capacity building of targeted groups, establishment of energy entrepreneurship fund and working with Partner States and humanitarian agencies to ensure that energy needs for displaced persons, refugees and their host communities are included in national energy planning.

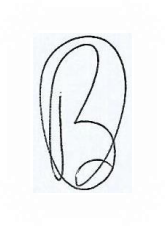
EACREEE will also seek to work with cities in the region to develop and implement a Sustainable Energy Action Plan. The plan will identify and promote implementation of activities relevant to climate change mitigation and adaptation measures that are achievable and compelling to local authorities in the EAC region. In addition, the Centre will pursue initiatives toward scaling up adoption of industrial energy management standards compatible with ISO

50001 by industries in the EAC region. This initiative will aim at helping industries assess their industrial energy saving potentials and adopt specific technologies for improvement of industrial energy efficiency.

While the specific programs and initiatives to address these goals may change over time, all EACREEE's activities will be guided by the key principles of social cohesion, environmental conservation and economic prosperity for the region through promotion of universal energy access, affordable energy services, reduced environmental impact and energy security.

We recognize that these momentous tasks cannot be achieved single-handedly. Ensuring everyone has access to sustainable energy by 2030 will require leadership and partners of all kinds — from governments, companies, institutions, financiers, development banks, unions and communities, entrepreneurs and civil society, to name a few. We need to work closely together to mobilize and share knowledge, expertise, technology and financial resources required to achieve objectives outlined in this Strategic Plan.

We would like to acknowledge the EAC, EAC Partner States, our development partners especially the United Nations Industrial Development Organization and the Austria Development Agency for the unwavering support in developing this Strategic Plan and getting it approved. I also extend appreciation to the EACREEE team, under the leadership of the Interim Executive Director Dr. Mackay Okure, that developed the initial framework for the Strategic Plan and managed the process of its development.



Eng. Benson Mlambo Mwakina,

Chairperson, Board of Directors

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EXECUTIVE SUMMARY

The East African Community (EAC) Partner States must address the interrelated challenges of energy access, energy security and climate change mitigation and adaptation, which are intertwined with the region's economic and social challenges. This trio of challenges in turn considerably complicates the execution of strategies aimed at fostering socio-economic development, attracting foreign investment, and providing basic social services. The lack of access to modern, affordable and reliable energy services is interrelated with a variety of economic, social, environmental and political problems.

The deployment of sustainable energy technologies is considered as an effective tool to tackle economic/industrial productivity and competitiveness, energy security, energy access/affordability and negative externalities of conventional energy systems (e.g. GHG emissions, local pollution) simultaneously and in an integrated way. All the EAC Partner States have included development of renewable energy and energy efficiency in their National Determined Contributions (NDCs) for the implementation of the Paris Climate Agreement.

The EAC Partner States recognizes the importance of regional cooperation in order to jointly tackle the challenges. The East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) has therefore been established as an intergovernmental platform for collaboration in the area of renewable energy and energy efficiency. EACREEE has been mandated by the EAC Council of Ministers to promote renewable energy and energy efficiency in the region through policy advocacy, investment promotion and capacity building as well as promoting research and development and technology transfer. In this regard, EACREEE's vision is to be leading hub for renewable energy and energy efficiency. EACREEE's mission is to promote an integrated and inclusive energy market as an engine for socio-economic development and improved livelihoods in the EAC region.

This EACREEE Strategic Plan provides a roadmap for our work, highlights the Centre's major priorities for the next five years (2019-2023) toward achievements of its mission. Through this Strategic plan, EACREEE aims to accelerate the energy and climate transformation by creating economies of scales, equal progress and spill-over effects between countries. In this context, EACREEE will focus on regional initiatives to strengthen actions at national levels through the following strategic interventions:

- Creating enabling environment for RE&EE investments through policies, regulation, standardization, strategies, and other frameworks development. EACREE will provide technical support to the EAC in support the EAC in the development of a coherent regional policy/roadmap/strategy on Renewable Energy and energy efficiency.

- Develop and implement Programme to accelerate deployment improved/modern biomass technologies. The Programme will involve (i) developing regional standards for improved cook stoves (ii) working with the national authorities responsible for vocational education and training to incorporate the building of improved cook stoves in the curricula for house construction practice, and (iii) sensitizing and training architects and engineers to include provisions for improved household cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities.

- Stimulating Investments in Renewable Energy and Energy Efficiency. This will involve establishing EACREEE Renewable Energy and Energy Efficiency Facility as well as promoting sustainable energy for productive uses.

- Promoting Sustainable Energy Programmes in Cities and Other Built Environments. This will cover wide areas such as (i) establishing minimum energy perforance standards for appliances, (ii) supporting East African cities to develop and implement their Sustainable Energy Action Plans (iii) promoting wastes to energy programmes, and (iv) promote RE&EE in transport sector in efforts to help decarbonize transport sector in built environment.

- Accelerating Industrial Energy Efficiency. This will include implement regional programme for scaling up adoption of Industrial Energy Management Standards compatible with ISO 50001 by industries and strengtheing capacities of Energy Service Companies (ESCOs) and Energy Management Professionals to support EE programmes.

- Capacity Building in Renewable Energy and Energy Efficiency. This will involve developing and implementing integrated training Programmes in RE&EE within the region, including capacity for feasibility studies as well as strengthening capacity in research and development in areas of RE&EE.

- Strengthening capacity for sustainable Energy-Water-Food Nexus Planning. This will involve (i) developing a regional standardized energy data collection, analysis and management system (ii) builing regional capacity for sustainable planning of the Energy-Water-Food nexus, (iii) establishing regional on-line geospatial portal will provide synergies between the different focal points in each Partner States and strengthen national and regional capacity to monitor energy projects and investments, bring East Africa together as a collective working group to give it a voice in a high-level discussions and help avoid duplication of efforts across the region and even within individual Partner States.

- Reducing Inequalities in Energy Access, Energy Entrepreneurship and Workforce. This will involve (i) developing and implementing programme on capacity women and youth on how to promote, set up and operate RE&EE technologies (e.g. improved cook stoves), because RE&EE projects are much more effective when women are involved, (ii) establishing energy entrepreneurship fund for women, youth and marginalized persons, and (iii) working with Partner States and humanitarian agencies to ensure that energy needs for all displaced persons, refugees and their host communities are included in national energy planning. Displaced persons and special groups exert more pressures on the available resources in the places where they are settled. The most significant impacts include deforestation, soil erosion, and depletion and pollution of water resources

Achieving the ambitions set up in this Strategic Plan will require leadership and influential Partners of all kinds — from governments, companies, institutions, financiers, development banks, unions and communities, entrepreneurs and civil society, to name a few. Support from the EAC Partner States will be particularly crucial in mobilizing resources required to achieve the ambitions.

1. INTRODUCTION

The following Strategic Plan outlines the strategic vision and mission of EACREEE within the East African Community (EAC) regional and the Global Network of Regional Sustainable Energy Centers (GN-SEC).[1] The Strategic Plan understands itself as an important input for the EACREEE Business Plan to be developed. The Business Plan will showcase how to operationalize the vision within a given time and resource framework. The Plan will also include an evaluation and monitoring framework (incl. gender aggregated indicators).

1.1. Regional Setting

The East African Community (EAC) is a regional intergovernmental organization of six Partner States, namely the Republic of Burundi, Republic of Kenya, the Republic of Rwanda; the Republic of South Sudan, the United Republic of Tanzania, and the Republic of Uganda. According to the EAC's 2018 population report, the EAC is home to over 170 million people spread across over 2.467 million square kilometers. The annual population growth for the region is 2.6%. Since 1990, with the exception of Rwanda, the population has doubled; the latest United Nations World Population Prospect 2017 revision demonstrates that Tanzania, Kenya and Uganda are among the world's 33 countries expected to see their populations increase five-fold or more by 2100.

Currently, about 22% of the EAC population lives in urban areas, and increasing at a rate of between 4.1-6.7% annually. By 2030, between 30% and 50% of the region's population is expected to live in urban areas, leading to a doubling in the population size of the region's cities within the next two decades. Regional population growth and rapid urbanization increasing the pressure to electrify and to provide access to other modern energy services. This is in addition to straining the region's limited energy sources, especially biomass which is still the predominant energy source for cooking and heating at household, commercial and industrial levels.

About 90% of rural and low-income urban households in East Africa use either firewood or charcoal to cook their food. According to estimates, the transition from biomass-based cooking fuels to modern solutions, such as electricity or LPG, is likely to last several decades. Rural households prefer firewood, while urban ones favour charcoal. From research conducted, charcoal provides over 82% of the energy used by urban households in East Africa. Regional demand for biomass-based energy – especially charcoal – is expected to increase further in the coming decades as a result of population growth, rapid urbanization, and the slow pace of change to other modern energy sources. By 2017, the electricity access rate in Kenya stood at 56%, Tanzania at 32.8%, Rwanda at 29.37%, Uganda at 26.7%, Burundi at 7.59% and South Sudan at about 1%.

1.2. Alignment with East African Community (EAC) Policies

The East African Community (EAC) was established in 1999 by the Treaty for Establishment of the East African Community (the Treaty). The mission of the Community is to widen and deepen economic, political, social and cultural integration in order to improve the quality of life of the people of East Africa through increased competitiveness, value added production, trade and investments. In this context, the EAC has set important regional policies.

[1] www.gn-sec.net

The Treaty defined four pillars of integration, namely:

- Customs Union – which means that the EAC Partner States agreed to establish free trade (or zero duty imposed) on goods and services amongst themselves and agreed on a common external tariff (CET), whereby imports from countries outside the EAC zone are subjected to the same tariff when sold to any EAC Partner State.
- Common Market, which provides for free movement of goods, people, labour, services and capital from one Partner State to another as well as the rights of establishment and residence without restrictions.
- Monetary Union – which provides for the attainment of a single currency for daily transactions within the Common Market.
- Political Federation – which envisages coming together to form a super-state under a single political authority / government.

The Customs Union and Common Market, which have been in force since 2005 and 2010 respectively, have direct bearing on energy investments and trade in the region. In acknowledgement of the need to develop industry to stimulate economic development, the EAC developed an industrialisation strategy for 2012 to 2032. Ambitious targets were set drawing from the EAC Industrialisation Policy including: diversification of the manufacturing base, increase in local value-added in resource based exports to at least 40% by 2032, expansion of manufacturing exports as a share of total exports to 60% and intra-regional manufacturing exports relative to total manufactured exports to at least 25% by 2032 and strengthening of research and development and technological capabilities towards transformation of the sector through industrial upgrading. Expected long-term outcomes include Manufacturing Value Added (MVA) contributing to 25 % of GDP and MVA per capita reaching 258 USD by 2032.

There is also a mutual benefit for EAC Partner States to harmonise energy policy, legislation, regulation and standards. Energy plays an important role to attain the established social, environmental, economic, and industrial development targets of the EAC region simultaneously. Energy is essential for the running of daily domestic activities and operation of industry. Availability of reliable and affordable energy is crucial for the functioning of EAC economies. Energy plays a catalytic role in stimulating investments, higher levels of productivity and competitiveness.

1.3. Rationale for EACREEE – Need for Acceleration and Inclusiveness

The deployment of sustainable energy technologies is considered as an effective tool to tackle economic/industrial productivity and competitiveness, energy security, energy access/affordability and negative externalities of conventional energy systems (e.g. GHG emissions, local pollution) simultaneously and in an integrated way. In this context, also EAC Partner States have developed and adopted far-reaching energy policies with concrete targets for scaling-up renewable energy and energy efficiency markets throughout the next decades. These include also ambitious targets for energy access and decentralised renewable energy solutions for rural electrification and productive uses. In addition, such targets were also included in the National Determined Contributions (NDCs) of EAC Partner States for the implementation of the Paris Climate Agreement. Kenya, Rwanda, Tanzania and Uganda each have introduced FIT policies, and Kenya and Tanzania have adopted innovative zero-VAT and tariff policies on solar products.

Most of these efforts are closely aligned with economic, industrial and environmental policies targeting increased competitiveness, productivity, inclusiveness, sustainability and resilience

to climate change impacts. Despite the achievements, there are still significant policy and implementation gaps particularly in the areas of decentralised renewable energies, energy efficiency, heating, cooking and transport. One disadvantage is also, that currently there is no coherent sustainable energy policy and target framework on regional level. Therefore, currently the regional level is not conducive to support equal progress and economies of scales.

EACREEE has studied the progress in conjunction with the developed EAC Renewable Energy and Energy Efficiency Regional Status Report.[2] EACREEE has already started to address these policy and implementation gaps. For example, with support of SIDA and UNIDO, EACREEE and SACREEE hast started to work on the development of EE standards for appliances and lighting in SADC and EAC. The African Union will work with the GN-SEC centres on continental standards. Similarly, there are discussions with UN Environment on development of Minimum Performance Standards for cooling equipment in the context of the Kigali Amendment.

Despite growing investments over the past decade, sustainable energy markets have not reached economies of scale in the EAC. In the energy sector, the deployment of renewable energy and energy efficiency solutions remains hindered by a broad range of barriers and shortcomings related to policy and regulation, fiscal and non-fiscal incentives, technical limitations, economics, finance, capacity, quality infrastructure, R&D and innovation frameworks, knowledge and awareness.

Moreover, in most EAC Partner States the inability of the domestic private sector to supply sustainable energy quality products and services under competitive prices has become a bottleneck for the uptake of these markets. The domestic manufacturing and servicing sector remains weakly developed and the growing demand remains underserved by international suppliers and supply chains due to high market entry costs and risks. Moreover, policies and technology transfer programs tend to focus on creating demand for sustainable energy products and services and tend to ignore supplier-oriented actions focused on strengthening domestic innovation systems, productive industrial capacities and entrepreneurship.

Such trends raise concerns regarding the inclusiveness of technology transfer processes. This offers opportunities, but also bears the risk that the local value and job creation effects of such investments remain low and are not sustained in the long-run. In some EAC Partner States equipment and services (e.g. consulting, energy auditing, installation, and maintenance) continue to be imported. The absence of domestic suppliers and service providers questions the long-term sustainability of already undertaken renewable energy investments in various developing countries. There is need to strengthen the ability of the local private sector to participate in the regional and global value chains of technology manufacturing and servicing.

By looking at the moderate growth rates of sustainable energy markets in the EAC, it becomes obvious that SDG-7, SDG-9 and SDG-13 cannot be attained by 2030 in business-as-usual scenarios. Markets for sustainable energy products and services remain small and fragmented. There is need for economies of scale and speed. Regional cooperation and integration between EAC Partner States, private sector and civil society can be an effective tool to address some of the existing demand and supply-side barriers for sustainable energy market development. Some of the barriers can be addressed more effectively and at lower cost at regional level.

[2] REN-21, EACREEE, UNIDO, https://www.eacreee.org/publications

1.4. Establishment of EACREEE as part of a global network

To accelerate and strengthen the ownership in the energy transformation, the 7th Meeting of the Sectorial Council on Energy of the East African Community (EAC), held in October 2011, directed the EAC Secretariat to establish the East African Centre for Renewable Energy and Energy Efficiency (EACREEE). The centre works towards the creation of an integrated and inclusive EAC market for sustainable energy and climate technology products and services.

The increased availability and local supply of these is an important contribution to address the existing rural energy access challenge, increase the competitiveness and productivity of domestic businesses and industry, and to improve the environmental footprint of the region (local pollution, GHG emissions). The Centre will be also charged with the task to champion regional initiatives towards achieving Sustainable Development Goals (SDGs), implementation of the Paris Agreement on Climate Change and addressing the specific needs of the people of EAC. Sustainable energy plays an important role to achieve the set goals in the EAC Industrialisation Policy covering the period 2012 to 2032.

The decision of the EAC Partner States was inspired by the example of the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), which was established in Praia, Cabo Verde, in 2010. ECREEE is part of the Global Network of Regional Sustainable Energy Centres (GN-SEC) Programme.[3] Under a common framework, UNIDO assists regional organisations in the creation and operation of sustainable energy centres. The GN-SEC is an innovative south-south and triangular multi-stakeholder partnership to accelerate the energy and climate transformation in developing countries. The gradually expanding partnership comprises a sub-network of centres for the African and the Arab region (in cooperation with the EAC, SADC, ECOWAS, and the Arab League) and a sub-network for Small Island Developing States (in cooperation with SIDS DOCK, CARICOM, and SPC). The network is now becoming a global platform of knowledge exchange and provides a “maker-space” for south-south cooperation on joint issues and solutions.

Article 5 of the Treaty for the Establishment of the East African Community provides for development of policies and programmes aimed at widening and deepening co-operation among the Partner States in research and technology (among other areas) for their mutual benefit. In addition, Article 101 of the Treaty relating to the adoption of policies and mechanisms to promote the efficient exploitation, development, joint research and utilization of various energy resources available within the region.

The technical and institutional design of the centre was developed during a consultative preparatory process which was executed by the EAC Secretariat with technical assistance of the United Nations Industrial Development Organization (UNIDO) and financial support of the Austrian Development Agency (ADA). At the 33rd Meeting of the EAC Council of Ministers held in Arusha, Tanzania on 29th February 2016, it was decided to establish EACREEE as Centre of Excellency at the Makerere University College of Engineering, Design, Art and Technology (CEDAT) in Kampala, Uganda. Following further consultations, the Centre was registered with the legal name “East African Centre of Excellence for Renewable Energy and Efficiency Ltd” (EACREEE) – as a non-for-profit company limited by guarantee under the Ugandan Law.

[3] www.gn-sec.net

2. ENERGY SITUATION ANALYSIS

The energy sector in the EAC region faces a number of challenges. A detailed description of the EAC energy situation and challenges is included in the EACREEE Renewable Energy and Energy Efficiency Baseline Market Report, the EACREEE Project Document and the EAC Renewable Energy and Energy Efficiency Regional Status Report.[4] This chapter will not repeat all the aspects but will focus on selected priority areas EACREEE will focus on. The priorities were identified in consultation with EAC Partner States during the EACREEE preparatory and start-up phase, as well as during the discussions at the East African Sustainable Energy Forum, held in 2017.

EAC's energy sector must address the interrelated challenges of energy access, energy security and climate change mitigation and adaptation[5], which are intertwined with the region's economic and social challenges. Indeed, this trio of challenges in turn considerably complicates the execution of strategies aimed at fostering socio-economic development, attracting foreign investment, and providing basic social services. The lack of access to modern, affordable and reliable energy services is interrelated with a variety of economic, social, environmental and political problems.

It is instrumental for serving basic human needs at household level (e.g. cooking, refrigeration, heating, lighting and communication), health centers, schools; and productive uses to improve productivity represent the minimum levels required to improve livelihoods in any country and to drive local economic development on a sustainable basis. Integrating energy into development policies to promote sustainable and rural development, by making available new and renewable energy sources, and improved energy efficiency for social services, rural households and productive needs in rural development programs is a key factor in achieving sustainable development and poverty reduction in the EAC region. In "business as usual" scenarios – without considerable additional investments – energy poverty and its consequences will continue to be a predominant challenge in the EAC region in 2030.

2.1. Overreliance on Traditional Biomass

According to a recent report[6], solid biomass currently accounts for over 80% of final energy consumption in the region; over 75% of energy demand in Kenya, over 80% of energy demand in Tanzania, over 93% of energy demand in Uganda, over 85% of energy demand in Rwanda, over 95% of energy demand in Burundi and 96% in South Sudan. The use of biomass spans both the household, commercial/institutional and industrial levels. As in much of Africa, use of solid biomass in the EAC region is higher in rural areas, at 98.6%, than in urban settings (85.7%). Rural households use woody biomass, whereas most urban households use charcoal. In some urban settings, such as in Kenya, fuel stacking is practiced. Biomass is used widely for industrial activities e.g. brewing industries, tea-processing industries, and sugar industry among others in the region.

As population levels rise, the region's biomass demand is set to double every 20 to 25 years. However, current biomass production is not at par with the increasing demand. The

[4] www.eacreee.org/publications

[5] The link between adaption and energy is seen, for example, through the benefit that hydropower developments can have in responding to more erratic rainfall patterns caused by climate change

[6] EAC Renewable Energy and Energy Efficiency Regional Status Report, by REN21 - http://www.ren21.net/wp-content/uploads/2016/10/REN21-EAC-web-EN.pdf.pdf

unsustainable harvesting of woody biomass contributes to forest depletion and to the disruption of ecosystems and hydrological catchment areas. To address this deficit, there is need for a comprehensive wood energy plan with implementation strategies which ensure its sustainable production and consumption.

Lack of or inadequate regulation has hindered the ability of the private sector to enter the biomass market to increase efficiency in both fuel production and consumption, and to develop economically viable fuel alternatives[7]. Policy makers also have focused on reducing overall demand for solid biomass and have not paid enough attention to fuel substitution. In addition, formulation and implementation of national policies are often centrally managed and are constrained in most cases by: (i) lack of necessary budgetary support for personnel and tools resulting in weak policy enforcement; and (ii) the absence of community involvement in forest management. For these reasons among others, there are no incentives for efficiency in the production and utilization.

The use of waste to energy from municipalities and agro-industries, the consideration of socio-economic and environmental aspects in the production of biofuels with respect to food security, and introduction of sustainable and efficient production systems in harvesting wood resources especially the involvement of the local communities are all worth considering in the development of regional and national bioenergy policies and strategies.

2.2. Unequal access to reliable and affordable electricity services

The central EAC electricity networks serve mainly urban centres and suburbs. The electricity systems in the EAC are facing challenges due to the growing gap between predicted demand, existing supply capacities, lack of regional interconnections and limited capital to invest.

Low electrification rates due to limited coverage of the power grid, coupled with low electricity consumption rates, have resulted in electricity currently contributing less than 10% to the region's energy balance. Progress in expanding electricity access has trailed population growth.

There is optimism as access to electricity in the region is increasing. For example, Kenya's electrification rate rose from 20% in 2013 to 55% of the population connected to Kenya Power's main grid or mini-grids as of 2016. Rwanda's national electrification rate has risen to 31% in 2016, up from 21% in 2013. Burundi, South Sudan, Tanzania and Uganda registered lower increase in electrification rates. Moreover, the urban and rural poor in East Africa spend a higher percentage of their income on energy services than the better-off population.

Kenya's experience is particularly worth noting. It took Kenya only about three years to get more than half of its population connected to the grid. It is also noteworthy that Kenya's electricity comes mainly from renewable sources —more than 60% of installed capacity comes from hydro and geothermal power. Nevertheless, according to a recently published study[8], in some parts of Kenya, electrification rates remained low, at 5% for rural households and 22% for rural businesses, even in areas of good grid coverage.

[7] Policy and institutional context for NRM in Kenya: Challenges and opportunities for Landcare, by World Agroforestry Centre - http://www.worldagroforestry.org/sea/Publications/files/workingpaper/WP0097-08.pdf

[8] Lee K et al, Electrification for "Under Grid" households in Rural Kenya., Published in Development Engineering Journal, 2017.

2.3. Energy Efficiency

With economic growth in the EAC region, the lack of energy resources is becoming a major obstacle. Implementing energy efficiency measures can allow the delivery of more service for the same energy input. Energy efficiency also can reduce the need to install new peak capacity and can support the development of renewable energy in the region.

The estimated technical and commercial losses in the transmission and distribution systems are around 20% throughout the East African region. In reality, they are even higher due to the use of inefficient household and industrial appliances not meeting certain minimum performance standards.

Although a lot of efforts have been put forth to promote energy efficiency in the region, more work still has to be done in this area. To date, energy efficiency as an energy "resource" has not received the same attention as renewable energy in some EAC Partner States. Kenya for example has an Energy Act 2006 which provides a set of rules and guidelines that the Government has put for the whole Energy sector in Kenya. The 2006 Energy Act sets up the Energy Regulatory Commission (ERC), an independent regulator, that formulates licensing procedures, issues permits, makes recommendations for further energy regulations, ensures monitoring, evaluation and enforcement of Energy Management Regulation 2012, etc.

Implementing energy efficiency measures and activities is more than just an issue of cost savings; it is in itself a low-cost energy resource. The rational use of scarce energy sources allows the delivery of more services for the same energy input. Energy efficiency also can reduce the need to install new peak capacity and can support the development of an energy supply based on renewable energy.

2.4. Increasing Demand for Transportation Fuels

The EAC recognizes that an efficient transportation system is one of the key ingredients for sustainable development in the region. Transport is inextricably linked to, and exerts a strong influence on, other sectors of the economy. Cheap, efficient, adequate, safe, and environmentally friendly transport services provide effective support to agricultural and industrial production, inter- and intra-country trade, regional integration, tourism, and to social and administrative services that are key to national and regional development. Thus, transportation is essential to achieving most of the SDGs.

Road transport is the most important sub-sector in the region. There is increasing demand for fossil fuels in the road transport sector in the region. Traffic jams in East African cities is one of the greatest causes of increased energy consumption, urban pollution and hindrances to economic development in the region. Nairobi, Kampala and Dar es Salaam have some of the worst traffic gridlocks on the continent, with the commuters in these cities spending almost 4-6 hours a day in traffic for going to work and returning home – journeys that would take much less time in clear traffic. Traffic jams do not only lead to loss of economic production to the unproductive time spent between homes and the places of work, but also more wastage of fuel, which in turn leads to unnecessary increase in greenhouse gas emissions.

The major cause of traffic jams and increased energy consumption in the transport sector is the growing private car ownership in the region. In order to reduce traffic jams, most cities/municipalities have therefore embarked on massive road infrastructure development projects. But these have not always been in pace with the surging traffic. While the emphasis

has been on increasing the road infrastructure, there is always very little mention of the need to reduce energy consumption in the transport sector, especially by improvements in public transportation and non-motorized transport infrastructures.

2.5. Climate Change

Climate change poses a double challenge for the region. The energy sector in the EAC region is already grappling with the effects of climate change. Temperature rise and increased frequency of extreme weather events, such as floods, cyclones and droughts are already affecting the energy security of EAC Partner States. With the inflated price of fossil fuels and lack of large capacity power infrastructure, not to mention the emissions that are generated from conventional methods of power infrastructure development, it is imperative for the region to follow a low carbon development model towards socio-economic advancement.

Attainment of the UN Sustainable Development Goal of universal energy access, energy security and climate change mitigation objectives for the whole East African region will require proper policy coordination and additional investment in sustainable energy infrastructure. Co-ordinated efforts are required to meet the demand for energy, in particular for electricity and process heat, as well as the need to create reliable and accessible energy production, transmission and distribution system in rural areas to allow for socio-economic development of the region in a strategic manner.

In addition, all the EAC Partner States have signed the Paris Agreement and are at different stages in the ratification process. The EAC Secretariat has developed a Road Map for Implementation of the key Resolutions of the Paris Agreement (PA). The key interventions presented in the roadmap is to support the capitalization of the EAC Climate Change Funds through pioneering the accreditation as Regional Implementing Entity (RIE) under the Green Climate Fund (GCF) and Adaptation Fund (AF); and support Partner States to develop capacities for accreditation of their National Implementing Entity (NIE); as well as support Partner States to develop credible projects that may attract funds from AF and GCF. Other interventions include; promoting the continental climate resilient and low carbon development initiatives such as the Climate Smart Agriculture; promoting the African Adaptation and Loss and Damage Initiative; and lastly; promoting renewable energy and other sustainable development initiatives in a bid to attain global goal of reducing Greenhouse Gas (GHG) Emissions.

2.6 Gender and Equity Issues of Energy Access

In many contexts, it is women who suffer the most from conditions of extreme poverty. Because of their traditional responsibilities for collecting fuel and water, in many developing countries women and girls would benefit most from access to improved energy services. Reduced drudgery for women and increased access to non-polluting power for lighting, cooking and other household and productive purposes can dramatically improve women's levels of empowerment, education, literacy, nutrition, health, economic opportunities and involvement in community activities. These improvements in women's lives can, in turn, have significantly beneficial consequences for their families and communities.

The situation of other vulnerable groups such as elderly people, children, people with disabilities and ethnic minorities are also expected to be improved through the provision of affordable renewable energy services. There is need to develop and implement projects and activities with particular focus on sustainable energy, gender and vulnerable groups. There is also need to mainstream gender considerations into sustainable energy planning and

implementation. In this context, the gender program of the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) is a good example how to address these issues on policy levels.

2.7 Water-Energy-Food Nexus

Water security, energy security and food security are so inextricably linked that actions in one area more often than not have impacts in one or both of the others. Energy is needed for extracting, transporting, distributing and treating water. Water is used for extraction, mining, processing, refining, and residue disposal of fossil fuels, as well as for growing feedstock for biofuels and for generating electricity. Food production is by far the largest consumer of global fresh water supplies and requires energy to power food production, processing and transportation. Globally, agriculture is responsible for an average of 70% of fresh water consumption by humans. Food production sometimes also competes with energy for land. These intricate linkages must be taken into account when developing and implementing energy policies and programmes. While the EAC region has long recognized that regional integration is central to addressing existing energy challenges and creating new opportunities for energy generation, it has not managed to link energy, food and water sector planning. At the regional level, there has been more focus or bias on energy sector - and mainly electricity. Shortcomings in inter-sectoral coordination are a major challenge both on the national and transboundary levels.

2.8 Policy Framework

Creation of an enabling environment is mostly a function of the national government and regulatory bodies. Several energy projects in the EAC region have been developed or are being developed due to subsidies and tax breaks as well as other supportive policies. National policies are therefore key to gauge the viability of a business model from one country to another. The Regulatory Indicator for Sustainable Energy (RISE) launched by the Sustainable Energy for All Initiative (SEforAll) and the World Bank in February 2017 provides country-wise overview of progress towards establishing the necessary policy and regulatory frameworks for sustainable energy. By use of scores, RISE helps governments assess if the policy and regulatory framework in place is conducive to driving progress on sustainable energy, and pinpoints where more can be done to attract private investments. RISE scores reflect a snapshot of a country's policies and regulations in the energy sector, organized by the three pillars of the SEforAll initiative: Energy Access, Energy Efficiency, and Renewable Energy. *Table 1* shows the RISE Scores for the EAC Partner States.

TABLE 1: REGULATORY INDICATORS FOR SUSTAINABLE ENERGY FOR EAC PARTNER STATES, 2017 (SOURCE: HTTP://RISE.ESMAP.ORG/)

Country	Energy Access	Renewable Energy	Energy Efficiency	Overall Score
Burundi	45	54	12	37
Kenya	82	63	48	64
Rwanda	41	59	21	40
South Sudan	18	10	16	15
Tanzania	75	59	28	54
Uganda	78	54	34	55

The table shows that at national levels, all the EAC partner states have prepared, or are in the process of preparing/reviewing, their energy access, renewable energy and/or energy efficiency policy frameworks. The RISE scores show how suitable the country's policy and regulatory frameworks are in providing level playing field for provision of clean, affordable, reliable energy. The scores provide a comprehensive picture of the strength and breadth of government support for sustainable energy and the actions they have taken to turn that support into reality. According to the current scores shown in Table 1, it can be seen that there is much work to be done at national levels on energy efficiency policies in all the countries, while South Sudan needs to develop comprehensive policies in all areas.

At the regional level, the EAC Secretariat published the 'Regional Strategy on Scaling-up Access to Modern Energy Services in the East African Community, (2009). The objective of this regional strategy was to ensure that EAC modern energy access targets are met, to enable Partner States meet the Millennium Development Goals (MDGs). The strategy was prepared with MDGs in mind. Since MDGs have been replaced by Sustainable Development Goals (SDGs), there is need to develop a comprehensive regional renewable energy and energy efficiency policy that is compliant with all the SDGs.

In addition, given the Customs Union and Common Market are already in force in the EAC region, coordination and cooperation is crucial in addressing the energy needs. A regional energy policy cooperation is seen as a means to address region-specific challenges such as achieving universal access, security of supply, energy imports dependence, affordability, but also to build trust among the Partner States.

2.9 Access to finance

Access to finance has been defined as the most significant challenge to the penetration of energy technology in the region. The effects of limited financing options are felt at all levels of the distribution value chain from the manufacturer through to importers, distributors, dealers and finally the end user. The lack of detailed information about the energy sector in the region is a major impediment to foreign direct investment. Limited awareness of market trends and rates of return along with the fears of political instability raises the risk elements for investors. These factors lead to the development of a 'High Perceived Risk' level that results in overall investor uncertainty. The limitations of Access to Finance can also be attributed to the Cost of Capital which has emerged as a major impediment to the growth of the energy sector in the EAC region. High interest rates combined with the cost of technology and foreign expertise have greatly affected the cost of capital for EAC energy projects.

2.10 Awareness

Consumer education has been highlighted as one of the top three challenges facing the penetration of EAC systems, especially in the EAC region. There is a great need to raise the awareness levels of the target market of the energy generation options available and their benefits, as well as the hazards involved with using the more dangerous dirty fuels to meet their energy needs. The shortage of entrepreneurial skills and entrepreneurial capacity in the energy sector has limited the marketing of EAC products. Market Spoilage causes the aspect of awareness that is most challenging to overcome. Market Spoilage occurs due to the presence of substandard products in the market. Poor-quality products, although cheap, increase the difficulty of market penetration because the end users no longer trust the technology.

2.11 Access to technical support services

Availability of technical assistance in the proximity of the end users is a key factor in countering the effects of market spoilage. The presence of technicians well versed in design, installation, trouble-shooting, repair and maintenance of energy systems within the locality increases the trust of the consumers. Due to the novelty of most of the energy products, it is important to develop local maintenance capacity in the area where the products are being marketed. Nevertheless, the scattered nature of Bottom of the Pyramid (BOP) consumers coupled with their low buying power makes the notion of setting up service centers in the distribution regions unsustainable.

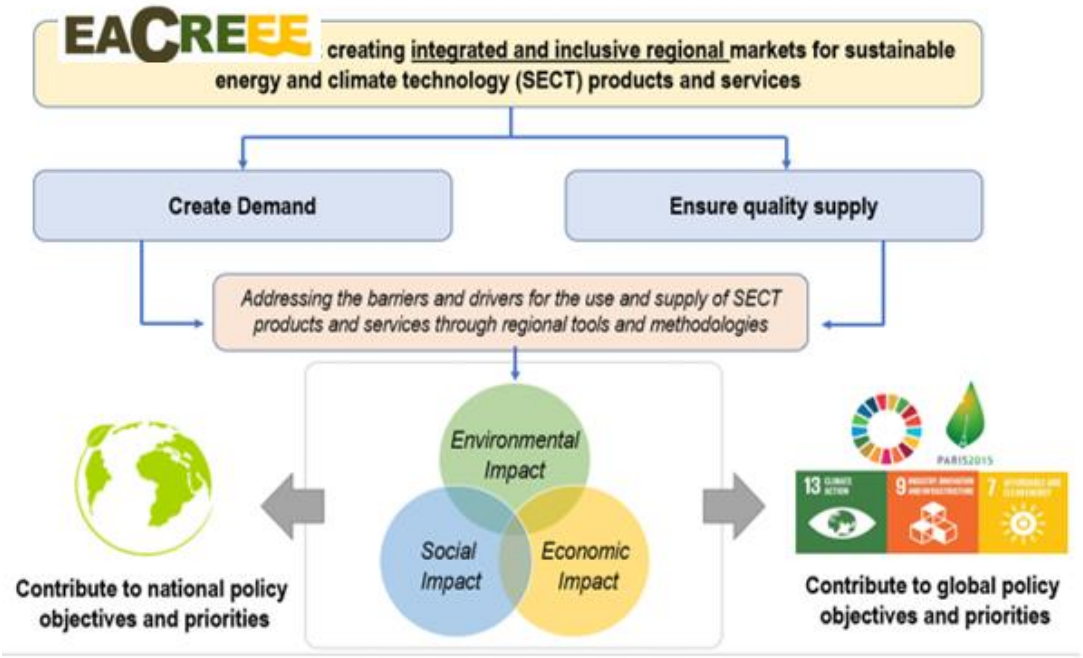
2.12 Sustainable energy entrepreneurship and innovation

To increase the long-term sustainability and local value creation of renewable energy and energy efficiency investments in the EAC Partner States there is the need to strengthen domestic energy entrepreneurship and innovation systems. There is need to put focus on actions to strengthen the productive (manufacturing, assembling, servicing) and innovation capacities of domestic businesses and entrepreneurs (e.g. local content requirements, fiscal and non-fiscal incentives, incubation, acceleration, R&D, quality infrastructure and standards, qualification, IPs, cluster building). Further analysis on the obstacles and barriers for energy entrepreneurship and innovation needs to be undertaken by EACREEE. In this context, other EAC countries can learn for the “Kenyan way” to promote the domestic solar business.

3. EACREEE MISSION, VISION, OBJECTIVES AND CORE VALUES

3.1. Mission

***A regional Centre committed to promote an integrated and inclusive energy market as an engine for socio-economic development and improved livelihoods*.**



3.2. Vision

A leading hub for renewable energy and energy efficiency

3.3. Objectives

EACREEE works towards the creation of an integrated and inclusive EAC market for sustainable energy and climate technology products and services. The local demand and supply side needs equal attention. The increased availability and local supply of these is an important contribution to address the existing rural energy access challenge, increase the competitiveness and productivity of domestic businesses and industry, and to improve the environmental footprint of the region (local pollution, GHG emissions).

EACREEE's core objectives are:

1. To promote renewable energy and energy efficiency technology in the region by offering/facilitating targeted technical support to the EAC, national governments, local governments, civil society organizations and private sector organization that contribute to the achievement of the SDGs and the implementation of the Paris Agreement on Climate Change.

2. To facilitate the transformation of renewable energy and energy efficiency policies by lobbying/ joint mobilization for resources for formulation and implementation of coherent sustainable energy policies in the EAC in efforts to consolidate sustainable local renewable energy enterprises/entrepreneurs and improve access to clean energy.
3. To facilitate renewable energy and energy efficiency investment, entrepreneurship and innovation through partnerships and innovative tools and methodologies.
4. To facilitate capacity building on renewable energy and energy efficiency in the EAC through trainings/seminars/workshops/conferences/forums.
5. To facilitate/promote research or technology transfer and disseminate findings on topical issues as input into policy formulation, development planning and implementation.
6. To promote a joint sustainable energy development programme for the EAC.
7. To cooperate with international organizations with similar goals and objectives in formulation and implementation of sustainable energy development programmes in the EAC.

3.4. Core Values

EACREEE will be guided by the following core values, which continue to reflect our mission, to guide our decisions, actions and provision of services:

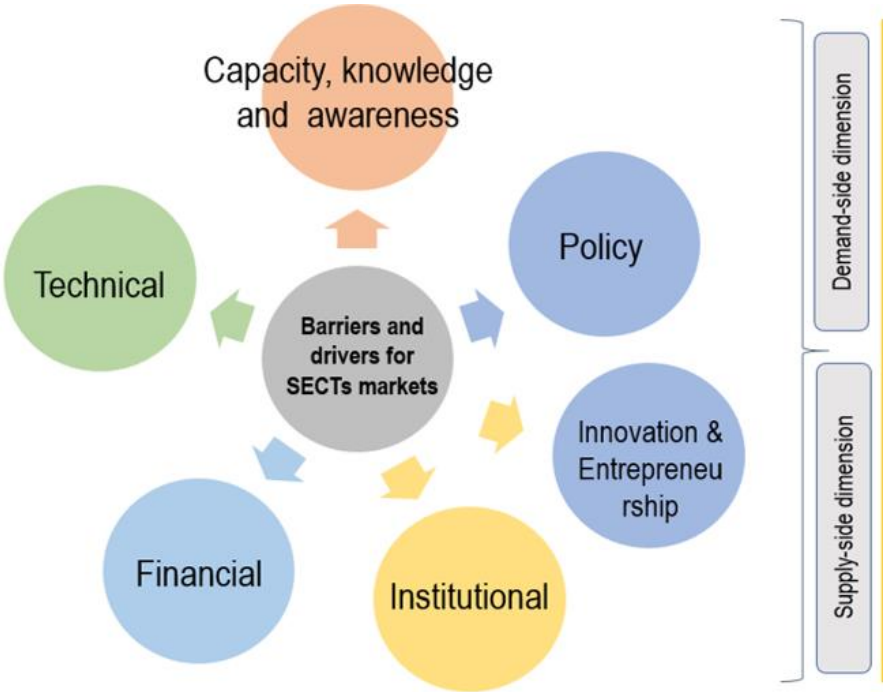
1. Team work
2. Integrity.
3. Accountability and Transparency.
4. Diligence.
5. Professionalism.
6. Results and Responsiveness
7. Continuous improvement

4. STRATEGIC INTERVENTIONS AND PROGRAMS

The areas of interventions discussed in this section include the priority activities with a potential for significant contributions to the EAC regional development objectives, the SDGs and the Paris Agreement. While the specific programs and initiatives to address these goals may change over time, all EACREEE's activities will be guided by the key principles of social cohesion, environmental conservation and economic prosperity for the region through promotion of universal energy access, affordable energy services, reduced environmental impact and energy security.

EACREEE aims to accelerate the energy and climate transformation by creating economies of scales, equal progress and spill-over effects between countries. Through cross-border approaches and methodologies, EACREEE complements and accelerates national efforts in the areas of policy and regulation, capacity development, knowledge and data management, awareness raising, as well as the promotion of investment, innovation and entrepreneurship. With its regional activities, EACREEE addresses key demand-side and supplier-side barriers for the uptake of sustainable energy markets in the EAC. In this context, EACREEE focuses on regional actions to strengthen the productive (manufacturing, assembling, servicing) and innovation capacities of domestic businesses and entrepreneurs (e.g. local content requirements, fiscal and non-fiscal incentives, incubation, acceleration, R&D, quality infrastructure and standards, qualification, IPs, cluster building).

FIGURE 1: EACREEE ADDRESSES DEMAND AND SUPPLY(IER) SIDE BARRIERS FOR THE UPTAKE OF INTEGRATED AND INCLUSIVE SUSTAINABLE ENERGY TECHNOLOGY MARKETS IN THE EAST AFRICAN COMMUNITY (EAC)



The Action Plans to achieve EACREEE's objectives are framed along the following strategic interventions/programs:

4.1 Creating enabling environment for RE&EE investments through policies, regulation, standardization, strategies, and other frameworks development

Proper coordination with relevant authorities and stakeholders is key to development of policy and regulatory frameworks, to ensure an enabling and conducive environment for RE&EE investments. EACREEE will provide technical backstopping to the EAC Sectoral Council on Energy in the development of regional policies, strategies and other related frameworks on RE&EE in line with SDGs and the Paris Agreement on Climate Change. The following initiatives will be undertaken:

- Support the EAC in the development of a coherent regional policy/roadmap/strategy on Renewable Energy and energy efficiency. As a starting point, EACREEE is working with the East African Science and Technology Commission (EASTECO) to develop EAC Sustainable Renewable Energy Technologies Deployment Framework and Guideline. This document will provide the framework and guidelines for the development of a coherent regional policy on renewable energy. EACREEE will follow up on Partner States to harmonize their national polices with the regional policy.
- Develop EAC Energy Efficiency Strategy. With support from the United Nations Economic Commission for Africa (UNECA) and other potential partners, EACREEE will develop an EAC Energy Efficiency Strategy based on the national strategies. The Strategy will map, review and update already developed strategies and document feasible interventions encompassing all best practices in energy efficiency and conservation that can contribute to improving energy access, reducing cost of production and minimizing emissions in East African region.
- Publishing policy briefs on renewable energy and energy efficiency. This can help policy and decision makers to quickly analyze issues in order to come up with specific, policy, legislative and regulatory frameworks for various aspects of renewable energy and energy efficiency.

4.2 Clean Cooking Fuels and Technologies

Since the 1980s, EAC governments and international organizations have been promoting the use of improved, more-efficient cook stoves. Between 2012 and 2014, an estimated 5.3 million clean cook stoves were distributed in the region, through private companies or government programmes. Although much gains have been registered with respect to improved cook stoves, a sizable number of households still use traditional cook stoves. For this reason, the following initiatives will be pursued by EACREEE promote supply of modern and clean cooking fuels and technologies as well as awareness creation to create demand.

- Develop and implement Programme to accelerate deployment improved/modern biomass technologies. The Programme will involve (i) developing regional standards for improved cook stoves (ii) working with the national authorities responsible for vocational education and training to incorporate the building of improved cook stoves in the curricula for house construction practice, and (iii) sensitizing and training architects and engineers to include provisions for improved household cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities.

4.3 Stimulating Investments in Renewable Energy and Energy Efficiency

The EAC Partner States collectively have a vast renewable energy potential, exploited only marginally to date. There are already several national initiatives to increase electricity generation from renewable energy sources. However, a large percentage of the population still lack access to electricity. Although there has been steady increase in electrification in the region, in most cases the applications have been generally limited to lighting, communication and entertainment services. On the other hand, application of sustainable energy in agriculture and agro-base industries in the rural areas is still very limited, even in some areas which are grid-connected. Promoting productive uses of energy can help to stimulate economic growth, giving the rural communities more purchasing power for electricity for other social services.

The following initiatives will be pursued:

- Establishing EACREEE Renewable Energy and Energy Efficiency Facility. The Programme will be designed to provide grant co-funding for small to medium sized RE&EE projects, including mini/micro-grids and businesses in rural and peri-urban areas. Build capacity among local players to enable them prepare bankable projects to reach the desired standards of project preparation and bankability, in order to secure finance. The Programme will also support building capacity of SMEs on preparation of a bankable feasibility study and financial model that will provide sufficient project details for the approval of financing as well as of development of an Environmental Impact Assessment (EIA) report to obtain the necessary environmental permits and concessional financing from donors and government development banks.
- Design and implement projects to promote sustainable energy for productive uses. The projects will involve (i) raising awareness about productive uses of energy as opposed to mere consumption – i.e. including aspects of behavioral changes, (ii) promoting private sector investment in small and medium-scale productive uses of energy (e.g. in irrigation, small-scale agro-processing, etc.), (iii) support local capacity building and training in productive uses of energy and business development, (iv) sharing experience and best practices, and (v) and facilitating access to finance for small and medium-scale projects on productive uses of energy.

4.4 Promoting Sustainable Energy Programmes in Cities and Other Built Environments

Residential and commercial building accounts for more than 40% of the total national energy consumption in most countries. In East Africa, with quite a small industrial sector, household accounts for much higher portion of the total energy consumption. Hence, it is very essential to pay attention on energy consumption in this sector.

Several energy efficiency intervention programmes have been implemented in the EAC region, mainly at national levels. These include replacement of inefficient incandescent light bulbs with fluorescent or light emitting diodes (LED) lamps, development of Minimum Energy Performance Standards (MEPS) for electrical appliances, among others. Although a lot has been done in this area, there is still large room for improvements. EACREEE will work with other partners to develop and implement programmes to promote energy efficiency in buildings.

EACREEE will also work with cities in the region and development partners to assist the cities in developing and implementing Sustainable Energy Action Plan in line with the Covenant of

Mayors for Climate & Energy. The aim is to help EAC cities/municipalities to develop and implement sustainable energy programmes and related climate change mitigation and adaptation measures that are relevant, achievable and compelling to local authorities in the EAC region. These measures will include promoting energy conservation in the transport sector, energy and resource efficiency in the built environment, energy efficiency in refrigeration, heating, ventilation and air conditioning (HVAC) systems and waste-to-energy programmes, among others. For the transport sector, there is need for improving efficiency and decency in public transport, campaign for behavioral changes with respect to public transport, promoting development of infrastructure for non-motorized transport and walkways and promoting use of efficient vehicles.

EACREEE looks at taking lead in;

- Supporting East African cities to develop and implement their Sustainable Energy Action Plans.
- Promoting energy efficiency and conservation in the built environments.
- Promoting and showcasing self-sustainable energy generation incorporated in the design and construction buildings and other facilities in EAC cities. EACREEE will work with its partners to have more cities generating energy (electricity, biogas, etc.) from municipal wastes.
- Work with other partners to establish, develop and implement a facility for green financing for project development and risk mitigation;
- Promote RE&EE in transport sector in efforts to help decarbonize transport sector in built environment.

4.5 Energy Efficiency in Industries

In view of both reducing the energy demand of industries and improving industrial energy efficiency, EAC Partner States are implementing a number of energy management programmes at national levels. Much of the interventions have been on supporting energy audit for industrial and commercial facilities and developing MEPS using a labelling system for certain industrial appliances. Currently the labelling system applies to five appliances: lighting, refrigerators, freezers, motors and air conditioners. Implementation of this system is still at a nascent stage. EACREEE will work with all the relevant stakeholders to pursue all these initiatives to improve energy efficiency in the industrial sector.

EACREEE will work with other partners to:

- Establish and implement regional programme for scaling up adoption of Industrial Energy Management Standards compatible with ISO 50001 by industries.
- Assess industrial energy saving potentials and promote specific technologies for improvement of industrial energy efficiency.
- Strengthen capacities of Energy Service Companies (ESCOs) and Energy Management Professionals to support EE programmes.

4.6 Capacity Building in Renewable Energy and Energy Efficiency

Human capital is recognized as the most critical requirement for building a sustainable energy future. The quality of a country's human capital is central to promoting and sustaining innovation as well as the adoption of appropriate technology for accelerated sustainable

development. Strengthening human capital enables the building of abilities, relationships and values that enable institutions, groups and individuals to improve the development, utilization and performance of energy systems in an efficient and environmentally benign manner.

EACREEE will work with other partners to:

- Develop and implement integrated training Programmes in RE&EE within the region. EACREEE will seek support from or work with development partners to develop and implement Programmes to build capacity in RE&EE e.g. the Micro-Grid Academy and the Solar Energy Academy. This will involve building capacity for design, production, installation and maintenance of renewable energy technologies. This will be achieved through designing and implementing specialized training Programmes (including face-to-face and e-learning) in key RE&EE technologies with greater potentials in the EAC region.
- Conduct training on carrying out feasibility studies of projects. EACREEE will work with other partners to build capacity on preparation of a bankable feasibility study and financial model for renewable energy projects.
- Strengthen capacity in research and development in areas of RE&EE. EACREEE will seek to strengthen capacity to implement research and development, and technology transfer Programmes.
- Raising awareness and building technical capacity on digitalization of the energy systems. Energy policy makers need to make sure they are well-informed about the latest developments in the digital world, its nomenclature, trends, and ability to impact a variety of energy systems (both in the near and longer term). The region should have adequate staff with expertise in digital systems for the energy sector, who can provide accurate technical advice to the policy makers.

4.7 Sustainable Energy-Water-Food Nexus Planning

Natural resources in EAC region are increasingly under pressure, especially due to population growth, economic growth and transformation as well as climate change. Energy-Water-Food nexus approach has emerged to understand interdependencies and commonly manage resources within a multi-scale and multi-level framework. In EAC, the high and growing consumption of traditional biomass especially for cooking purposes - notably fuelwood and charcoal - is both a key source of energy and contributor for food security as well as a pressure on natural resources. Improving the bioenergy value chains is essential for limiting environmental degradation and for securing the livelihoods of millions of people.

It is becoming increasingly unsustainable to manage water, energy and food systems through the long-held single sector approach as practiced across the world. A more integrated approach across the three sectors is increasingly being acknowledged as global best practice. This involves moving away from the conventional policy and decision-making in separate ‘silos’ toward an Energy-Water-Food ‘nexus approach’ that identifies and addresses trade-offs resulting from the demands of the three sectors on limited natural resources.

EACREEE will work with other partners to:

- To develop a regional standardized energy data collection, analysis and management system. This will provide EAC Partner States the basis for strategic interventions, ascertaining their specific energy issues in order to develop context specific, sustainable long term programmes or projects that are relevant and driven by the needs of the communities.

- To build regional capacity for sustainable planning of the Energy-Water-Food nexus. A nexus approach to managing the interlinked resources can enhance water, energy and food security by increasing efficiency, reducing trade-offs, building synergies and improving governance across sectors and across the borders. Focusing on energy generation primarily without coordination with food and water sectors will not achieve meaningful regional integration nor will it fully deliver in improving the quality of life across the EAC region. A coordinated Energy–Water–Food nexus platform would have better prospects of delivering on social and economic goals.
- To raise awareness on the importance of the Energy-Water-Food nexus and the benefits of integrated planning among relevant institutions.

4.8 Reducing Inequalities in Energy Access, Energy Entrepreneurship and Workforce

Within the EAC region, a significant number of men, women and youths, particularly the low-income or rural population, are disadvantaged in terms of their ability to access modern and sustainable energy. This situation is limiting socio-economic development of the energy poor as well as of the overall economy. Nonetheless, men, women and youths are affected differently by energy poverty, and require modern energy to fulfill specific tasks within their influence, be it agricultural, domestic, commercial or community-based.

Renewable energy sector employed, directly and indirectly, approximately 10.3 million people in 2017[9] around the world. Although this data is mostly based in countries like China, Brazil, United States, India, Japan, Germany and the rest of EU, the region employs a sizable number in RE&EE sector. With expanding of and investment in RE&EE, it is critical to have no one left behind, for these reason, gender equality and youth empowerment can be critical in policy development as well as structuring investment.

EACREEE will seek to pursue the following initiatives:

- Develop and implement Programme on capacity building for men, women and youths. The project will involve training both men, women and youth on how to promote, set up and operate RE&EE technologies (e.g. improved cook stoves), because RE&EE projects are much more effective when women are involved.
- Establishing energy entrepreneurship fund for women, youth and marginalized persons.
- Working with Partner States and humanitarian agencies to ensure that energy needs for all displaced persons, refugees and their host communities are included in national energy planning. Displaced persons and special groups exert more pressures on the available resources in the places where they are settled. The most significant impacts include deforestation, soil erosion, and depletion and pollution of water resources. Meeting the energy needs of special groups and displaced people in a sustainable manner remains a challenge that requires international attention.

5 STRENGTHENING COOPERATION

EACREEE seeks to become a regular platform for the formation of joint solutions for sustainable development in RE&EE in the East African region. Market-oriented solutions for decarbonizing energy markets will require the region to integrate renewable energies more

[9] Renewable Energy and Jobs – Annual Review 2018 (Abu Dhabi:2018)

strongly in the market. The Centre will work/coordinate with all Partners to centralize effort for a greater impact of initiatives in the region.

5.1 Collaboration with National Institutions

It is envisaged that EACREEE will have a lean Secretariat. Hence, to support implementation of EACREEE activities NFIs have been established, which interlink the Secretariat with all EAC Partner States. The purpose of the NFIs network is to increase the impact and effectiveness of programs, projects and activities developed, coordinated, co-funded and/or implemented under the leadership of the Centre.

However, most of these NFIs do not have capacities and mandate to support capacity building (education, training and research) on RE&EE. Since one of the key objectives of EACREEE is to support capacity building in RE&EE, the Centre will work with other well-established institutions in the region to design and implement capacity-building programs according to their competencies. A written partnership framework/agreement or a memorandum of understanding shall be signed with the institution. These institutions shall play a useful and cost-effective role by complementing and supporting the activities of national institutions operating in similar fields, thus fostering national and collective self-reliance. EACREEE will mainly coordinate and monitor these regional activities. EACREEE will focus mainly on “train the trainers” methodologies. Moreover, it will mobilize funding for regional qualification and certification programs to be implemented through national institutions. EACREEE will not implement training itself, but take leadership in identifying key needs and stakeholders, as well as mobilizing means and partners to implement. In certain cases, EACREEE might provide quality certifications for trainers.

5.2 Collaboration with Other Regional Sustainable Energy Centers

EACREEE is a member of the Global Network of Regional Sustainable Energy Centres (GN-SEC), which is coordinated by UNIDO in cooperation with various regional economic communities and organizations. The Centres respond to the urgent need for increased regional cooperation and capacities to mitigate existing barriers to RE&EE investment, markets and industries. EACREEE will play an active role in this global network, seeking to share experience with other Centres and cooperating with them in putting forward the sustainable energy agenda in the global debates. EACREEE information sources will be disseminated through the GN-SEC platform: www.gn-sec.net.

5.3 Partnership Building

Ensuring everyone has access to sustainable energy by 2030 will require leadership and influential Partners of all kinds — from governments, companies, institutions, financiers, development banks, unions and communities, entrepreneurs and civil society, to name a few.

In the 2030 Agenda for Sustainable Development, the world leaders expressed their determination to mobilize resources through a revitalized Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people. Solidarity is particularly important among the EAC Partner States, which are undergoing an integration process.

EACREEE will position itself as a regional hub for UN Sustainable Energy for All Initiative to engage the leaders. This will entail developing closer relationships with international

organizations and institutional partners to mobilize and share knowledge, expertise, technology and financial resources required to achieve sustainable energy for all.

5.4 Resources Mobilization

Design and implementation of EACREEE's priority programmes will require significant amount of resources. EACREEE with support from the EAC Secretariat, Partner States and UNIDO will mobilize resources based upon requirements identified in this strategic plan. EACREEE will mobilize funds for its activities from the Partner States, other governments (development partners) and international organizations.

Resource mobilization will involve identifying programmatic areas within EACREEE's approved programmes and other interest areas for which voluntary contributions (financial and in-kind contributions) will be solicited. The Centre will initiate and maintain appropriate contacts with the relevant donor(s), and manage resource mobilization activities, including outreach activities with the aim of closing the funding gap by means of building new and enhancing existing relationships with donors.

EACREEE will work closely with the EAC Secretariat, Partner States and development partners to implement activities aimed at mobilizing resources for this Strategic Plan. This will include, among other things, organizing and participating in workshops and conferences.

EACREEE will develop a comprehensive resources mobilization strategy, including defining modalities of engagement, outlining goals and expected outcomes, including outcome monitoring of the implemented projects. The management of resources and partnerships will continue to follow a results-based approach. Partnerships and resource mobilization are to be designed to support specific EACREEE objectives, which may include strategic, programmatic and/or operational objectives.

6 IMPLEMENTATION FRAMEWORK

6.1 Guiding Principles

The implementation of this Strategic Plan will be guided by the following principles.

- Regional and National Ownership. This is the central guiding principle. Development partners will be encouraged to support only programmes/projects that address areas where there are regional or national programmes enjoying strong EAC or government commitment with evidence of significant financial support. This will ensure sustainability of the programme.
- In-kind contributions by EAC Partner States by making available time of experts, as well as hosting services for conferences and events;
- Resources Optimization: EACREEE will seek to make the best use of available financial resources, prioritizing 'high impact/ low cost' solutions and match making actions with most appropriate funding mechanisms.
- Prioritization: The strategic interventions are based on EAC development priorities and the Partner States will have the liberty to prioritize those actions most important to their development priorities.
- Stakeholders Participation: Relevant stakeholders will be informed, consulted and involved throughout the implementation of this Strategic Plan;
- Best Practices and Replicability: EACREEE will develop projects based on best practices or proven experiences and which can be replicable across the EAC Partner States.
- Consideration of gender, youth, social and environmental criteria in all programmes and interventions

6.2 Institutional Roles

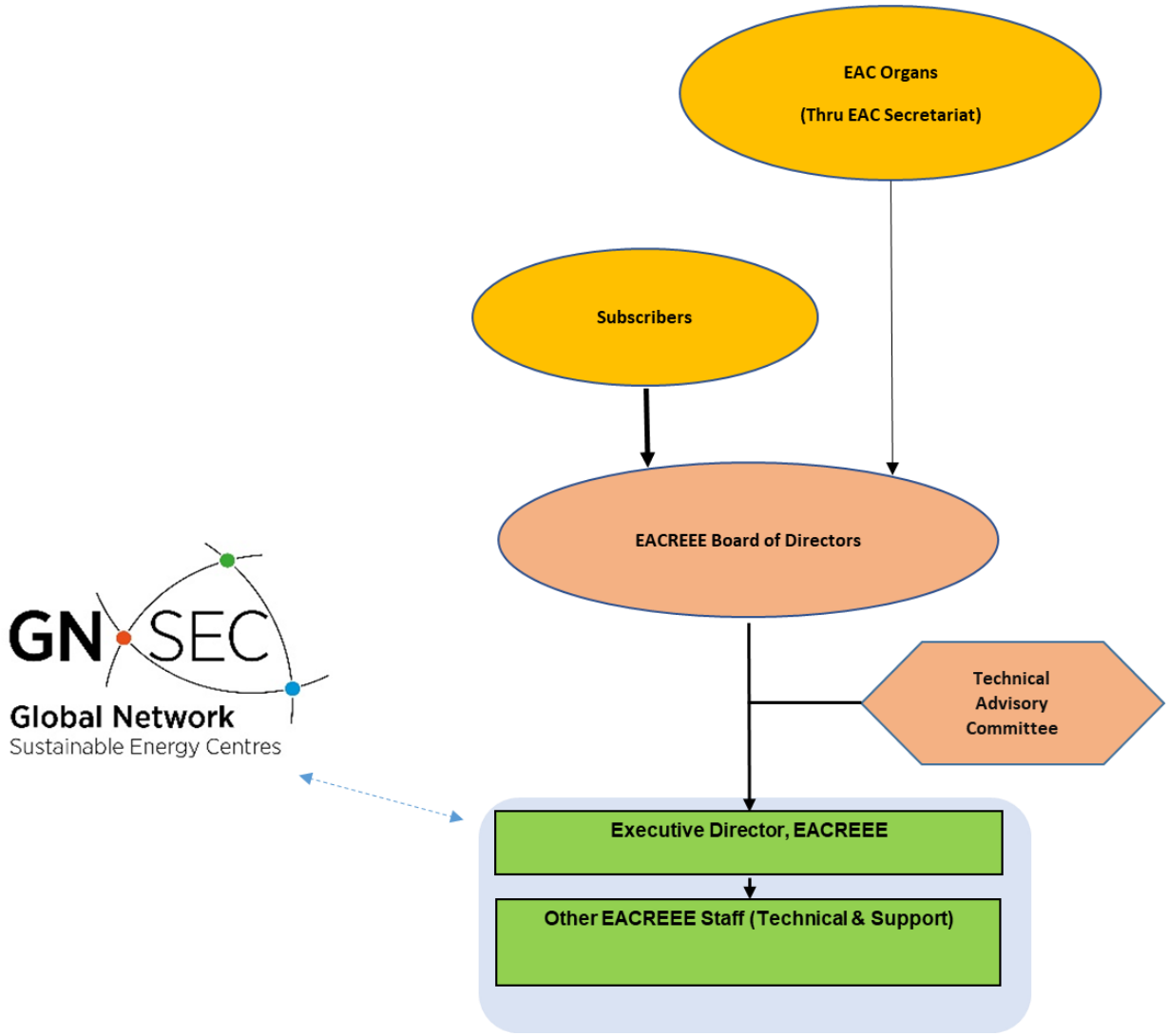
The implementation of this Strategic Plan will be overseen by the EACREEE Board of Directors/Steering Committee, which is accountable to both Makerere University Council and EAC Sectoral Council on Energy. All programmes will be approved by EAC Sectoral Council on Energy meeting. Implementation of some projects, especially those of policy nature, will require involvement of the EAC Council of Ministers, which is a policy making organ of the EAC.

The organizational arrangement for implementation of this Strategic Plan is shown in the Organizational Chart below.

In each EAC Partner State, there shall be a NFI, with a high ranking official of appropriate technical competence as the NFI Coordinator. All NFI Coordinators shall be members of the EACREEE Technical Advisory Committee.

The projects will be mainly implemented at national levels through the NFI. EACREEE Secretariat will coordinate with these NFIs to ensure successful implementation of programmes arising out of this strategic plan. The programmes that are to be implemented at regional level will be led by the EACREEE Secretariat with support from the EAC Secretariat.

The EAC Secretariat, has the responsibility to facilitate resources mobilization for this strategic plan. The EAC secretariat will also be directly responsible for implementation of the component on institutional strengthening.



6.3 Strengthening EAREEE's institutional capacity to implement Programmes

The East African Centre of Excellence for Renewable Energy and Efficiency Ltd will continue designing and implementing sustainable energy programmes/projects in the areas identified in this Strategic Plan on behalf of the EAC Secretariat and to support EAC Partner States. EACREEE will play a leading regional role between various market enablers to improve operation efficiency, avoid or minimize duplication of efforts, and capitalize on the existing national, regional and international institutional strengths to create synergies. The Centre will support the creation and strengthening of a RE&EE Association in each Partner State (and with a regional coordination), acting as nuclei for mobilizing participation of local private sector, including financial institutions. In addition, the Centre will work to harmonize and synergize efforts with such regional organizations like the Common Market for Eastern and Southern Africa (COMESA), Economic Community of West African States (ECOWAS), Middle East and North Africa (MENA), Southern African Development Community (SADC), GN-SEC Members, Regional Power Pools, etc.

In order for EACREEE to develop and implement programmes identified in this Strategic Plan, its capacity needs to be strengthened. The following activities will be undertaken:

- Establish the institutional governance structure of EACREEE in accordance with its Articles of Association.
- Provide adequate staffing.
- Establish and implement the internal rules of procedures and regulations governing procurement, staff travel, financial management, and other aspects as soon as possible in order to streamline EACREEE's operations.
- Each partner States will contribute to the development of regional EACREEE programs and projects by ensuring synergies between national and regional activities
- EACREEE has developed an internship program, which will strengthen also the capacities of EACREEE as well as NFIs to deal with EACREEE activities.

Develop and implement a comprehensive roadmap for establishment of East African Centre for Renewable Energy and Energy Efficiency as an EAC institution.

7 MONITORING AND EVALUATION

It is important to establish a robust M&E system to monitor the implementation of the strategic plan at national and regional levels. This will help in tracking progress towards the achievement of EACREEE's goals and objectives, and identify any deviation or bottlenecks.

The Board of Directors, the Technical committee and other committees established by the Board of Directors will be responsible for project monitoring and evaluation, conducted in accordance with established EACREEE's procedures. EACREEE's procedures will include:

- Rules of procedures for Board of Directors meeting,
- Internal rules, regulations and procedures,
- Financial and administration manual,
- Procurement and assets disposal rules, etc.

The results matrix provides performance and impact indicators for EACREEE's operations along with their corresponding means of verification. The Monitoring and Evaluation (M&E) Plan include:

- Annual Technical Advisory Committee (TAC) and Board of Directors (BoD) meetings
- 5 years Business Plan including monitoring and evaluation framework (incl. gender aggregated quantifiable indicators)
- Annual EACREEE's progress reports,
- Project implementation reviews,
- Financial review reports,
- External independent evaluations,
- External independent impact evaluations

ANNEX: RESULTS MATRIX

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
Outcome **1**: Policy, legal and incentive frameworks to promote Renewable Energy and Energy Efficiency (RE&EE) investments and markets developed and their implementation is facilitated	Output 1.1: Regional Renewable Energy and Energy Efficiency Policy roadmap and Action Plan approved	- Consultants ToR to develop regional Renewable Energy and Energy Efficiency (RE&EE) drafted, advertisement done and consultant recruited by Q4 2019. - Partnership Framework with Partners developed by Q1 2020 - Agenda for Inception Workshop and Kick off meeting developed and stakeholders invited by Q2 2020. - Regional RE&EE Policy roadmap and Action Plan drafted by Q4 2020 - Regional RE&EE Policy roadmap and Action Plan validated by key stakeholders by Q4 2020 - Regional RE&EE Policy roadmap and Action Plan adopted by EAC Sectoral Council on Energy by Q3 2021	- Inception Workshop report - Copies of Partnership Framework - Validation workshop report - Published regional RE&EE Policy roadmap and Action Plan
	Output 1.2: Bioenergy Development Strategy and Investment Plan for the Eastern African Region developed and approved	- Drafting of Bioenergy Development Strategy and Investment Plan - Regional stakeholders consultation to validate the draft strategy - Approval of draft strategy	- Inception Workshop report - Validation workshop report - Published Bioenergy Development Strategy and Investment Plan
	Output 1.3: Harmonised Regulatory Framework for the Electricity Market in Africa	- National Roadmap for MEPS and Labelling of Appliances in Uganda developed, - Stakeholder consultations held - Guidelines on Policy and Technical Models for Micro/Mini Grids developed	- Inception Workshop report - Validation workshop report - Published Harmonised Regulatory Framework for the Electricity Market in Africa

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
	Output 1.4: Regulations for Refrigerators and Air Conditioners	- Model regulations for refrigerators and air conditioners drafted, - Number of stakeholders who consider use of a financial mechanism - Model regulations approved at EAC level.	- Inception Workshop report - Validation workshop report - Published Regulations for Refrigerators and Air Conditioners
	Output 1.5: Policy Briefs and recommendations on specific RE&EE issues released	- Prepare at least one policy brief biannually	- Published policy briefs
Outcome **2**: Increased Access to Cleaner and More Efficient Cooking Equipment and biofuels.	Output 2.1: Regional standards for improved cook stoves and biofuels in place	- Consultants ToR to develop regional standards for improved cook stoves drafted, advertisement done and consultant recruited by Q4 2020. - Partnership Framework with Partners developed by Q1 2021 - Agenda for Inception Workshop and Kick off meeting developed and stakeholders invited by Q2 2021. - Regional standards for improved cook stoves drafted by Q4 2021 - Regional standards for improved cook stoves drafted, reviewed and validated by Q4 2021 - Standards for improved cook stoves reviewed and approved by the EAC SCE by Q3 2022	- Inception Workshop report - Copies of Partnership Framework - Validation workshop report - Published regional standards for improved cook stoves
	Output 2.2: Construction of improved cook stoves included in the curriculum of vocational education and training programmes in the EAC region	- Consultants ToR to develop regional standards standardized curriculum for training drafted, advertisement done and consultant recruited by Q2 2020. - Standardized curriculum for training developed and validated by Q4 2020 - Training of Trainers on construction of improved cook stoves conducted by Q1 2021	- Copy of standardized training curriculum - Validation workshop report - Training workshop report - Copy of Partnership agreements/Memorandum of understanding with training institutions

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
		- Strategy for specialized training on improved cook stoves and biofuels established and implemented by Q1 2022 - A dedicated awareness campaign on use of improved cook stoves and biofuels conducted by Q2 2020 - At least one institution in each EAC Partner State providing training on improved cook stoves by Q2 2022 - Impact assessment on use of improved cook stoves and biofuels conducted by Q3 2022	- Impact assessment reports
	Output 2.3: Architects, engineers and builders are sensitized to include provisions for improved cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities that require cooking.	- Consultants ToR drafted, advertisement done and consultant recruited by Q2 2020. - At least 50 architects and engineers per country sensitized and trained to include provisions for improved cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities that require cooking by Q4 2020 - Impact assessment on integration of improved cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities that require cooking conducted by Q3 2021 - Strategy on reporting on economic benefits of use of improved cook stoves and biofuels market transformation at national and regional levels developed and implemented by Q3 2021	- Training workshop report - Impact assessment reports

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
Outcome 3: Increased Investments in small to medium scale renewable energy businesses (including power generation, roof-top solar PV system, solar water heating, clean cooking, etc) and productive uses of energy	Output 3.1: EACREEE Renewable Energy and Energy Efficiency Facility established to provide grant co-funding for small to medium sized renewable energy and energy efficiency (RE&EE) projects and businesses as well as productive uses of energy	- Investment promotion strategy for SME in RE&EE in rural and peri-urban areas developed by Q2 2020 - Capacity of local financial institution to assess various RE&EE feasibility studies developed and implemented by Q2 2020 - National and regional development banks mobilized to create investment packages and counterpart funding for implementation of RE&EE projects by Q4 2020 - Model customized sustainable energy financing packages for the region developed in collaboration with financial institutions by Q4 2020 - Regular call for proposals to support business development by Q1 2021 - Impact assessment of increased financing of RE&EE to local small- to medium-scale entrepreneurs and investors developed by Q3 2021	- Documented investment promotion strategy in place - Capacity building workshop reports - Model investment packages and counterpart funding for implementation of RE&EE projects in place - Impact Assessment report
	Output 3.2: Productive uses of energy promoted	- Private sector investment promotion in small and medium-scale systems for productive uses of energy (e.g. in irrigation, small-scale agro-processing, etc) conducted by Q3 2020 - Ensure provision for productive use of energy is adequately incorporated in the regional energy policy guidelines adopted by EAC Sectoral Council on Energy in Q3 2021. - Awareness and sensitization conducted for at least 5 selected areas per EAC Partner State where electricity can bring about economic development by Q4 2022	- Report on number and scale of investment on productive uses of energy - Published regional RE&EE Policy guidelines and Action Plan - Sensitization and awareness campaigns and workshops reports

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
	Output 3.3: A Net-zero and Ultra-Low Energy Centre of Excellence Building for the East Africa Centre for EACREEE developed and constructed	- Consultants ToR drafted, advertisement and qualified consultants recruited by Q4 2020 - Regional standards for Net-zero and Ultra-low energy buildings developed by Q1 2021 - Space for construction secured and necessary approvals done by Q1 2021 - Stakeholders participate in the review of standards, training curriculum and sensitization for Net-zero and Ultra-low energy buildings by Q3 2021 - Standards and curriculum for Net-zero and Ultra-low energy buildings reviewed and approved by the EAC SCE by Q4 2021 - Centre of Excellence for EACREEE building designed and constructed by Q4 2022 - Training curriculum on Net-zero and Ultra-low energy buildings developed and implemented Q1 2023 - Specialized sensitization and training Programmes on Net-zero and Ultra-low energy buildings designed and implemented Q1 2023 - Strategy to conduct review the impacts of Net-zero and Ultra-low energy buildings established and implemented Q1 2023	- Workshop and training reports - Published standards - Impact assessment reports - Copy of curriciulum
	Output 3.4: Solar Technology Applications and Resource Centre (STAR-C) in EAC region established	- Centre of excellence for STAR C designated - Training equipment procured - Curriculum developed - Trainings conducted	- Workshop and training reports - Copy of curriciulum

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
Outcome **4**: Reduced energy consumption and greenhouse gases emissions from East African Cities and other built environments	Output 4.1. Increased market share of Energy Efficient Lighting and Appliances	- Consultants and all project partners ToRs drafted by Q1 2018. - Consultant recruited by Q2 2018. - Partnership Framework with Partners developed by Q1 2019 - Agenda for Inception Workshop and Kick off meeting developed and stakeholders invited by Q4 2018. - EELA project validated by key stakeholders by Q1 2019 - Multi-year capacity building framework established in order to strengthen key institutions, testing centres and stakeholder groups by Q3 2019 - Technical Committee for Standards and Labelling of EE for EAC established by Q3 2019 - Management Structure for the EELA project in UNIDO/SACREEE /EACREEE established with gender balance by Q2 2019 - Monitoring and Evaluation mechanism developed by Q2 2019 - Gender sensitive regional framework for EE lighting and appliances including a measurement and verification plan developed by Q3 2019 - Regional gender sensitive outreach programs conducted by Q3 2020 - Sensitization and awareness raising strategy developed for EELA and implemented by Q3 2020 - Developing Minimum Energy Performance Standards (MEPS) of EELA developed, validated and adopted by Q1 2023	- Inception Workshop report - Copies of Partnership Framework - Validation workshop report - Published regional MEPS on EELA - Technical committee in place - Copy of documented Management Structure
	Output 4.2. Major cities have developed Sustainable Energy	- Strategy to support East African cities to develop and implement their Sustainable Energy Action Plans developed by Q2 2020	- Copy of strategy document - Impact assessment report

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
	Action Plan in line with the Covenant of Mayors for Climate & Energy	- Strategy to promoting energy efficiency and conservation in the built environments developed by Q3 2020 - Strategy to promote and showcase self-sustainable energy generation incorporated in the design and construction of buildings and other facilities developed by Q4 2020 - Strategy to work with other partners to establish, develop and implement a facility for green financing for project development and risk mitigation developed by Q1 2021 - Strategy to promote renewable energy and energy efficiency in transport sector in efforts to help decarbonize transport sector in built environment developed by Q3 2021 - Impact assessment of developed and Sustainable Energy Action Plan under implementation conducted by Q2 2022	
Outcome **5**: Improved industrial energy efficiency to enhance competitiveness of manufacturing industries in the East African Community (EAC) Partner States while reducing GHG emissions.	Output 5.1. Regional programme for scaling up adoption Industrial Energy Management Standards compatible with ISO 50001 by industries established and implemented	- Consultants ToR drafted, advertisement done and consultant recruited by Q3 2019 - Partnership Framework with Partners developed by Q2 2019 - Building Capacity of industries on energy management Systems (ISO 50001) built by Q2 2020. - Regional guidelines on industrial energy management developed by Q3 2020	- Copy of signed Partnership Framework or Memorandum of understanding with Partners - Training report - Copy of adopted regional guidelines on industrial energy management
	Output 5.2. Industrial energy saving potentials identified and specific technologies for improvement of	- Partnership Framework with Partners developed by Q4 2019 - Energy audits conducted in at least 200 industries by Q4 2020 and 50% of recommendations implemented by Q4 2021 - Monitoring systems and indicators to reliably track energy consumption and identify EE potential in industries developed by Q3 2019	- Copy of signed Partnership Framework or Memorandum of understanding with Partners - Industries audit reports - Industrial energy audit recommendations implementation reports

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
	industrial energy efficiency promoted	- Cogeneration systems promoted in all industries and commercial premises where both electricity and useful heat demand exists by removing barriers to their application by Q4 2022.	
	Output 5.3. Capacity of Energy Service Companies (ESCOs) and Energy Management Professionals enhanced to support EE programmes.	- Strategy developed and implemented to raise awareness about the roles of ESCOs by Q4 2019 - Energy management professionals continuously trained - Model guidelines or institutional and legal framework for the delivery and cost recovery of ESCO services developed by Q2 2020 - East African Energy Engineering Congress showcasing the technologies and exchanging information on energy management within the countries of the East African Community established by Q3 2020	- Copy of documented model guidelines or institutional and legal framework for the delivery and cost recovery of ESCO services - Copy of proceedings of the East African Energy Engineering Congress
Outcome **6**: Enhanced skills on design, installation, and operation and maintenance of specific RE&EE technologies	Output 6.1: Specialized training programmes (including E-learning, face-to-face and on-the-job training) in specific RE&EE technologies established.	- Structures developed to work with other partners to develop and implement training programmes on feasibility studies, design, construction, operation, and maintenance in targeted renewable energy technologies e.g. mini-grids, small hydropower, geothermal energy, solar energy, wind energy, biomass energy by Q4 2019 - E-learning modules for all major RE&EE technologies developed by Q2 2021 - Competent hosts institutions in the EAC Partner States identified and designated to host specific RE&EE programmes by Q2 2021 - Strategy to promote specific RE&EE technologies removing barriers to their application developed and implemented by Q2 2020 - Impact assessment of specific RE&EE technologies conducted by Q1 2023	- Documented working framework in place - Documented E-learning modules in place - Training reports - Copy of signed Partnership Framework or Memorandum of understanding with Partners - Impact assessment report

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
	Output 6.2. Enhanced regional capacity for research & development, and technology transfer in RE&EE promoted	- Structure to manage allocation of human, material, and financial resources for capacity building developed by Q3 2021 - Structure to have staff and leadership reflect upon and analyse data from monitoring and evaluation and other learning processes are used in decision making developed and implemented by Q2 2020 - Structure developed to have staff and leadership regularly reflect upon projects, programs, and strategies before, during, and after their implementation and document lessons learned and best practices by Q2 2020 - Structures developed for EACREEE to mobilize resources and provide research grant for at least 5 MSc/PhD students per EAC Partner State by Q1 2022	- Documented structures in place - Research grands disbursment reports
	Output 6.3 Enhanced awareness and technical capacity application of digital technologies in the energy sector	- Number of awareness workshops/conferences conducted on digitalization of the energy sector and the number of participants, - Number of persons trained on specific digital technologies applied in the energy sector. - Number of research works undertaken in digitalization in higher institutions of learning. - Number of energy companies in the EAC region adopting new digital technologies in the energy trade	- Training/workshop/conference reports - Publications - Adoption study reports
Outcome **7**: Enhanced Capacity for Nexus Approach in Sustainable Energy-Water-Food Planning	Output 7.1. East African Community Energy Observatory Platform developed	- Consultants ToR drafted, advertisement done and recruited by Q1 2019 - Detailed methodology of development and reasons for the choice of the methodology developed by Q1 2019 - Stakeholders participation for training and consultations conducted by Q2 2019	- Energy observatory in place and functional - Workshop reports - Reports of sensitization and awareness campaigns

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
		- Seminars and workshops for university lecturers, government staffs, industry staffs and students in the energy fields regularly conducted - Awareness campaign to sensitize companies on aspects of standardized energy data collection, analysis and management system and its benefits regularly conducted	
	Output 7.2. EAC Renewable energy resources mapped	- Framework to work with individual Partner States to conduct detail assessment of renewable energy resources developed by Q3 2019 and follow up with implementation	- Documented working framework in place
	Output 7.2. Regional RE&EE Master Plan developed	- Consultants ToR drafted, advertisement done and recruited by Q1 2020 - Detailed methodology of development and reasons for the choice of the methodology developed by Q1 2020 - Partnership Framework with Partners developed by Q1 2020 - Agenda for Inception Workshop and Kick off meeting developed and stakeholders invited by Q2 2020. - Regional Master Plan on RE&EE drafted by Q4 2020 - Regional Master Plan on RE&EE validated by key stakeholders by Q4 2020 - Regional Master Plan on RE&EE adopted by EAC Sectoral Council on Energy by Q3 2021 - Regional capacity built for sustainable planning of the energy-water-food nexus conducted Q3 2020	- Training and workshop reports - Copies of Partnership Framework - Validation workshop report - Published regional Master Plan on RE&EE -
Outcome 8: Inequalities in energy access, energy business ownership and energy workforce reduced through taking affirmative	Output 8.1: Specialized sensitization and training programmes for women on clean energy designed and implemented	- Regular call for proposals to support business development - Consultants ToR drafted, advertisement done qualified consultants recruited by Q2 2020 - Detailed methodology of development and reasons for the choice of the methodology developed by Q3 2020	- Training reports - Impact assessment report

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
actions to promote equal opportunities for all in all.		- At least 500 women from women groups across EAC Partner States trained on modern energy for domestic usage, energy conservation in households and energy entrepreneurship by Q3 2021 - Impact assessment of increased gender and equity in clean energy access conducted by Q3 2021	
	Output 8.2: Energy entrepreneurship fund for women, youth and marginalized persons established	- Sensitization of women in rural and peri-urban areas on investment opportunities in RE conducted by Q4 2021	- Women, youth and marginalized persons investment reports
	Output 8.3: Energy needs for all displaced persons, refugees and their host communities are included in national energy planning.	- Ensure regional energy policy to be developed and approved by the EAC SCE has provisions for displaced persons and special groups - Awareness regularly raised for humanitarian programmes to work directly with host communities to ensure equitable access to clean energy. - Developed model on sustainable energy standards and practices for displaced persons and special groups developed by Q2 2020 - Sustainable energy solutions in selected refugee camps developed and pilot solution implementation by Q4 2020	- Provisions for displaced persons and special regional energy policy groups incorporated in the - Model sustainable energy standards and practices for displaced persons and special groups - Pilot sustainable energy solution implementation report
Outcome 9: Enhanced Collaboration, Partnership and Resource Mobilization	Output 9.1: Increased awareness and support for EACREEE programmes	- Awareness and consultative workshops, seminars, Conferences, Forums, Training and Awareness campaigns regularly to stimulate support for EACREEE programmes and RE&EE investments in the region conducted regularly - EACREEE represented at international events	- Workshops, seminars, Conferences, Forums, Training and Awareness campaigns reports - Back to office reports - Events follow up communications records in the

Strategic Outcomes by 2023	Programme Outputs by 2023	Indicators and Targets	Means of verification
			Monitoring and Evaluation Framework
	Output 9.2: Partnership Building and Resource Mobilization strategy developed and implemented	- Partnership building and resource mobilization strategy developed and is put in implementation by Q3 2019 - EACREEE regularly organize or are represented in national/regional/international workshops, conferences and forums on RE&EE	- MoUs/agreements signed between EACREEE and other partners; - Reports of programmes/projects jointly designed by EACREEE and other organizations.
	Output 9.3: EACREEE entered into collaboration and/or partnership arrangement with other institutions	- Regular engagement with key institutions/organizations to enter into MoUs or other partnership arrangements on development and implementation of programmes on RE&EE.	- Copy of signed Partnership Agreement/Framework or Memorandum of understanding with Partners

BUDGET ESTIMATES

Strategic Outcomes by 2023	Programme Outputs by 2023	Budget Estimates for 2019-2023 (US$)
Outcome **1**: Policy, legal and incentive frameworks to promote RE&EE investments and markets developed and their implementation is facilitated	Output 1.1: EAC RE&EE strategy in place	200,000
	Output 1.2: Bioenergy Development Strategy and Investment Plan for the Eastern African Region	200,000
	Output 1.3: Harmonised Regulatory Framework for the Electricity Market in Africa	60,000
	Output 1.4: Regulations for Refrigerators and Air Conditioners	80,000
	Output 1.5: Policy Briefs and recommendations on specific RE&EE issues released	50,000
Outcome **2**: Increased Access to Cleaner and More Efficient Cooking Equipment and biofuels.	Output 2.1: Regional standards for improved cook stoves and biofuels in place	300,000
	Output 2.2: Construction of improved cook stoves included in the curriculum of vocational education and training programmes in the EAC region	1,000,000
	Output 2.3: Architects and engineers are sensitized to include provisions for improved cook stoves in the design and construction of low-cost residential buildings as well as commercial and institutional facilities that require cooking.	200,000
Outcome 3: Increased Investments in small to medium scale renewable energy businesses (including power generation, roof-top solar PV system, solar water heating, clean cooking, etc)	Output 3.1: EACREEE Renewable Energy and Energy Efficiency Facility established to provide grant co-funding for small to medium sized renewable energy and energy efficiency (RE&EE) projects and businesses	9,000,000
	Output 3.2: Productive uses of energy promoted	1,000,000
	Output 3.3: A Net-zero and Ultra-Low Energy Centre of Excellence Building for the East Africa Centre for EACREEE developed and constructed	1,000,000
	Output 3.4: Solar Technology Applications and Resource Centre (STAR-C) in EAC region established	500,000
Outcome **4**: Reduced energy consumption and greenhouse gases emissions from East African Cities and other built environments	Output 4.1. Increased market share of Energy Efficient Lighting and Appliances	2,000,000
	Output 5.2. Major cities have developed Sustainable Energy Action Plan in line with the Covenant of Mayors for Climate & Energy	1,000,000
Outcome **5**: Improved industrial energy efficiency to enhance competitiveness of manufacturing industries in the East African Community (EAC) Partner States while reducing GHG emissions.	Output 5.1. Enabling environment to promote investments in industrial energy efficiency created	300,000
	Output 5.2. Regional programme for scaling up adoption Industrial Energy Management Standards compatible with ISO 50001 by industries established and implemented	1,500,000

Strategic Outcomes by 2023	Programme Outputs by 2023	Budget Estimates for 2019-2023 (US$)
	Output 5.3. Capacity of Energy Service Companies (ESCOs) and Energy Management Professionals enhanced to support EE programmes.	600,000
Outcome **6**: Enhanced skills on design, installation, and operation and maintenance of specific RE&EE technologies	Output 6.1: Specialized training programmes (including E-learning, face-to-face and on-the-job training) in specific RE&EE technologies established.	1,500,000
	Output 6.2. Enhanced regional capacity for research & development, and technology transfer in RE&EE promoted	1,000,000
	Output 6.3. Enhanced awareness and technical capacity application of digital technologies in the energy sector	100,000
Outcome **7**: Enhanced Capacity for Nexus Approach in Sustainable Energy-Water-Food Planning	Output 7.1. East African Community Energy Observatory Platform developed	100,000
	Output 7.2. EAC Renewable energy resources mapped	5,000,000
	Output 7.2. Regional RE&EE Master Plan developed	400,000
Outcome 8: Inequalities in energy access, energy business ownership and energy workforce reduced through taking affirmative actions to promote equal opportunities for all in all.	Output 8.1: Specialized sensitization and training programmes for women on clean energy designed and implemented	1,000,000
	Output 8.2: Energy entrepreneurship fund for women, youth and marginalized persons established	5,000,000
	Output 8.3: Energy needs for all displaced persons, refugees and their host communities are included in national energy planning.	3,000,000
Outcome 9: Enhanced Collaboration, Partnership and Resource Mobilization	Output 9.1: Increased awareness and support for EACREEE programmes	1,000,000
	Output 9.2: Partnership Building and Resource Mobilization strategy developed and implemented	50,000
	Output 9.3: EACREEE entered into collaboration and/or partnership arrangement with other institutions	50,000
	Sub-total	**35,450,000**
Programme Management Costs	Core Programme Management activities executed - Constitution of Board of Directors to oversees the strategy and overall vision of the organization - Meetings of Technical Committee and Board of Directors - Approval of internal procedures and rules. - Recruit and maintain adequate core staff to implement core functions, programmes and activities of the Centre	**7,300,000**

Strategic Outcomes by 2023	Programme Outputs by 2023	Budget Estimates for 2019-2023 (US$)
ESTIMATED TOTAL BUDGET		**44,490,000**