



SUSTAINABLE ENERGY FOR ALL (SE4ALL)

Investment Prospectus for The Gambia

Prepared by:



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ABBREVIATIONS

AA	Action Agenda
AEA	Arthur Energy Advisors
AEP	Africa Energy Portal
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EE	Energy Efficiency
EEEP	Energy Efficiency Policy
GEG	Global Electric Group
GDP	Gross Domestic Product
GNMC	Gambia National Multi-sectoral Committee
GMGs	Green Mini Grids GMGs
IP	Investment Prospectus
IPP	Independent Power Producers
LPG	Liquified Petroleum Gas
LCPDP	A Least Cost Power Development Plan
MoE	Ministry of Energy
MoPE	Ministry of Petroleum and Energy
MW	Mega-watts
MoFEA	Ministry of Finance and Economic Affairs
NDP	National Development Plan
NEEAP	National Energy Efficiency Action Plan
NREAP	National Renewable Energy Action Plan
NAWEC	National Water and Electricity Supply Company Ltd
OMVG	Organisation de Mise en Valeur du Fleuve Gambia
PPA	Power Purchase Agreement
PURA	Public Utilities Regulatory Authority
RAGA	Rapid Assessment Gap Analysis
RE	Renewable Energy
REAGAM	Renewable Energy Association of The Gambia
SC	Steering Committee
SE4ALL	Sustainable Energy for All
SREP	Scaling up Renewable Energy Project
TWG	Technical Working Group
TDA	Tourism Development Area
UNIDO-GEF	United National Industrial Development Organization Global Environment Facility

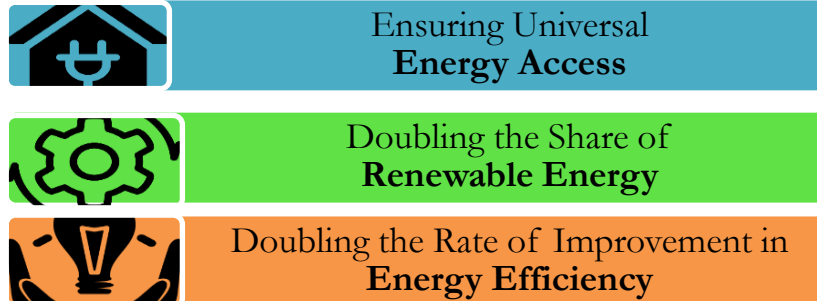
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1 INTRODUCTION

1.1 OVERVIEW OF SUSTAINABLE ENERGY FOR ALL (SE4ALL) INITIATIVE

The Sustainable Energy for All (SE4ALL) Initiative was launched by the UN Secretary-General in 2011, as a multi stakeholder partnership between governments, private sector and civil society groups. The three (3) main objectives of SE4ALL are to achieve the following by 2030:



1.2 CONTEXT, OBJECTIVE AND SCOPE OF THIS ASSIGNMENT

ECREEE was mandated by the Heads of Authority of the ECOWAS to be the SE4ALL focal point in the West Africa region. ECREEE then embarked on the SE4ALL regional program which aims at developing activities of the member states in alignment with national and regional strategies. Several projects were identified by the member states in consultation with ECREEE towards pursuing the goals set for 2030.

The Action Agendas (AA) documents are in response to the Secretary-General's initiative and defines the country's specific goals as aligned with the global objectives. It estimates the costs of achieving the goals and identifies actions that are needed to be taken to achieve the goals. The Investment Prospectus (IP) provides an organizational and analytical framework that is intended to guide potential investors on the projects and investment opportunities in the country. The Project Fiche (PF) will be a document that contains all information required pertaining to each project.

As part of efforts to advance the work done by the various countries in preparing the SE4ALL country Action Agendas and Investment Prospectuses, ECREEE contracted Arthur Energy Advisors (AEA) to update the IPs for The Gambia with the objective of making the Investment Prospectuses (IPs) more current and relevant to interested parties as some time had passed since they were initially prepared.

Accordingly, the scope of this assignment was to update the earlier versions of the Investment Prospectus and to provide a set of updated documents that will introduce and outline the programs and projects of each country. The updated documents, comprising an Investment Prospectus for each country as well as a Project Fiche for each project in the country portfolio, are intended for potential investors and those interested in considering participating in energy sector opportunities in the countries.

1.3 INCEPTION/COMMENCEMENT OF THIS ASSIGNMENT

To commence the assignment, ECREEE sent out introductory letters to the focal persons in the country. The consultant then met with the individuals and institutions that were the custodians of the Action Agendas and the IPs within each country. This was necessary for the consultant to ascertain the current situation and the material issues of the energy sector as well as the status of actions being pursued by each country under its Action Agenda. This was to enable the consultant, where warranted, to prepare a preamble that provided an update of the relevant changes in the context for the SE4ALL program for a better appreciation by the readers.

1.4 INVESTMENT PROSPECTUS

The investment prospectus (IP) contains a list of projects and programs contributing to the achievement of the SE4ALL objectives submitted by public or by private entities in the country, for which funding is required. The IP aims at operationalizing the Action Agenda developed by the country by identifying and developing projects and programs to include the type of project, the investment requirements, financing sought (grants, debt, and equity), and estimated duration. The projects and programs are denoted accordingly to the five (5) pipelines below:

- 1) on-grid (Generation, Transmission, and Distribution),
- 2) off-grid (Mini-grids and Standalone Systems),
- 3) Energy Efficiency,
- 4) Bioenergy and Clean Cooking,
- 5) Enabling Environment.

2 THE GAMBIA – DESCRIPTION OF INVESTMENT THESIS

2.1 COUNTRY OVERVIEW

2.1.1 Demography and Geographical Context

The Gambia is a small and narrow country in West Africa with a total area of 11,300 km². Approximately 1,300 km² of The Gambia's area is covered by water. The Gambia has five regions and two municipalities. It has 80km of coastline with all of its 740km border zones touching Senegal. The country has a population of 2.1 million (2017). With 186 people per square kilometer, it is one of the most densely populated countries in Africa. Most of the population (57%) is concentrated around urban and peri-urban centres.

Economic growth is projected to be at 5.4% in 2019 and 5.2% in 2020 but will remain slightly below potential. This assumes a strong recovery in tourism and trade, a normal agricultural season, and improvements in electricity provision. Political stability, combined with improved macroeconomic conditions, would help strengthen investment activity. Economic activity would also be underpinned by key infrastructure developments, notably energy supply, as well as improved trade and re-export trade¹.



plate 1: Map of The Gambia

2.1.2 Political Context

The Gambia attained independence in 1965, ending a period of seclusion and diplomatic isolation and strained relations with their sole neighbour, Senegal. Attaining independence paved way for the Gambia to re-establish strong diplomatic ties with regional and international trading partners which is expected to accelerate economic growth.

2.1.3 Economic Overview

The Gambia is a small economy that relies primarily on tourism, rain-dependent agriculture, and remittances, and is vulnerable to external shocks. In recent years, the economy was hit by economic shocks in agriculture caused by erratic rainfall and in tourism caused by the spillover effects of the regional Ebola crisis and political crisis during 2015-2016.

¹ The Gambia Overview: World Bank Group, November 2018

The economy recovered strongly in 2017, with growth estimated at 4.6%, up from 0.4% in 2016. Robust growth in the service sector (10.6%), mainly in commerce, drove this recovery. Tourist arrivals turned around in the second half of 2017. However, agriculture saw a decrease by 8.1% due to uneven distribution of rainfall.

Population	2.1 million	2017
GDP	USD 1.489 billion	2017
GDP growth	5.6 %	2017
Inflation	5.7 %	2017

plate 2: Main indicators of The Gambian economy (World Bank 2017)

The key long-term development challenges facing The Gambia are related to its undiversified economy, small internal market, limited access to resources, lack of skills necessary to build effective institutions, high population growth, lack of private sector job creation, and high rate of outmigration.

2.1.4 Energy Policy Framework

The Ministry of Petroleum and Energy is responsible for policy making for the energy sector in the Gambia. It has over the past few years been building its capacity and has developed relevant policy and strategic frameworks for the development of the energy sector. These include the following:

- The Electricity Act 2005
- Renewable Energy Act 2013
- The Energy Policy 2015 – 2020
- National Renewable Energy Action Plan 2015
- National Energy Efficiency Action Plan 2015
- Renewable Energy Investment Strategy 2017
- Electricity Sector Roadmap 2017 – 2025
- Green Mini-grids Enabling Framework (Ongoing)

2.1.5 Energy Sector Background and Trajectory

The Gambia's electricity sector has gone through several phases. At independence, the Gambia had no hydroelectricity generation, however, it partnered with its neighboring countries - Guinea, Guinea-Bissau, Senegal through their regional institution - the Gambia River Basin Development Organisation (OMVG) which was given the objective of improving energy supply and security of the member states. As recorded by the Africa Energy Portal (AEP) in 2017, approximately 45% of Gambians had access to electricity; 13% of the rural population had access to electricity while 66% of the population in urban areas had access to electricity. The Electricity Act of 2004 partially liberalized the energy market by opening up electricity generation to Independent Power Producers (IPPs). The country had two IPPs operating currently; Global Electric Group (GEG) which had an installed capacity of 25 MW and Gamwind which operated the 150kVA Bantukunku wind project. Their joint efforts totaled half of the power generated in the country.

The electricity supply situation in the Gambia has since then witnessed some improvements following the signing of a 2-year 30MW Power Purchase Agreement (PPA) between Karpowership and the Gambian electricity utility National Water and Electricity Supply Company Ltd (NAWEC) in February 2018. Karpowership started operation in May 2018 in Banjul. NAWEC's available generation capacity is presently 80 MW while demand is between 55 MW and 60 MW. An

interconnection agreement and bilateral PPA signed between NAWEC and SENELEC of Senegal in 2017 has resulted in an improvement in electricity supply in the provinces.

The World Bank, European Union and the European Investment Bank are jointly funding a 20 MW on-grid solar park. The request for expression of interest has already been sent out to potential developers. NAWEC also signed a Power Purchase Agreement (PPA) with an Independent Power Producer (IPP) for a 10 MW PV solar plant. The World Bank is funding an upgrade of the transmission network to 225 KV, whilst the Chinese and African Development Bank are providing support in the area of electricity access.

In the domain of modern renewable energy, the national penetration rate remains in the low single digit of 3% (IRENA, 2018), while little progress has been made on energy efficiency. The implementation of the National Renewable Energy Action Plan (NREAP) 2015 and the National Energy Efficiency Action Plan (NEEAP) 2015 are expected to bring about some improvements. Renewable energy represents an area of tremendous opportunity for The Gambia. Investment opportunities that exist for these renewable energy resources include:

- Utility-scale power generation in urban and peri-urban set-ups;
- Mini-grid or off-grid solutions in remote and rural areas and;
- Non-electric applications such as solar drying and efficient and clean cooking.

In the area of clean cooking technologies, penetration remains low, with most households in both the rural and urban areas depending on traditional biomass for their cooking. Biomass, including woodfuel, accounts for about 80% of the country's energy supply, and for more than 90% of household energy consumption - reaching up to 97% in some rural areas. The National UNIDO Global Environment Facility (UNIDO-GEF) project is providing grants for several pilot projects for clean cooking. However, these projects are constrained by funding and the lack of appropriate business models to scale up their operations.

A key challenge of the energy sector is the predominance of biomass for cooking and fossil fuels for electricity generation, with their associated environmental and economic costs. The Gambia has one of the highest electricity tariffs in Africa, given the high cost of imported oil for generation and the diseconomies of scale from its small power system. These challenges underscore the opportunities in renewable energy for clean cooking and electricity generation.

2.2 OPERATION OF ELECTRICITY INFRASTRUCTURE

2.2.1 Generation, Transmission and Distribution Arrangements

The Electricity Act of 2005 opened the generation and distribution segments to private sector participation and instituted an open access regime. The liberalization of the sector did not change NAWEC's position; a vertically integrated electricity public utility who is responsible for electricity generation, transmission and distribution of electricity in the Gambia.

The Ministry of Energy was established in 2007 with responsibility of implementing government policy in relation to electricity supply and distribution, water management, petroleum products and renewable energy.

2.2.2 Renewable Energy Sector

The Renewable Energy Act enacted in 2013 tasked the Ministry of Energy among other functions to be responsible for recommending national targets for the use of renewable energy resources. In 2016, the Ministry of Petroleum and the Ministry of Energy (MoE) were merged to become the Ministry of Energy and Petroleum (MoPE). MoPE assumed the role of the MoE after the merger.

As stated in the Gambia's vision 2020, the department is expected to guide the sector for the efficient utilization and development of limited energy resources to support economic development in an environmentally friendly way to maintain the advances already gained via investment schemes. The Gambia subscribed to the United Nations Sustainable Energy For All (SE4ALL) initiative, as part of the objectives of the SE4ALL, countries are required to double the share of renewable energy by 10% in the energy mix by 2030. For the Gambia to achieve this target, Solar PV, wind energy, wood-fuel and biomass are being developed in various capacities to help achieve this objective.

2.2.3 Regulatory Environment

The Public Utilities Regulatory Authority (PURA), established by the PURA Act 2001 in 2014, regulates the ICT, Water and Energy sector (Electricity, renewable energy and downstream petroleum) in The Gambia. The Act defines the institutional arrangements and general powers. As part of PURA's functions, it recommends issuance of licenses and approval of tariffs to the Ministry of Energy and Petroleum. Since it started operations in 2003, it has registered key accomplishments in the energy sector. These include:

- Electricity and water tariff guidelines and models in 2009, which have been the basis of several electricity and water tariff reviews of NAWEC;
- Renewable energy Feed in Tariff Rules;
- Electricity Licensing Guidelines;
- Electricity License Application Forms.

The Ministry of Energy and Petroleum makes energy policy whilst the Public Utilities Regulatory Authority (PURA) oversees the Renewable Energy industry. There is a RE fund which is set aside for RE related activities in line with developing RE in the country. The Act specifies that the RE Fund shall be managed by the PURA. The RE Fund has the potential to be a leading provider of financial support to the sector through promoting RE projects, adoption of international best practices on RE and research into RE, providing subsidies, developing RE infrastructure and providing capacity building for RE development. The RE Act also outlines a range of possible funding sources including levies, donations and grants, authority revenues from RE activities, from National Assembly and any other source approved by the Ministry of Finance and Economic Affairs (MoFEA).

To compliment overall energy policy and regulatory frameworks described above, the Renewable Energy Act of 2013 "establishes the legal, economic, and institutional basis to promote the use of

renewable energy (RE) resources and for connected matters”. More specifically, it includes the following key components:

Tax exemptions: The Act provides for the Ministry to determine the equipment eligible for tax exemptions, in collaboration with the MoFEA (Section 3(1)(b)). It covers exemptions from import tax and duty for imported products, and exemptions from corporate, value-added, and retail tax for a period of 15 years.

Feed-in Tariff (FiT) Rules: The Act states that these Rules need to be established by PURA (Section 11) and developed within 6 months of the Act coming into force. PURA is currently developing a Feed-in Tariff framework, which is expected to have significant impact on grid-interconnection of isolated Green Mini Grids (GMGs). The threshold for FiT is set at a minimum of 20 kW of installed capacity, while a net metering framework is applied to GMGs below this level.

Green Mini Grids (GMGs) provisions: section 13 of the Act establishes that “Private Wire Networks” (GMGs) can charge a tariff up to the national tariff, up to 200 kW of installed capacity. GMGs greater than 200 kW “or wishing to charge tariffs greater than the approved electricity tariff may also be permitted”, with PURA’s approval.

2.3 FRAMEWORK FOR RENEWABLE ENERGY PROJECTS

2.3.1 Licensing

In order to promote private sector participation in the electricity industry and control entry and exit within the sector, the PURA who oversees licensing led a process to streamline activities and concerns of private participants. A 7-step procedure clarifying and streamlining the licensing of an IPP has been produced to help in the licensing process. The PURA has also developed a template for Power Purchase Agreement (PPA) which defines the pricing methodology, the technical and metering requirements and the rights and obligations of the utility (NAWEC) and an IPP.

2.4 ELECTRICITY SECTOR STRUCTURE AND INSTITUTIONS

The electricity supply sector in The Gambia is mainly the responsibility of NAWEC with Global Electrical Group (GEG) who was contracted by NAWEC to build, own, operate and maintain a power generation facility.

There are a number of relevant institutions in the energy sector who have various responsibilities in the legislation of the sector.

The principal institutions of the sector are:

- Office of the President of the Republic of The Gambia is responsible for receiving information from all ministries related to specific energy objective and has the final authority on regulation, tariffs and contracting of any IPP.
- Ministry of Energy oversees the entire operation of the energy sector of the country and provides support to NAWEC and GEG. It also provides recommendation on energy related tariffs to the President.
- Ministry of Finance receives recommendations from PURA, evaluates the financial implications and provides recommendations to the President.
- National Water and Electric Company (NAWEC) is responsible for the operation and maintenance of one of the power generation facilities in the greater Banjul area, the transmission and distribution of power in the entire country. NAWEC is also responsible for establishing tariffs and administration of Power Purchase Agreements (PPA) with PPPs in the country.
- Global Electrical Group Limited is an Independent Power Producer contracted by NAWEC to build, own, operate and maintain a power generation facility in the greater Banjul area.
- GAM Petroleum is affiliated to GEG and is responsible for contracting, storage and delivery of majority of the country's fuel supply
- Public Utilities Regulatory Authority (PURA) is the authority which regulates the activities of the country's public utility sector.
- Renewable Energy Association of The Gambia (REAGAM) is a not-for-profit cooperation with private and public companies and individuals active in the promotion of renewable energy projects.

2.5 INVESTMENT OPPORTUNITIES

The Electricity Sector Roadmap identifies around US\$600 million of short- and medium-term investments (over nine years) needed to modernize the energy system. A Least Cost Power Development Plan (LCPDP) is at the heart of the road map, in addition to a review of required investments in transmission and distribution (T&D), as well as institutional changes required to attract reasonably priced IPPs to the sector. The Roadmap objectives are presented in three phases, depicted in plate 7 below.

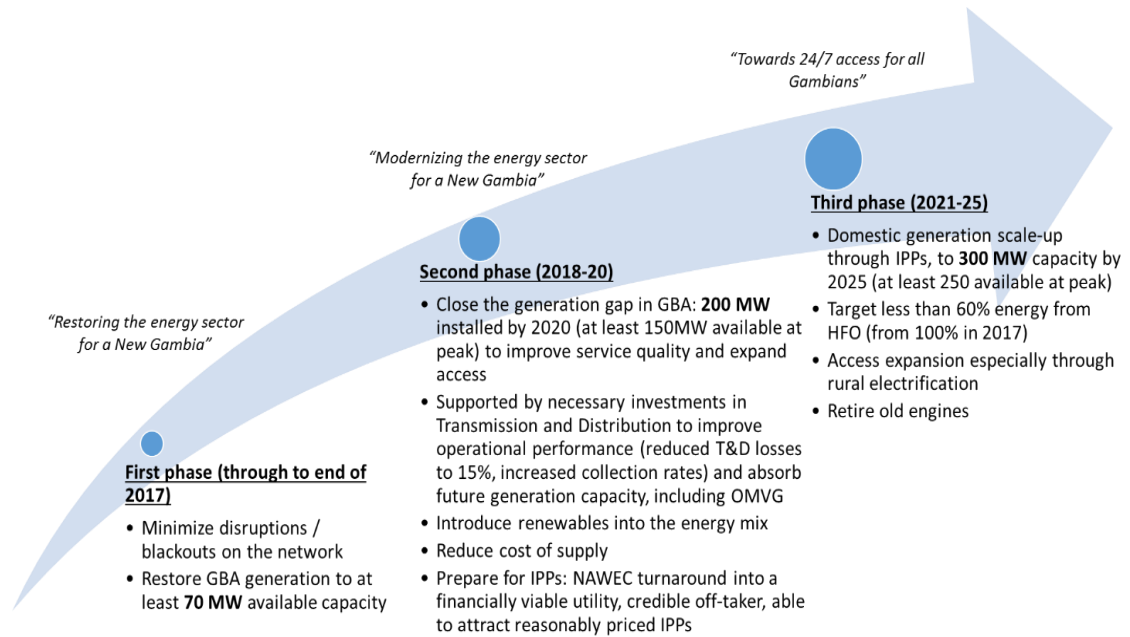


plate 3: The Gambia Electricity Sector Roadmap, 2017

The priority is to restore generation in the Greater Banjul Area (GBA) as quickly as possible. First Phase targets of the Roadmap have all been met. The second phase (2018–2020) includes closing the generation gap and investments in Transmission and Distribution (T&D).

- Presently installed generation capacity stands at 139 MW. GERMP Project line linking Brikama and Jabang to connect two main power houses - prequalification completed and work on detailed technical and financial proposal yet to be released.
- Karpowership emergency generation of 35 MW was added in 2018.
- 20 MW HFO plant to be ready for commissioning by the end of 2019.
- The tender documents for 50 MW HFO and 20 MW Solar have been prepared to be launched at the end 2019 or early 2020 for Phase 2 of the Roadmap.

The third phase aims to scale generation to 300 MW of available capacity by 2025 including capacity through the interconnection with the West African Power Pool (WAPP) regional grid and transition toward universal access. WAPP working with Gambia government for a 150 MW Solar park in The Gambia for the ECOWAS regional electricity market. Tenders launched and evaluation completed. 2023 earmarked for commissioning.

The Roadmap (2017 – 2025) has identified three phases for the development of the electricity sector, requiring the scaling up of investments to increase generation capacity, transmission and distribution and to enhance the viability of NAWEC. This presents opportunities for IPPs especially in the second and third phases.

The Renewable Energy Investment Strategy for The Gambia, 2017 has also identified investment opportunities for water pumping for irrigation, industry/manufacturing, service and access to off-grid electricity. The market potentials for these sectors up to 2030 are shown below.

Sector	Sub-sector	Technology	Market potential by 2030	Socio-economic impact	Nature of investment	Attractiveness of investment for private sector
Water pumping for irrigation	Horticulture irrigation	PV	0.16 – 0.98 MW	High	Public and private	low
	Rice irrigation	PV	1.2 MW	High	Private	Medium
Industry / Manufacturing	-	PV	8.8 – 17.6 MW	Medium	Public	Medium
	GGC	Biomass	2.5-3 MW	Medium	Public	-
Services	Telecommunication cellular	PV on-grid	0.3 – 0.6 MW	Medium	Private	Medium
		PV and wind on-grid	1.4 – 2.8 MW	Medium	Private	High
	Tourism facilities	PV	4.1 - 8.2 MW	Medium	Private	Medium
		Solar water heating	3,300 – 6,600 m ²	Medium	Private	High
Access to electricity off-grid	Communities / households and MSMEs business	PV mini-grids	13.4 MW	High	Public and private	Medium
	Public services: health	PV off-grid	0.08 – 0.11 MW	High	Public	-
	Public Services: Education	PV off-grid	1.18 MW	High	Public	-

plate 4: Renewable Energy investment strategy for The Gambia, 2017

2.6 INVESTMENT INCENTIVES

The Gambia offers attractive incentive packages to investors, categorised under Special Investment Certificate, Export Promotion & Export Processing Zones and Enterprise Support. A breakdown of what each entail is described below:

Special Investment Certificate: The Government has identified a number of sectors as priority areas. Investing in these sectors will give investors access to attractive and special investment incentives. These sectors include:

- Agriculture, Forestry and Fisheries
- Manufacturing
- Tourism
- Energy
- Mineral Exploration
- Financial Services

Special Investment status shall be conferred to investments which fulfil the following eligibility criteria:

- Foreign investment enterprise that invests not less than the equivalent of \$250,000;
- Domestic investment enterprise that invests not less than \$100,000 in a priority sector is eligible to incentives in section 39 of the act.

Investors upon whom “special investment” status shall be conferred will be entitled to benefit from the following incentive package for a period of five years:

- A tax holiday in respect of income tax including corporate or turnover tax;
- An annual allowance at the rate of 15% for depreciation of buildings including structural improvements notwithstanding the rate provided in the Third Schedule of the Income and Value Added Tax Act 2012;
- Exemption from import duty in respect of capital goods in accordance with the Customs and Excise Act 2010 and;
- Exemption from import Value Added Tax.

Export Promotion and Export Processing Zones: As a strategy for developing the export potential of the country, the Government is also developing Free Zones in specially selected locations to enable investors to operate in an environment that has the ideal set of infrastructure and special tax incentive regimes.

Incentives for free zone investors: An investor operating in an export processing zone that exports at least eighty percent of its output is exempt from the payment of:

- Import or excise duty and Value Added Tax on goods produced within or import into an export processing zone unless the goods are entered for consumption into the customs territory;
- Import duty on capital equipment;
- Corporate or turnover tax; and
- Municipal tax.

An investor shall be allowed to operate in an export processing zone for a maximum period of ten years.

2.7 SUMMARY OF SPECIFIC POLICY OBJECTIVES SET FOR SE4ALL IN COUNTRY

The Gambia’s policy objectives for the SE4ALL was set as targets for a duration spanning 2016-2030. The targets were divided into three (3); 2016, 2020 and 2030. Since 2016 is phased out, this document dwells on the 2020 and 2030 targets under the three (3) pillars; Energy Access, Renewable Energy and Energy Efficiency. Below are the targets under the various pillars.

National Renewable Energy Action Plan (NREAP)

The ECOWAS Renewable Energy Policy (EREP) and the ECOWAS Energy Efficiency Policy (EEEP) were adopted by the ECOWAS Member States in October 2012 and the ECOWAS Heads of States on 18 July 2013.

The EREP entails the development of National Renewable Energy Action Plans (NREAPs) by the end of 2014 by all fifteen ECOWAS Member States. The Gambia’s NREAP was developed with renewable energy targets for 2020 and 2030 with measures to achieve the targets. The targets and progress on their attainment are identified in brackets below:

By 2020

44 MW of hydro capacity through OMVG (An ongoing regional access project of \$66 million funded by the WB through ECOWAS, will include the upgrading of Gambia’s transmission network to 225 KV to facilitate interconnection with OMVG). Construction of the transmission line is ongoing and expected to be completed in 2021.

- 17 MW Solar PV + 7 MW Wind Power capacity;

- 49.6% Grid Connected RE capacity (World Bank 20 MW solar park project at tender stage – Work ongoing for land compensation, 10 MW Solar IPP signed in 2016 about to commence development - Land was a key issue and has been resolved. NAWEC renegotiated the PPA and re-signed the PPA - implementation beginning 2020);
- Equip 10% of hotels and of agro-industries with solar thermal system (Some hotels already installed solar thermal systems);
- Equip 25% of district health centres, maternities, school kitchens and boarding schools with solar thermal system (160 million Euro project funded by EU, EIB and WB to provide off-grid solar to 1000 schools and 130 health centres throughout the country).

By 2030

- 50 MW Solar PV + 20 MW Wind Power capacity. Updated the feasibility study for wind park in Tujering, a coastal town. Companies expressed interest and discussions ongoing with a Finnish and German company;
- 38.9% Grid Connected RE capacity. Tender documents to be launched for 20MW solar project end 2019/early 2020;
- Equip 50% of district health centers, maternities, school kitchens and boarding schools with solar thermal system;
- Equip 50% of hotels and 25% of agro-industries with solar thermal system.

National Energy Efficiency Action Plan (NEEAP)

The Gambia also developed its NEEAP with targets for 2020 and 2030 with measures to attain those targets. The targets with progress registered to date in brackets are as follows:

By 2020

- • 40% charcoal produced using efficient charcoal production technologies (Not yet attained. Most projects are at small scale)
- • 100% penetration of energy efficient lighting in on and off-grid systems (Not yet attained)
- • Reduce T&D losses to 19.9% from 24.9% in 2013. Losses at 21% presently.
 - Reach 5% of energy savings in the building sector.

By 2030

- • 100% charcoal produced using efficient charcoal production technologies • Reduce T&D losses to 10%
- Reach 15% of energy savings in the building sector

3 THE GAMBIA – PIPELINE OF PROJECTS

The table below lists the projects submitted by various entities, for which funding is required. The respective Project Fiches are presented as an Annex.

Project Description	Sponsor	Status	Total Cost	Nature of Need
Pipeline 2: Off-grid projects (Mini-grids and Standalone Systems)				
Sintet Solar-Powered Irrigation System for Cassava Production	Re-generate the Gambia (Fandema Kafo)	The project is at the concept stage	US \$2.5 million	Equity/Debt/Grant
GAMCON Community Solar MicroGrid (70 kWp) in the Lower River Region	Development Ventures LLC	The project is at the concept stage	US \$480,000	Equity/Debt/Grant
GHE Nucleus Farm Renewable Energy Project	Gambia Horticultural Enterprise	The project is at the concept stage	US \$300,000	Equity/Debt/Grant
Solar Multifunctional Platforms	Mbolo Association	Under development	US \$100,000	Equity/Debt/Grant
Power for the Future - Solar PV Investments to Provide Power and Generate Revenue for Gambia's Hospitals	Power Up Gambia	Under development	US \$1.1 million	Grant
Development of 40 kW mini-grid in Jinack Island	Tefa Center for Fisheries Development in Africa (FishDeC)	Under development	Approx. US \$200,000	Equity/Debt/Grant
Rural Electrification and Renewable Energy Development	Unique Group	The project is at the concept stage	US \$10 million	Equity/Debt/Grant

Project Description	Sponsor	Status	Total Cost	Nature of Need
Solar Kits Pilot Production – “Made-in-The Gambia” Unit Installation Project	NADJI.BI (Gambia Ltd.)	Under development	Approx. US \$490,000	Equity/Debt/Grant
Smart Solar Eco-Community Initiative	NADJI.BI (Gambia Ltd.)	Under development	Approx. US \$590,000	Equity/Debt/Grant
RUTDA Project-Street Lighting Phase	Gambia Tourism Development Board	Under development	Approx. US \$800,000	Grant
Hybrid Energy Production Program (Biogas and Solar)	Bondali Youth Development Association (BYDA)	Under development	US \$2.4 million	Equity/Debt/Grant
Solar Powered Greenhouse Gardening	J.E.G GARDENS	Under development	Approx. US \$6,000	Debt/Grant
Pipeline 5: Enabling Environment				
Solar PV IPP (20 – 30 MW)	Naanovo Energy / SolarMaax	Under development	US \$42 million	Facilitation of a favorable PPA with NAWEC

3.1 PIPELINE 2: OFF-GRID PROJECTS (MINI-GRIDS AND STANDALONE SYSTEMS)

3.1.1 Sintet Solar-Powered Irrigation System for Cassava Production

Project Description

This project is targeted at improving solar irrigation systems to enable farmers attain higher yields from their current crops and assist them with the diversification of crop production. Currently, a significant number of farmers are involved in groundnut production, however this project seeks to make available the infrastructure that will allow them to also farm higher yield crops such as cassava.

This project will target 40 farmers in Sintet village to improve their livelihoods via cassava production and soil fertility maintenance techniques such as “barassango” accasia tree planting. The objectives are:

- Train 40 farmers on methods to improve cassava production from 20 tonnes/hectare to 45 tonnes/hectare by 2020
- Increase income of farmers from GMD300,000(US \$5,900) – GMD 675,000(US \$13,420) by 2020
- Fence 3 hectares of cassava farm with improve solar irrigation systems.

SE4ALL Impact

This is expected to impact on Gambia’s SE4ALL energy access and renewable energy goals, as this project will seek to generate energy in rural areas and also accelerate productive uses of energy for income generation.

Project partners and Key Stakeholders

Project Sponsor - Re-generate the Gambia

Funding and Implementation Plans

This project will require an initial investment cost of US \$2.5 million and an estimated annual operating cost of US \$120k.

3.1.2 GAMCON Community Solar MicroGrid (70 kWp) in the Lower River Region

Project Description

Less than 15% of the rural & peri-urban population of The Gambia have access to reliable electricity supplies. While most households could afford to buy electricity from grids, due to upfront capital costs, most households rely entirely on small home power systems (solar kits, etc.) which are unable to power most consumer goods and commercial machinery. Even those consumers that can afford to invest in generator supplies are confronted by extremely high, volatile and rapidly increasing energy costs due to lack of control over energy supplies. While renewable energy micro-grids offer a potential energy solution for rural & peri-urban communities, currently the funding vehicles for local stakeholders to invest in their own electrification projects are severely limited.

This project seeks to mitigate the above problems by installing and operating solar power micro-grids that retail low-cost electricity directly to consumers in two rural communities. By combining innovative technologies with a participatory investment model, we are seeking to support communities raise debt investment and install localized electric generation/distribution systems that power their entire respective communities. This approach to developing distributed micro-grids, is analogous to the development of mobile telecoms networks over land-line connections, as it facilitates the rapid growth of power supplies at a cost significantly lower than expanding outmoded national grids.

The objectives of this project are as follows:

- Installation of a 70kWp Solar Micro-Grid in Kuli Kunda, Kiang West, Lower River Region.
- Install 105 domestic and commercial point of supply to 811 customers
- 20 micro-enterprises will receive power via the solar micro-grid
- Install a commercially sustainable and jointly community owned 240 volt 3 phase power supply in Kuli Kunda and connect at least 40% of the households in the area and promote the productive use of power
- Expand the micro-grid to 5 new sites
- Develop a pipeline of future solar micro-grids in the Lower River Region to develop using commercial financing

SE4ALL Impact

The project falls under both energy access and renewable energy goals of Gambia's SE4ALL initiative.

Project Partners and Key Stakeholders

Development Ventures – Project Sponsor

Funding and Implementation Plans

The total initial investment cost will be US \$480,000, with Development Ventures ready to cover up to 5% of the initial investment cost. The project sponsor will fully cover the operating costs of the micro grid.

3.1.3 GHE Nucleus farm renewable Energy Project

Project Description

Gambian Horticultural Enterprises (GHE) is located in the town of Kembujeh, the company operates a nucleus farm and a multi-purpose agro-processing centre. The company currently uses a combination of diesel generators and the national electricity grid to supply all farm and processing operations which has resulted in extremely high operational costs. The company is seeking to develop an affordable, sustainable and clean energy source which will increase profitability and allow an opportunity to provide electricity to surrounding households.

The objectives of this project are:

- To promote green energy to smallholder farmers, which will also provide biogas for cooking and fertilizers for their farms.

GHE will target community women vegetable gardens and youth farmers for capacity building to improve crop yield, educate them in the use of renewable energy in their production process to increase income and eventually alleviate poverty. Some of the expected benefits are:

- Connecting 1,000 households with solar flood lights
- Provide 1,000 families to benefit from the use of cooking pellets in place of firewood
- Equip 20 vegetable gardens with bio-digesters to generate biogas for lighting or cooking and organic fertiliser

This project involves energy access, renewable energy and energy efficiency

Project Partners and Key Stakeholders

Gambia Horticultural Enterprise – Project Sponsor

Funding and Implementation Plans

The total investment cost for this is estimated to be US \$300,000 with an annual operating cost of US \$75,000.

3.1.4 Solar multifunctional platforms – Mbolo association

Project Description

This project is focused on transforming the economies in rural and peri-urban areas through access to renewable energy and the provision of community facility hubs called Solar Multifunctional Platforms (SMFPs). Energy access in these communities will promote the building of a green economy in these rural communities, which will assist income generating opportunities which would have previously not existed. This project is targeted at providing diverse economic opportunities for the women and the youth of these communities to be able to generate income for their households. The rural communities focused on are Central River Region North, Central River Region South, Lower River Region, Upper River Region and NBR.

The expected outputs of this program are:

- At least 75 communities are connected to electricity and 2,250 households with access to solar lighting
- Establishment of household solar lighting industry
- 22,500 direct beneficiaries and 112,500 indirect beneficiaries.
- 375kWh solar PV standalone system installed
- 375 green jobs created
- Reduction of 493 CO₂ reduction

This project has renewable energy and energy access impact

Project Partners and Key Stakeholders

Mbolo Association – Project Sponsor

Funding and Implementation Plans

The initial investment cost is estimated to be US \$100,000.

3.1.5 Power for the Future - Solar PV Investments to Provide Power and Generate Revenue for Gambia's Hospitals

Project Description

Power Up Gambia is a registered charitable organization in the United States and The Gambia, currently operating under a MoU with the Gambian Ministry of Health and Social Welfare and the Ministry of Petroleum and Energy. The intention is to build two 250 kW solar farms at two hospitals: Bwiam General Hospital and Bansang General Hospital. These will be hybrid solar power systems, grid connected with battery backup to provide uninterrupted 24-hour electricity to the hospital while sending excess power out to the national grid during the day.

Working with Bwiam General Hospital and Bansang General Hospital, Power Up Gambia intends to meet the hospital's energy needs and provide excess power for sale to the national grid. By generating excess power, this project will help The Gambia increase the amount of renewable energy that is part of the national grid while helping to reduce the country's reliance on diesel power for electrical generation. Both hospitals have received preliminary approval from NAWEC as part of a net billing agreement.

Direct beneficiaries are the estimated 110,000 number of patients who visit both facilities annually to access urgent healthcare. Availability of uninterrupted electricity will assist the facilities provide high quality healthcare. Lower cost solar generated electricity, with net metering to generate revenue for the hospital will give hospital administration to spend additional resources on areas which are critical to improving the quality of healthcare. Other beneficiaries include members of the surrounding community who will experience improved power supply and voltage stabilisation in their respective households and businesses.

Project Partners and Key Stakeholders

Power Up Gambia – Project Sponsor

NAWEC – Distribution Entity

Funding and Implementation Plans

The project is estimated to cost US \$1.1 million

3.1.6 Development of 40 kW mini-grid in Jinack Island

Project Description

This project provides for the installation of a 40kWp Solar PV mini-grid system as a feasible low-cost option of providing electricity to approximately 2,000 residents of Jinack island community.

The Jinack Community is a remote island in the North Bank Region of the Lower Niumi District of The Gambia, in West Africa. The island has an area of 60km² and is located on the north-western edge of the River Gambia estuary and is separated from the mainland delta of the Niumi National Park by the Niji Bolon creek. The island is an area of outstanding natural beauty and is home to several rare species of birds nesting only on the Island. The geographical diversity and beauty of the Island provide unique opportunities for the study and research of wildlife, flora and fauna.

Despite being one of the top destinations for thousands of tourists each year, the community lacks grid electricity. A grid extension to the community seems unlikely in the medium term/ long term due to the distance from the mainland and the high cost of laying underwater cables from the nearest grid facilities. The people on the island depend solely on diesel generators for limited hours of electricity supply, usually, 2 – 4 hours per night; kerosene lamps, dry battery cells and candles are used to supplement their basic lighting needs thereafter. Fuel supply to the island community is irregular and the costs are very high compared to the costs of fuel in the urban areas due to other associated costs such as the cost of transporting fuel community. The money spent on the purchase of fuels is a significant share of the income of individual households and businesses.

The lack of basic electricity services severely hinders the island's development as basic amenities such as the community health centre and tourism businesses (i.e. restaurants and lodges) also depend on unreliable and expensive diesel generators for power. There are other indirect costs such the effect on school children's education due to their inability to study after darkness, environmental degradation due to the release of greenhouse gas emissions when using firewood, kerosene etc. as well as the health impact, especially on women, as a result of the use of firewood for cooking which could cause respiratory illnesses.

The country has an average annual solar irradiation is 4.5 – 5.3 kWh/m² per day, which represents a high generating potential for PV power plants. As such, a mini-grid electrification system has been identified as both technically and economically feasible. The proposed project is important as it does not only reduce the financial burden of fuel imports on the vulnerable people living on Jinack island but also offers an opportunities to enhance their lives through improved facilities for education, information technology, improved health care delivery, energy security and opportunities to venture into income-generating activities.

The main beneficiaries of the project would be the people of the Jinack island community. Altogether this includes 500 households, a 10-hectare aquaculture business, 10 tourism businesses, 2 lower & upper basic and senior secondary schools, the community health centre, and the community recreational centre. Overall, access to electricity is expected to spur economic growth through the enhancement of the inhabitants' socio-economic activity, contribute to poverty reduction and contribute to the country's effort to reach universal access to electricity while meeting its renewable energy and greenhouse gas (GHG) reduction targets. This project will be crucial for the economic transformation of Jinack island as we have seen previously in other communities which have deployed micro and mini grids.

SE4ALL Impact

The Gambia intends to achieve a high target of 48% renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems. This project is consistent with the country's National Energy Policy 2014 which prioritizes rural electrification and promotes the use of resources, such as wind and solar, for electricity generation, particularly in rural areas.

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- FishDeC, the Tefa Center for Fisheries Development in Africa
- The Jinack Island Community

Funding and Implementation Plans

The project cost is estimated at 10,000,000 GMD (approx. 194,000 USD)

3.1.7 Rural Electrification and Renewable Energy Development

Project Description

This project seeks to establish a solar-powered mini-grid to meet the growing demand for electricity in Sare Pateh Jamwelly, a non-electrified community with a population of over 4,000 inhabitants in the West Coast Region of The Gambia.

The community of Sare Pateh Jamwelly has not experienced the pleasure of having electricity supply from the national grid for over 60 years (even before The Gambia gained Independence). With a peri-urban population and low purchasing power, grid extension is unfeasible in many nearby areas despite the main grid being less than 4km from Sare Pateh Jamwelly. This translates into a need for alternative energy supply, especially in rural areas. Most of the generators in rural and peri-urban areas are out of operation due to the increase in petroleum prices, poor quality generators available in the market and lack of knowledge of proper maintenance techniques, as well as instances of theft.

The proposed project aims to build a small off-grid power station with a photovoltaic array and an energy storage system to meet the demand of over 200 families; it's estimated that each household will use 0.67 kWh electricity per day, so the total daily power consumption will be about 134 kWh.

The project seeks to:

- a) Provide modern, affordable and sustainable energy to previously deprived and scattered rural villages;
- b) To create a favorable condition for the development of home-based income-generating activities and small & medium enterprises, creating jobs and generate income for the local population through enhanced private sector involvement;
- c) Enhance the delivery of social services like education, health, clean water supply and communication to people in the target areas;
- d) Establish a replicable model for rural development through electrification;
- e) Contribute to the mitigation of the adverse effects of climate change in The Gambia, a poor and vulnerable county in Africa.

The immediate, final beneficiaries are the presently un-served rural/semi-rural communities Sare Pateh, Youna, Mariama Kunda, Jabang, Sotokoi and its surrounding villages located in Kombo North.

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%² renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems.

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- Sare Pateh Jamwelly community
- Unique Group in The Gambia

² <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

Funding and Implementation Plans

This Project estimates full funding of US \$10 Million over various phases but for the initial pilot phase for 200 households, the budget is estimated at US \$600,000.00.

The Project in its first phase is looking at electrifying over 200 homes. Phase 2 and 3 will seek to provide electricity to some hospitals and health centers. There will also be the provision of street lights in towns, villages and main roads and replacing the current incandescent street lights which are causing NAWEC significant revenue losses as consumption is high with municipalities and the NRA unable to pay for these high bills and the high power consumption taking away much-needed power from already congested grid.

3.1.8 Solar Kits Pilot Production – “Made-in-The Gambia” Unit Installation Project

Project Description

Around 320,000 households do not have access to electricity service in The Gambia making the use of Solar Home System (SHS) prevalent in the Gambia. There are however just a few Gambian companies into the manufacturing and distribution of the SHSs.

Nadji.Bi Group, a manufacturer and distributor of smart, innovative solar solutions for off-grid electrification, lighting and productive uses in Africa seeks investment to expand its business in The Gambia. The company seeks to develop a strong and viable company through the invested capital to scale up its operations for the benefit of the Gambian market.

The company specialises in community-based Research & Development (R&D), manufacturing, and distribution of solar devices, services and integrated solutions to local communities. The company also provides solar home systems for rural & urban electrification and solar water pumps through proprietary Pay-As-You-Go (PAYGo) software Platform that enables Mobile Money payment, monitoring and control of devices through the Internet of Things protocols (IoT) and Big Data collection and analysis.

The company seeks to undertake the following activities:

- 1) Deployment of a small industrial site and office – with equipment/installation/ training and processes
- 2) Deployment of a Showroom and of a “Nadji.Bi Solar Village” - with equipment / installation/training and processes:
 - a) Set up solar plant close to destination markets by geographical area
 - b) Launching of Research & Development (R&D) Partnerships with the University of The Gambia in the field of smart solar solutions
 - c) Train the next generation in smart solar technologies and solutions

This is expected to benefit rural communities, peri-urban areas, and urban centers, technical schools, and universities. The project is also expected to create a number of direct (est. 15 people) and indirect jobs - Sales force, Agents, Distributors (est. 100 people)

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%³ renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems. The country also has a goal of increasing energy supply in the country by 20% through mini solar kits and batteries.

Benefits

The project’s benefits include:

- Private sector support
- Access to clean and affordable solar kits
- Job creation

³ <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

- Environmental and social benefits

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- Nadji.Bi Group

Funding and Implementation Plans

The project cost is estimated at 25,000,000 GMD

Component	Item Description	Budget
A. Deployment of a small industrial site and office Nadji.Bi Gambia – with equipment/installation/training and processes:	<ul style="list-style-type: none"> • Mini solar kits production site (with the first stock of 500 pieces) • Local engineering school • Local R&D workshop with partnership with a local university • Industrial pilot site – around • Provisional charges for the first year of operation including Bank 	5,300,000 GMD (102,820 USD)
	<ul style="list-style-type: none"> • Warranty provision for public tenders 	5,300,000 GMD (102,820 USD)
B. Deployment of a Showroom and of a “Nadji.Bi Solar Village” - with equipment / installation / training and processes:	Showroom and pilot Smart Solar Eco-village <ul style="list-style-type: none"> • Showroom of demo solutions/devices • Deployment of 50 mini solar kits • 2 solar streetlights • 1 solar milling machines • 1 solar water pump for irrigation • 1 solar freezer • 1 solar TV • 1 solar school: mini-kit & solar video-projector, • 1 solar health post: mini-kits, small freezer, fan • 1 solar mosque: 2 mini-kits, 1 speaker 	3,500,000 GMD (67,900.2 USD)
Total Investment Cost		14,100,000 GMD (273,541 USD)

3.1.9 Smart Solar Eco-Community Initiative

Project Description

The Smart Solar Eco-Community Initiative is a project target at communities of 500 to 1 000 people living within a 1 km² range. This initiative consists of implementing a few solar connected solutions to enable the sustainable development of the community through:

- Solar kit deployment via PAYGo – distributed and installed through local women and youth organisations,
- Solar streetlights for safety – installed through grants,
- A Solar transformation platform enabled to generate income, constituting of a solar milling machine, a freezer, mobile phone charging station, oil press, sewing machines, barbering equipment, entertainment hall,
- Solar water pumps for drinking and for horticultural activities.

Energy access in rural areas is typically characterised by the challenges of lack of grid availability and limited energy production or transmission infrastructure. In order to meet energy needs in rural areas, biomass and petroleum products such as kerosene and paraffin wax candles are used. The use of these products often results in environmental degradation, the release of greenhouse gas emissions and health problems. The high cost of petroleum products can also be a significant financial burden which often leads to suppressed demand leading to energy needs not being completely met.

The initiative will consist of 20 to 50 beneficiary communities in the first year of deployment. Our initial targets are Bafuloto village in the Western Region and several communities with the Basse Area Council jurisdiction.

This project will use village-level solar energy generation as a lever for sustainable and inclusive village level development in a manner that improves the quality of life of rural communities in The Gambia.

Similar projects have been implemented in Aga Biram village, Senegal. Some components of the project are currently underway in two (2) locations in The Gambia:

- Nyangen village, North Bank Region – Solar milling machine, customized freezer, mobile charging station
- Janjanbureh, Central River Region - Solar milling machine, customized freezer, mobile charging station

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%⁴ renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems. The country also has a goal of increasing energy supply in the country by 20% through mini solar kits and batteries.

Benefits

- Access to affordable and reliable electricity
- improved the quality of life of the inhabitants

⁴ <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

- Environmental benefits

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- Nadji.Bi Group

Funding and Implementation Plans

The project cost is estimated at 30 000 000 GMD (approx. 582,001 USD)

3.1.10 RUTDA Project-Street Lighting Phase

Project Description

This project involves the installation of 493 solar streetlights in urban and rural communities over a period of 3 years. 200 solar streetlights will be installed along all feeder roads and footpaths within the TDA clusters (Kotu Strand, Kotu Beach, and Bijilo) averaging 4.7 km and 293 will be installed along a stretch of 7 km beachside (Lebato Fajara to Coco Ocean Bijilo).

Street lighting in most Tourism Development Areas (TDAs) is insufficient or nonexistent. In addition, the few street lighting systems are powered from the electricity grid. As the country struggles to meet its escalating electricity demand, solar streetlights have been identified as the most energy-efficient means to meet public lighting needs in urban communities.

The solar-powered street lighting system will play an important role in improving public safety and the general business and living climate of urban areas.

The main project beneficiaries include tourists and the general public.

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%⁵ renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems.

Benefits

- Improvement in public safety and security especially in the tourism areas
- Reduction in traffic-related road accidents and loss of life
- Energy efficiency in public lighting

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- Ministry of Transport, Works and Infrastructure
- The Gambia Tourism Board

Funding and Implementation Plans

The project cost is estimated at 40,000,000 GMD (approx. 776,002 USD)

⁵ <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

3.1.11 Hybrid Energy Production Program (Biogas and Solar)

Project Description

This project seeks to explore the use of biogas plants in recycling vast volumes of organic waste produced daily from cattle herds or farms, other animal droppings, household, and kitchen waste into a renewable energy source like biogas for electricity and fertilizer production for commercial purposes. The solar-powered irrigation system will be used to provide a backup for sustainable water supply to enhance year-round crop production, livestock husbandry systems and create employment for the youth and women

The table below shows biogas feed and estimated energy yield:

No	Type of Organic waste	Estimated Daily Production (kg/day)	Estimated Biogas production (ltr/day)	Estimated Energy Output (kWh/day)	Energy Yield (kWh/day)
1	Cow dung	3,000.00	105,000.00	630,000.00	315,000.00
2	Poultry waste	600.00	21,000.00	126,000.00	63,000.00
3	Vegetable post-harvest waste	200.00	7,000.00	42,000.00	21,000.00
	Total	3,800.00	133,000.00	798,000.00	399,000.00

The project is estimated to directly benefit the 5,000 inhabitants of the village and over 20,000 people from the surrounding villages and beyond will indirectly benefit from the services and products. The local economy and businesses will grow and will translate to the self-reliance of the people. It will also contribute to national development and economic growth as excess products will be exported to other countries to earn foreign income.

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%⁶ renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems.

Benefits

- Access to affordable and reliable electricity
- Reduction in carbon emissions
- Reduction in food wastage
- Job creation

Project Partners and Key Stakeholders

- Ministry of Energy, The Gambia
- Bondali Youth Development Association (BYDA)

Funding and Implementation Plans

The project cost is estimated at 2,374,500 USD

⁶ <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

3.1.12 Solar Powered Greenhouse Gardening

Project Description

This project seeks to promote solar-powered greenhouse gardens in medium or low-income households that rely on farming and gardening.

These gardens currently cultivate diverse crops - tomatoes, onions, peppers, cabbages, and sweet potatoes. Most farmers in these gardens are women as they hold the traditional role of growing subsistence crops in many rural communities. These women farmers are contributing to their households' budget and reinvesting in the garden.

This project seeks to convert these gardens into solar greenhouse gardens where the conditions necessary to grow plants are supplied mostly by the sun rather than other fuel sources. This will be achieved through having a glazing oriented to receive solar energy, retaining the solar heat by using heat-storing materials such as water and having insulation in the walls and/or roof where there is little or no direct sunlight. The air within the house is circulated to stabilize day and night-time temperatures and also having a vestibule to minimize heat losses.

75% of the electricity produced by the solar power plant will mainly be for irrigation and other household uses. Excess energy produced will be used to supply electricity to the nearby compounds and streets. These Solar greenhouses are expected to play an important role in the agricultural industry due to their cost-effectiveness and energy efficiency.

SE4ALL Impact

The Gambia intends to achieve full electricity access at the household level in urban areas and at the community level in rural areas. The Gambia intends to achieve a target of 48%⁷ renewable electricity by 2030 with a combination of grid extension, mini-grids and isolated systems.

Project Partners and Key Stakeholders

- Ministry of Agriculture
- J.E.G GARDENS

Funding and Implementation Plans

The project cost is estimated at 300,000 GMD (approx. 5,820.01 USD)

⁷ <https://www.se4all-africa.org/seforall-in-africa/country-data/gambia/>

3.2 PIPELINE 5: ENABLING ENVIRONMENT

3.2.1 Independent Power Producer Solar PV (20 – 30MW)

Project Description

Naanovo Solar is exploring the opportunity of constructing a solar power plant with a minimum size of 20MW, ranging up to a maximum 30 MW, with an option to include battery storage. The aim of the project includes the following:

- Increasing the share of clean energy in electricity supply mix
- Reduce the dependence of fossil fuels for generating electricity inadvertently reducing carbon dioxide emissions
- Creating employment throughout The Gambia directly via direct employment at the power plant (up to 80 people), and the indirect and induced employment through the provision of electricity to generate more economic activity. Up to 3,000 households and business are expected to benefit directly from the implementation of this project
- Social benefits as schools and hospitals will benefit from the provision of electricity

Project Partners and Key Stakeholders

Naanovo Solar – Project Sponsor

NAWEC – Power Distribution Company

Funding Implementation

The project is estimated to have a capital expenditure of US \$42 million. Naanovo has confirmed that it has secured the required funding to be able to build the plant and cover its operation costs for 25 years, after which it will transfer the plant to the Government of The Gambia. Naanovo is currently seeking a Power Purchase Agreement between itself and NAWEC, to enable this project move forward.

4 ANNEX: PROJECT FICHES

5.1 PIPELINE 2: OFF-GRID PROJECTS (MINI-GRID AND STANDALONE SYSTEMS)	
Name of the Project	<u>Sintet Solar-Powered Irrigation System for Cassava Production</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grid and Standalone Systems)
Financial Structure Overview	The total investment cost will be US \$2.5 million of which 10% will be the project sponsor's/ owner's equity and the rest will be additional equity investment and bank loan and/or grant.
Country - Project Location	The Gambia
Project Description	<p>Sintet is a rural farming village located in Western Gambia on the Senegalese border, 140 km from Gambia's capital city Banjul.</p> <p>This project is targeted at improving solar irrigation systems to enable farmers attain higher yields from their current crops and assist them with the diversification of crop production. Currently, a significant number of farmers are involved in groundnut production, however this project seeks to make available the infrastructure that will allow them to also farm higher yield crops such as cassava.</p> <p>This project will target 40 farmers in Sintet village to improve their livelihoods via cassava production and soil fertility maintenance techniques such as "barassango" accasia tree planting. The objectives are to:</p> <ul style="list-style-type: none"> • Train 40 farmers on methods to improve cassava production from 20 tonnes/hectare to 45 tonnes/hectare by 2020 • Increase income of farmers from GMD300,000(US \$5,900) - GMD 675,000(US \$13,420) by 2020 • Fence 3 hectares of cassava farm with solar-powered irrigation systems.
Target Market	40 farmers (4 men and 36 women) in Sintet village who will have their livelihood improved through cassava production
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	This is expected to impact on Gambia's SE4ALL energy access and renewable energy goals, as this project will seek to generate energy in rural areas and also accelerate productive uses of energy for income generation.
Description of Status	The project is at the concept stage
Timeline (Provisional)	

<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
<p>Funding Sought</p> <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - \$2.5 million. - Foreseen debt/equity ratio for implementation: 95% / 10% - The estimated annual operating cost is US \$120,000
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Solar-powered irrigation systems - Access to reliable, affordable and sustainable energy - Improved household food security, Productive Uses of Energy (PUE), Economic and social development
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Re-generate the Gambia (Fandema Kafo) - alkaligaye481@gmail.com / +220 743 2606
<p>Project / Program Narrative</p>	

<u>Name of the Project</u>	<u>GAMCON Community Solar MicroGrid (70 kWp) in the Lower River Region</u>
Specific ECOWAS Pipeline	Off-grid project (Minigrids and Standalone Systems)
Financial Structure Overview	The total initial investment cost will be US \$480,000, with Development Ventures ready to cover up to 5% of the initial investment cost. The project sponsor will fully cover the operating costs of the micro grid.
Country - Project Location	The Gambia, Kuli Kunda, Kiang West, Lower River Region
Project Description	<p>Less than 15% of the rural & peri-urban population of The Gambia have access to reliable electricity supplies. While most households could afford to buy electricity from grids, due to upfront capital costs, most households rely entirely on small home power systems (solar kits, etc.) which are unable to power most consumer goods and commercial machinery. Even those consumers that can afford to invest in generator supplies are confronted by extremely high, volatile and rapidly increasing energy costs due to lack of control over energy supplies. While renewable energy micro-grids offer a potential energy solution for rural & peri-urban communities, currently the funding vehicles for local stakeholders to invest in their own electrification projects are severely limited.</p> <p>This project seeks to mitigate the above problems by installing and operating solar power micro-grids that retail low-cost electricity directly to consumers in two rural communities. By combining innovative technologies with a participatory investment model, we are seeking to support communities raise debt investment and install localized electric generation/distribution systems that power their entire respective communities. This approach to developing distributed micro-grids, is analogous to the development of mobile telecoms networks over land-line connections, as it facilitates the rapid growth of power supplies at a cost significantly lower than expanding outmoded national grids.</p> <p>The objectives of this project are as follows:</p> <ul style="list-style-type: none"> • Installation of a 70 kWp Solar Micro-Grid in Kuli Kunda, Kiang West, Lower River Region. • Install 105 domestic and commercial point of supply to 811 customers • 20 micro-enterprises will receive power via the solar micro-grid • Install a commercially sustainable and jointly community owned 240-volt 3 phase power supply in Kuli Kunda and connect at least 40% of the households in the area and promote the productive use of power • Expand the micro-grid to 5 new sites

	<ul style="list-style-type: none"> Develop a pipeline of future solar micro-grids in the Lower River Region to develop using commercial financing
Target Market	Households and Small Scale and Medium Enterprises (SMEs) in the Kuli Kunda community
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	70 kWp system serving the energy needs of households and SMEs in the Kuli Kunda community.
Description of Status	The project is at the concept stage
Timeline (Provisional)	
<ul style="list-style-type: none"> Development Phase Ends Financial Closing By Start of Implementation Date of Commissioning Solution Implemented 	
Funding Sought	
<ul style="list-style-type: none"> Total Cost of Project Project Development Environmental Studies Permits Financial Close 	<ul style="list-style-type: none"> US \$480,000 Foreseen debt/equity ratio for development: 0% / 100% Foreseen debt/equity ratio for implementation: 95% / 5%
Renewable Resources, Technology and Benefits	
<ul style="list-style-type: none"> Renewable Resource Technology Type Proposed Solution Direct Benefits Indirect Benefits 	<ul style="list-style-type: none"> Solar Energy Photovoltaics Solar Microgrid Energy Access Economic and Social Development
Project Sponsor Details	
<ul style="list-style-type: none"> Name Contact Information Type of Organisation 	<ul style="list-style-type: none"> Development Ventures LLC Name: Liam Kelly; Email: lkelly@developmentventures.net; Tel:0044 (0) 7762936234
Project/Program Narrative	

Name of the Project	<u>GHE Nucleus Farm Renewable Energy Project</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grids and Standalone Systems)
Financial Structure Overview	The total investment cost for this is estimated to be US \$300,000 with an annual operating cost of US \$75,000. The project sponsor seeks an equity investment and bank loan and/or grant for project implementation.
Country - Project Location	The Gambia
Project Description	<p>Gambian Horticultural Enterprises (GHE) is located in the town of Kembujeh, the company operates a nucleus farm and a multi-purpose agro-processing centre. The company currently uses a combination of diesel generators and the national electricity grid to supply all farm and processing operations which has resulted in extremely high operational costs. The company is seeking to develop an affordable, sustainable and clean energy source which will increase profitability and allow an opportunity to provide electricity to surrounding households.</p> <p>The objectives of this project are:</p> <ul style="list-style-type: none"> • To promote green energy to smallholder farmers, which will also provide biogas for cooking and fertilizers for their farms. • GHE will target community women vegetable gardens and youth farmers for capacity building to improve crop yield, educate them in the use of renewable energy in their production process to increase income and eventually alleviate poverty. Some of the expected benefits are: <ul style="list-style-type: none"> • Connecting 1,000 households with solar flood lights • Provide 1,000 families to benefit from the use of cooking pellets in place of firewood • Equip 20 vegetable gardens with bio-digesters to generate biogas for lighting or cooking and organic fertiliser
Target Market	
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	Provision of an affordable, sustainable and clean energy source which will increase profitability and allow an opportunity to provide electricity to about 1,000 households.
Description of Status	The project is at the concept stage
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By 	

<ul style="list-style-type: none"> - Start of Implementation - Date of Commissioning - Solution Implemented 	
<p>Funding Sought</p> <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - US \$300,000 - Foreseen debt/equity ratio for development: 100% - Foreseen debt/equity ratio for implementation: 100%
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Access to energy - Clean and safe energy for cooking
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information <p>Type of Organisation</p>	<ul style="list-style-type: none"> - Gambia Horticultural Enterprise (GHE)
<p>Project / Program Narrative</p>	

<u>Name of the Project</u>	<u>Solar Multifunctional Platforms – Mbolo Association</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grid and Standalone Systems)
Financial Structure Overview	The initial investment cost is estimated to be US \$100,000. The project sponsor seeks an equity investment and bank loan and/or grant for project implementation.
Country - Project Location	The Gambia
Project Description	<p>This project is focused on transforming the economies in rural and peri-urban areas through access to renewable energy and the provision of community facility hubs called “Solar Multifunctional Platforms (SMFPs)”.</p> <p>Energy access in these communities will promote the building of a green economy in these rural communities, which will assist income generating opportunities which would have previously not existed.</p> <p>This project is targeted at providing diverse economic opportunities for the women and the youth of these communities to be able to generate income for their households. The rural communities focused on are Central River Region North, Central River Region South, Lower River Region, Upper River Region and NBR.</p> <p>The expected outputs of this program are:</p> <ul style="list-style-type: none"> • At least 75 communities are connected to electricity and 2,250 households with access to solar lighting • Establishment of household solar lighting industry • 22,500 direct beneficiaries and 112,500 indirect beneficiaries. • 375 kWh solar PV standalone system installed • 375 estimated green jobs to be created
Target Market	75 communities
Sponsor’s Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By 	

<ul style="list-style-type: none"> - Start of Implementation - Date of Commissioning - Solution Implemented 	
<p>Funding Sought</p> <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - The initial investment cost is estimated to be US \$100,000 <p>Foreseen debt/equity ratio for development: 100%, Foreseen debt/equity ratio for implementation: 100%</p>
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Access to energy and lighting - Job creation
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Mbolo Association
<p>Project / Program Narrative</p>	

Name of the Project	<u>Power for the Future – Solar PV Investments to Provide Power and Generate Revenue for Gambia’s Hospitals</u>
Specific ECOWAS Pipeline	Off-grid project (Minigrids and Standalone Systems)
Financial Structure Overview	The implementation of the project will require US \$1.1 million of which 23% will be the project sponsor’s/ owner’s equity and the rest will be additional equity investment and bank loan and/or grant.
Country - Project Location	The Gambia
Project Description	<p>Power Up Gambia is a registered charitable organization in the United States and The Gambia, currently operating under a MoU with the Gambian Ministry of Health and Social Welfare and the Ministry of Petroleum and Energy.</p> <p>The intention to build two 250 kWp solar farms at two hospitals: Bwiam General Hospital and Bansang General Hospital. These will be hybrid solar power systems, grid connected with battery backup to provide uninterrupted 24 electricity to the hospital while sending excess power out to the national grid during the day.</p> <p>Working with Bwiam General Hospital and Bansang General Hospital, Power Up Gambia intends to meet the hospital's energy needs and provide excess power for sale to the national grid. By generating excess power, this project will help The Gambia increase the amount of renewable energy that is part of the national grid while helping to reduce the country's reliance on diesel power for electrical generation. Both hospitals have received preliminary approval from NAWEC as part of a net billing agreement.</p> <p>Direct beneficiaries are the estimated 110,000 number of patients who visit both facilities annually to access urgent healthcare. Availability of uninterrupted electricity will assist the facilities provide high quality healthcare. Lower cost solar generated electricity, with net metering to generate revenue for the hospital will give hospital administration to spend additional resources on areas which are critical to improving the quality of healthcare. Other beneficiaries include members of the surrounding community who will experience improved power supply and voltage stabilisation in their respective households and businesses.</p>
Target Market	Bwiam General Hospital and Bansang General Hospital
Sponsor’s Experience in Similar Projects	
Specific Contribution to the 3	500 kW system serving the energy needs of two (2) hospitals

SE4ALL Goal (s)	with over 110,000 estimated patients who visit both facilities.
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	
<ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - US \$1.1 million
Renewable Resources, Technology and Benefits	
<ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Solar farms - Access to reliable, affordable, and sustainable energy - Improved healthcare delivery
Project Sponsor Details	
<ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Power Up Gambia - Name: Lynn McConville, Exec. Director; Email: lmccconville@powerupgambia.org
Project / Program Narrative	

Name of the Project	Development of 40 kW mini-grid in Jinack Island
Specific ECOWAS Pipeline	Off-grid project (Mini-grid and Standalone Systems)
Financial Structure Overview	The implementation of the project will require US \$200,000 of which 10% will be the project sponsor's/ owner's equity and the rest will be additional equity investment and bank loan and/or grant.
Country - Project Location	The Gambia, Jinack Island in the North Bank Region
Project Description	This project provides for the installation of a 40kWp Solar PV mini-grid system as a feasible low-cost option of providing electricity to approximately 2,000 residents of Jinack island community.
Target Market	The target group of beneficiaries include residents of the Jinack island community and local small businesses: 500 households, a 10-hectare aquaculture business, 10 tourism businesses, 2 lower & upper basic and senior secondary schools, the community health centre, and the community recreational centre.
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	40 kWp system serving the energy needs of over 2,000 residents.
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	<ul style="list-style-type: none"> - 10,000,000 GMD (approx. US\$ 200,000) Foreseen debt/equity ratio for development: 0% / 100% Foreseen debt/equity ratio for implementation: 90% / 10%
<ul style="list-style-type: none"> - Project Development - Environmental Studies - Permits - Financial Close 	
Renewable Resources, Technology and Benefits	

<ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Mini-Grid Solar System - Energy Access, Job creation - Energy Security, Emission reduction, local development, poverty alleviation, social inclusion
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Tefa Center for Fisheries Development in Africa (FishDeC) - Tefa is a social enterprise registered in the Gambia providing high quality development services with demonstrated experience in the successful management and implementation of projects in the Gambia. - Name: Lamin JS Fatajo; Email: mfatajo@tefaglobal.com
<p>Project / Program Narrative</p>	

<u>Name of the Project</u>	<u>Rural Electrification and Renewable Energy Development</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grid and Standalone Systems)
Financial Structure Overview	<p>The full implementation of the project requires US \$ 10 million over various phases but for the initial pilot phase for 200 households, the budget is estimated at \$600,000.</p> <p>The project sponsor is seeking convertible debt/equity to finance the implementation of the project.</p>
Country - Project Location	The Gambia, Sare Pateh Jamwelly in West Coast Region
Project Description	This project seeks to establish a solar-powered mini-grid to meet the growing demand for electricity in Sare Pateh Jamwelly, a non-electrified community with a population of over 4,000 inhabitants in the West Coast Region of The Gambia.
Target Market	Over 5,000 people residing in these rural/semi-rural towns and some neighboring villages, 100 SME enterprises, 10 Community Services, including NGO and Administration offices: 10 establishments, schools, community hospitals, health stations, and 5 pumps for domestic applications, and 11 pumps for irrigation serving the natives of rural/semi-rural communities Sare Pateh, Youna, Mariama Kunda, Jabang, Sotokoi and its surrounding villages located in Kombo North
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	The system serving the energy needs of over 5,000 residents.
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	
<ul style="list-style-type: none"> - Total Cost of Project 	<ul style="list-style-type: none"> - This project's full funding is estimated at US \$10 million for various phases. <p>For the initial pilot phase for 200 households, the budget is estimated at US \$600,000</p> <p>Foreseen debt/equity ratio for development: 100% / 0%</p>

<ul style="list-style-type: none"> - Project Development - Environmental Studies - Permits - Financial Close 	<p>Foreseen debt/equity ratio for implementation: 100% / 0%</p>
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Mini-grid solar system with storage - Energy Access, Job Creation - Energy Security, Emission Reduction, Local Development, Social Inclusion
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Project Owner / Developer - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Unique Group - Email: info@uniquegroupe.com; Tel: +220 4390424
<p>Project / Program Narrative</p>	

<u>Name of the Project</u>	<u>Solar Kits Pilot Production “Made-in-The Gambia” Unit Installation Project</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grids and Standalone Systems)
Financial Structure Overview	The implementation of the project will require an investment amount of US \$500,000 of which 10% will be the project sponsor’s equity and the rest will be additional equity investment and bank loan and/or grant.
Country - Project Location	The Gambia; Fajara - Main HQ, Greater Banjul Area, Basse, Upper River Region, and Bafuloto, Western Region
Project Description	<p>Around 320,000 households do not have access to electricity service in The Gambia making the use of Solar Home System (SHS) prevalent in the Gambia. There are however just a few Gambian companies into the manufacturing and distribution of the SHSs.</p> <p>Nadji.Bi Group specializes in community-based R&D, manufacturing and distribution of solar devices, services and integrated solutions to local communities. In particular, they provide solar home systems for rural & urban electrification and solar water pumps through proprietary Pay-As-You-Go (PAYGO) software Platform that enables Mobile Money payment, monitoring and control of devices through Internet of Things protocols (IoT) and Big Data collection and analysis.</p> <p>The company seeks to undertake the following activities in The Gambia:</p> <ol style="list-style-type: none"> 1. Deployment of a small industrial site and office - with equipment/installation/ training and processes 2. Deployment of a Showroom and of a “Nadji.Bi Solar Village” - with equipment / installation/training and processes: <ol style="list-style-type: none"> a. Set up a solar plant close to destination markets by geographical area b. Launching of Research & Development (R&D) Partnerships with the University of The Gambia in the field of smart solar solutions c. Train the next generation in smart solar technologies and solutions <p>NAGJI.BI is seeking a convertible debt/equity for expansion of the business in The Gambia.</p>
Target Market	Rural communities, peri-urban areas and urban centers
Sponsor’s Experience in Similar Projects	Nadji.Bi (Senegal) has successfully implemented a similar project, which has become the flagship of West Africa for local solar manufacturing. It has been in operation for 4 years and

	<p>has sold over 80 000 units in the past 3 years. The government of Senegal has recognized its importance in their socio-economic programme for rural electrification and employment generation. Through its specialized agency, ANER, it has recently signed an agreement with Nadji.Bi Senegal to scale up production as part of their acceleration programme to provide electricity to the entire population in the next few years.</p> <p>In The Gambia, we have already made strides in this direction by signing agreements with the following local actors: Basse Area Council, Basse, Upper River Region, and Bafuloto Village Development Committee, Western Region.</p>
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional) <ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - 25,000,000 GMD (approx. US \$ 490,000) <p>Foreseen debt/equity ratio for development: 0% / 100%</p> <p>Foreseen debt/equity ratio for implementation: 90% / 10%</p>
Renewable Resources, Technology and Benefits <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Solar Home Systems - Private sector support, access to clean and affordable solar kits, job creation i.e. number of direct (est. 15 people) and indirect jobs – sales forces, agents, distributors (est. 100 people) - Environmental and social benefits

<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Nadji.Bi Group (Gambia) <p>Nadji.Bi Group, a manufacturer and distributor of smart, innovative solar solutions for off-grid electrification, lighting and productive uses in Africa seeks investment to expand its business in The Gambia.</p> <ul style="list-style-type: none"> - Name: Gabriel Latjor NDow; Email: Latjor.ndow@nadjibi.com; Tel:+2207039288
<p>Project / Program Narrative</p>	

Name of the Project	Smart Solar Eco-Community Initiative
Specific ECOWAS Pipeline	Off-grid project (Mini-grids and Standalone Systems)
Financial Structure Overview	The implementation of the project will require an investment amount of US \$590,000 of which 5% will be the project sponsor's equity and the rest will be additional equity investment and bank loan and/or grant.
Country - Project Location	The Gambia
Project Description	<p>The Smart Solar Eco-Community Initiative is a project adapted to communities of 500 to 1,000 people living within a 1 km² range.</p> <p>This initiative consists of implementing a few solar connected solutions to enable the sustainable development of the community:</p> <ul style="list-style-type: none"> • Solar kit deployment via PAYGo – distributed and installed through local women and youth organisations, • Solar streetlights for safety – installed through grants, • A Solar transformation platform enabled to generate income, constituting of a solar milling machine, a freezer, mobile phone charging station, oil press, sewing machines, barbering equipment, entertainment hall, • Solar water pumps for drinking and for horticultural activities
Target Market	The communities targeted are between 500 to 1000 people living in a 1square kilometer range. The initiative could consist of 20 to 50 beneficiary communities to deploy on the first year. The initial targets are Bafuloto village (Western Region), several communities with the Basse Area Council jurisdiction.
Sponsor's Experience in Similar Projects	<p>Similar projects have been implemented in Aga Biram village, Senegal. As of December 2019, some components of the project are currently underway in two (2) locations in The Gambia:</p> <ul style="list-style-type: none"> • Nyangen village, North Bank Region - Solar milling machine, customized freezer, mobile charging station • Janjanbureh, Central River Region - Solar milling machine, customized freezer, mobile charging station
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By 	

<ul style="list-style-type: none"> - Start of Implementation - Date of Commissioning - Solution Implemented 	
<p>Funding Sought</p> <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - 30,000,000 GMD (approx. US \$ 590,000) <p>Foreseen debt/equity ratio for development: 0% / 100%</p> <p>Foreseen debt/equity ratio for implementation: 95% / 5%</p>
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Standalone solar systems - Access to affordable and reliable electricity - Improved the quality of life of the inhabitants, Emission reduction
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Nadji.Bi Group (Gambia) <p>Nadji.Bi Group, a manufacturer and distributor of smart, innovative solar solutions for off-grid electrification, lighting and productive uses in Africa seeks investment to expand its business in The Gambia.</p> <ul style="list-style-type: none"> - Name: Gabriel Latjor NDow; Email: Latjor.ndow@nadjibi.com; Tel: +2207039288 - Limited Liability Company
<p>Project / Program Narrative</p>	

Name of the Project	RUTDA Project – Street Lighting Phase
Specific ECOWAS Pipeline	Off-grid project (Mini-grids and Standalone Systems)
Financial Structure Overview	The implementation of the project will require an investment amount of US \$ 790,000. The Tourist Development Board (TDA) is seeking a loan or grant for the implementation of this project.
Country - Project Location	The Gambia
Project Description	Insufficient lighting has been identified as a major gap in most Tourist Development Areas (TDA) in The Gambia. This project involves the installation of 493 solar-powered streetlights in urban and rural communities over a period of 3 years. Two hundred (200) solar-powered streetlights will be installed along all feeder roads and footpaths within the TDA clusters (i.e. Kotu Strand, Kotu Beach, and Bijilo) averaging 4.7 km, and the remaining two-hundred and ninety-three (293) will be installed along a 7km beachside stretch (i.e. Lebato Fajara to Coco Ocean Bijilo).
Target Market	Tourism facilities, hotels and the general public
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	<ul style="list-style-type: none"> - 40,000,000 GMD (approx. US \$ 800,000) Foreseen debt/equity ratio for development: 100% / 0% Foreseen debt/equity ratio for implementation: 100% / 0%
<ul style="list-style-type: none"> - Project Development - Environmental Studies - Permits 	

<ul style="list-style-type: none"> - Financial Close 	
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Solar-powered street lighting system - Sustainable lighting in Tourism Development Areas (TDAs) - Improvement in public safety and security especially in the tourism areas, Reduction in traffic-related road accidents and loss of life and Energy efficiency in public lighting
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Gambia Tourism Development Board - Email: info@grboard.gm; Tel: +220 4462490/1
<p>Project / Program Narrative</p>	

Name of the Project	<u>Hybrid Energy Production Program (Biogas and Solar)</u>
Specific ECOWAS Pipeline	Off-grid project (Mini-grids and Standalone Systems)
Financial Structure Overview	The implementation of the project will require an investment amount of US \$2,374,500 The sponsor is seeking a loan or grant for the implementation of this project.
Country - Project Location	The Gambia, the community of Bondali Jola
Project Description	This project seeks to explore the use of biogas plants in recycling vast volumes of organic waste produced daily from cattle herds or farms, other animal droppings, household, and kitchen waste into a renewable energy source like biogas for electricity and fertilizer production for commercial purposes. The solar-powered irrigation system will be used to provide a backup for sustainable water supply to enhance year-round crop production, livestock husbandry systems and create employment for the youth and women
Target Market	The community of Bondali Jola
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	
<ul style="list-style-type: none"> - Total Cost of Project - Project Development - Environmental Studies - Permits - Financial Close 	<ul style="list-style-type: none"> - US \$ 2,374,500 <p>Foreseen debt/equity ratio for development: 100% / 0%</p> <p>Foreseen debt/equity ratio for implementation: 100% / 0%</p>

<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Biogas & Solar Energy - The project outcome will benefit directly 5,000 inhabitants (women, men and children) of the village and over 20,000 people from the surrounding villages and beyond will indirectly benefit from the services and products produced
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Bondali Youth Development Association (BYDA) Bondali Youth Development Association (BYDA) is a registered community development association and has been in existence since the 1980s. It is the umbrella body charged with the responsibilities inter alia to spear head, implement and manage community driven development projects in the community. - Name: Allabatu Jatta and Ebrima Jallow; Email: allabatu2015@gmail.com / ebs241@gmail.com; Tel: +220 322 9035 / +220 344 4025
<p>Project / Program Narrative</p>	

Name of the Project	Solar Powered Greenhouse Gardening
Specific ECOWAS Pipeline	Off-grid and Standalone Systems
Financial Structure Overview	<p>The implementation of the project will require an investment amount of US \$ 6,000.</p> <p>The sponsor is seeking a loan or grant for the implementation of this project.</p>
Country - Project Location	The Gambia
Project Description	<p>This project seeks to promote solar-powered greenhouse gardens in medium or low-income households that rely on farming and gardening.</p> <p>These gardens currently cultivate diverse crops - tomatoes, onions, peppers, cabbages, and sweet potatoes. Most farmers in these gardens are women as they hold the traditional role of growing subsistence crops in many rural communities. These women farmers are contributing to their households' budget and reinvesting in the garden.</p> <p>This project seeks to convert these gardens into solar greenhouse gardens where the conditions necessary to grow plants are supplied mostly by the sun rather than other fuel sources. This will be achieved through having a glazing oriented to receive solar energy, retaining the solar heat by using heat-storing materials such as water and having insulation in the walls and/or roof where there is little or no direct sunlight. The air within the house is circulated to stabilize day and night-time temperatures and also having a vestibule to minimize heat losses.</p>
Target Market	
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	
Description of Status	
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	

Funding Sought <ul style="list-style-type: none"> - Total Cost of Project - Project Development - Financial Close 	<ul style="list-style-type: none"> - 300,000 GMD (approx. US \$ 6,000) <p>Foreseen debt or grant or equity ratio for development: 100% / 0%</p> <p>Foreseen debt or grant or equity ratio for implementation: 100% / 0%</p>
Renewable Resources, Technology and Benefits <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Solar-powered greenhouse
Project Sponsor Details <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - J.E.G GARDENS - Email: Kpacgpac292@gmail.com; Tel: +220 999 3335 / +220 286 9332
Project / Program Narrative	

5.2 PIPELINE 5: ENABLING ENVIRONMENT	
Name of the Project	Solar PV IPP (20 – 30 MW)
Specific ECOWAS Pipeline	Enabling Environment
Financial Structure Overview	<p>The total investment cost will be US \$42 million.</p> <p>The project sponsor has already secured 100% funding the project implementation. However, the sponsor seeks an enabling environment in the form of a favorable Power Purchasing Agreement (PPA) from the Gambian government owned utility – National Water and Electric Company (NAWEC) for electricity to be generated from the power plant over a predetermined/agreed period.</p>
Country - Project Location	The Gambia
Project Description	<p>Naanovo is a developer of clean energy projects.</p> <p>The company is seeking to construct a utility-scale 20 – 30 MW solar PV plant with a storage option in the Gambia as a solar Independent Power Producer (IPP).</p> <p>The company will be responsible for developing, designing, financing, operating, maintaining the power plant and transfer to the government after 25 years.</p>
Target Market	The unelectrified population of the Gambia
Sponsor's Experience in Similar Projects	
Specific Contribution to the 3 SE4ALL Goal (s)	20 – 30 MW utility-scale solar plant serving the energy needs of over 20,000 residents
Description of Status	The project is at the concept stage
Timeline (Provisional)	
<ul style="list-style-type: none"> - Development Phase Ends - Financial Closing By - Start of Implementation - Date of Commissioning - Solution Implemented 	
Funding Sought	
<ul style="list-style-type: none"> - Total Cost of Project 	<ul style="list-style-type: none"> - This project will require an investment cost of US \$42 million. <p>However, the project sponsor has already funds for the implementation but requires a “enabling environment” in the form a favorable PPA from the government-owned utility, NAWEC.</p>

<ul style="list-style-type: none"> - Project Development - Financial Close 	
<p>Renewable Resources, Technology and Benefits</p> <ul style="list-style-type: none"> - Renewable Resource - Technology Type - Proposed Solution - Direct Benefits - Indirect Benefits 	<ul style="list-style-type: none"> - Solar Energy - Photovoltaics - Grid-connected solar power plant - Access to reliable, affordable and sustainable energy - Productive Use of Energy (PUE), and Economic and social development
<p>Project Sponsor Details</p> <ul style="list-style-type: none"> - Name - Contact Information - Type of Organisation 	<ul style="list-style-type: none"> - Naanovo Energy / SolarMaax - Name: Momodou Danso; Email: Dansomodou@gmail.com ; Tel: +220 264 8197
<p>Project / Program Narrative</p>	