Renewable Energy Advocacy:

An analysis of policies and role of local civil society organizations in boosting renewable energy uptake

A Case Study of Benin, Ghana, Nigeria and Togo

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List of Acronyms

ABERME	Agence Béninoise d'Electrification Rurale et de Maîtrise d'Energie
AFD	Agence Française de Développement/French Agency for Development
ARE	Agence de régulation de l'électricité
AT2ER	Agence togolaise d'électrification rurale et des énergies renouvelables / Togolese Agency for Rural Electrification and Renewable Energy
BOAD	Banque Ouest Africaine de Développement / West African Development Bank
BUR	Biennial Update Report
CC	Climate Change
CCAFS	Climate Change, Agriculture and Food Security
CEB	Communauté Electrique du Bénin
CSO	Civil society organization
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Regional Centre for Renewable Energy and Energy Efficiency
EEEP	ECOWAS Energy Efficiency Policy
EREP	ECOWAS Renewable Energy Policy
EPSR	Electricity Power Sector Reform
FCT	Federal Capital Territory
GHG	Greenhouse Gas
IED	Innovation Environnement Développement
IFDD	Institut de la Francophonie pour le Développement Durable
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
kWh	Kilowatt hour
MW	Megawatt
NCCP	National Climate Change Policy
NDC	Nationally Determined Contribution
NEEAP	National Energy Efficiency Action Plans
NERC	Nigerian Electricity Regulatory Commission
NGO	Non-governmental organization
NREAP	National Renewable Energy Action Plans
PANER	Plan d'action national sur les énergies renouvelables
PV	Photovoltaic
RE	Renewable energy
REMP	Renewable Energy Master Plan
RETs	Renewable Energy Technologies
SE4ALL	Sustainable Energy for All
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WAEMU / UEMOA	West African Economic and Monetary Union
WASCAL	West African Science Centre on Climate Change and Adapted Land Use

Executive Summary

Access to modern energy services in sub-Saharan Africa still remains highly dependent on whether people reside in urban or rural areas, knowing that the majority of the population lives in rural areas. In West African countries, in the past few years, efforts have been made towards the development of renewable energies (REs) through the development of policies, programmes and projects with a view to address this lack of access to energy in the context of the international fight against climate change.

Individually and collectively, ECOWAS (Economic Community of West African States) countries have initiated several energy policies both to improve the living conditions of the most vulnerable populations and to fight against climate change. However, these policies have been diversely implemented and this report is taking stock of their status of implementation, reviews the constraints and gaps with a view to explore how civil society organisations could work to better support renewable energy and climate change adaptation and mitigation in particular in Benin, Ghana, Nigeria and Togo. The overall aim of this analytical report is therefore to identify possible areas of intervention for 350 Africa and its local partners to remove obstacles to the uptake of renewable energy in those countries. With the two-fold objective of the research in mind - 1. to summarise the current climate policies and legislation in the targeted countries (Benin, Ghana, Nigeria and Togo; and 2. to have an overview of opportunities and or barriers to implementation of renewable energy plans in the four countries.

Renewable energy alone is not a panacea to all of Africa's energy and developmental challenges. Renewable energy can come with its own problems, particularly if it is implemented using the same profit-oriented logic that has guided the development of fossil fuels. This includes implementation of projects without the free, prior and informed consent of affected communities, and big industries and urban elites being given priority access to electricity produced. Where corporations lead the rollout of renewable energy projects, the profit imperative can result in human and environmental rights violations as costs are externalised to communities and nature. Some forms of renewable energy require the mining of rare earth and other minerals, which is often associated with land and resource grabs affecting marginalized and indigenous communities around the world. These issues are often more prevalent in large-scale renewable energy projects.

350Africa.org recognises the interconnected energy and climate crises and the impact and opportunity a just and fair energy transition to renewable energy presents for people across Africa. The organisation supports localised, decentralised, clean, renewable energy alternatives which benefit communities with less energy access. This report mentions several action points for civil society groups to leverage opportunities and provide better support to renewable energy and climate adaptation and mitigation in the individual four countries through evidence-based advocacy and lobbying using facts and figures.

Following the review of the different policies, laws and instruments that have been developed and adopted in these countries, several categories of barriers and challenges have been identified. The most common barriers, constraints and challenges noted across these countries include:

- Lack of information, communication or knowledge on renewable energies and renewable energy technologies; general unawareness of the benefits of REs
- Lack or low level of legislation and rules to encourage and ensure the massive adoption of REs and RETs;
- Lack of or low participation and involvement of some categories of stakeholders in particular the CSOs and the private sector in the development process of REs in terms of communication knowledge sharing on the one hand and in terms of investment;
- Low level or lack of research and development on REs and RETs;
- Lack of skilled personnel for installation and maintenance; lack of technical competences and know-how;
- Lack of dialogue or synergies among all actors in the development of REs;
- Lack of accompanying measures or incentives to encourage the development of REs and when they exist, lack or low level of implementation;
- Lack of financing, investments, funding or access to capital or credit both on the demand and supply sides;
- Lack of local manufacturing or assembling plants.

In view of the challenges and opportunities that have emerged, possible courses of action for civil society organisations are suggested:

- Sensitization and awareness raising on REs, RETs among the population; capacity building including among CSOs;
- Advocacy for the development, strengthening or adoption of legislation and rules to accompany the development or adoption of REs, such as rules on incentives, land tenure, local content or quality control of RETs, etc.;
- Advocacy for the establishment of workforce training institutions, quality control and testing centres; strong capacity building;
- Establishment of a framework or coalition or policy dialogue space for local actors;
- Advocacy for the creation of dedicated funds or financing mechanisms, etc.

Many other action points have been identified according to the local circumstances. The implementation of these courses of actions will largely depend also on local circumstances.

In conclusion, it has been noted that in spite of the considerable renewable energy resources existing in the various targeted countries, a large portion of the population still lacks access to energy and the end use of biomass as a domestic source of energy is still huge. However, tremendous efforts are being made to address the barriers and challenges of national energy access, increased adoption of REs and GHG emissions reduction. These barriers include general unawareness of the benefits of REs, lack of technical competence and know-how, insufficient finance, lack of incentives or promotion of these incentives when they exist, lack of local manufacturing and assembly plants, and lack of regulatory environment and legal frameworks, among others.

These barriers and challenges call for strong and steady advocacy and promotion of REs in the four countries by CSOs. They have an important role to play as they already do for climate change action in all of these countries. The advocacy for further adoption of REs in these countries appears therefore to be in continuity of the ongoing commitment on climate change, even if in some countries it would need to start with internal capacity building on RE. From the analysis, it appears that CSOs need to perform this task by raising awareness on the many benefits of REs and RETs, encouraging staff training for qualified workforce, advocating for the creation of policy dialogue platforms and most importantly by developing synergies in concerted efforts. In this regard, the need for partnership building and concertation between government, civil society, research and academia communities, and the private sector as well as coordination between different stakeholders appears to be essential to ensure a successful deployment and development of REs in all of these countries. More specific actions have been identified and will need to be further outlined taking into account the policy circumstances and energy situation in each country.

General Introduction

I. General Introduction

In Sub-Saharan Africa in general, the majority of the population lives in rural areas and access to modern energy services is highly dependent on urban or rural areas. This inequitable energy supply situation has been observed for more than fifty years and is reflected in a strong disparity in the rate of access to modern energy services between the different areas and the different countries.

In the context of the international fight against climate change and fully aware of the dynamics of reducing greenhouse gas emissions and the harmful risks they pose to the daily lives of populations, West African countries, like other developing countries, have understood that the development of renewable energies on the one hand and the development of the control of energy access on the other hand can make a valuable contribution in achieving sustainable development goals in terms of modern energy penetration in localities, and have thereby developed policies, programs, projects, etc. related to energy access and low-carbon development.

At the regional level, apart from national policies, programmes and laws, the Economic Community of West African States (ECOWAS), that gathers 15 countries of the region in a common regional grouping for the promotion of economic integration, has also initiated several energy policies to both improve the living conditions of the most vulnerable populations and fight climate change, with regard to the role of energy in social transformations, of its impacts on health, the environment and greenhouse gas emission.

However, it is clear that all these policies, programmes and laws – be it national, regional or international - are diversely being implemented within the countries in the context of the fight against climate change. It is therefore important to take stock

	Wind	Pv	Small Scale Hdro	Biomass
BENIN	10%	20%	50%	20%
BURKINA FASO	0%	60%	30%	10%
CAPE VERDE	90%	10%	0%	0%
COTE D'IVOIRE	0%	10%	50%	40%
GAMBIE	60%	30%	0%	10%
GHANA	25%	35%	30%	10%
GUINEE	0%	20%	50%	30%
GUINEE BISSAU	0%	20%	40%	40%
LIBERIA	0%	10%	50%	40%
MALI	10%	30%	30%	30%
NIGER	30%	50%	0%	20%
NIGERIA	10%	30%	30%	30%
SENEGAL	70%	10%	0%	20%
SIERRA LEONE	0%	10%	60%	30%
TOGO	0%	20%	50%	30%
Mines	0%	30%	70%	0%

Table 1: Indicative ranking of RE resources by country.
Source: ECREEE, EREP, 2015.

of their status of implementation, review the constraints and gaps that may hinder their implementation, so as to understand the situation of renewable energy and climate policies and see how civil society organizations could work to better support renewable energy and climate change adaptation and mitigation and remove obstacles to the uptake of renewable energy in the region.

The overall aim of the proposed analytical research is therefore to review the status of the energy policies in relation to the climate change policies and strategies specifically in Benin, Ghana, Nigeria and Togo with a view to identifying possible areas of intervention for 350 Africa and its local partners.

Objectives of the research

The objective of this research is two-fold:

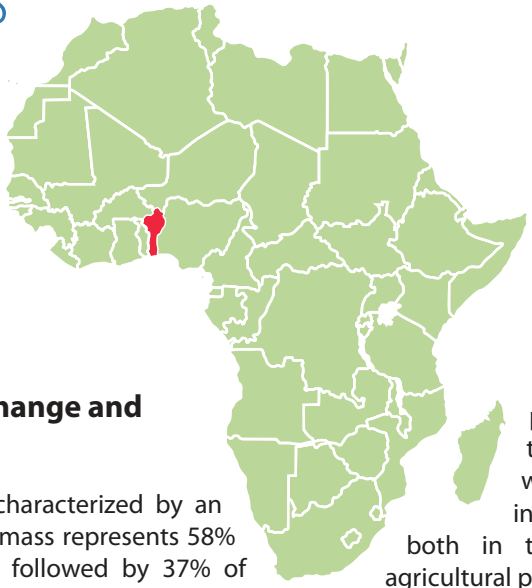
1. To **summarise the current climate policies and legislation** in Benin, Ghana, Togo and Nigeria, including the countries' NDCs and local national and regional policies and legislation relating to climate change and energy;
2. To **have an overview of opportunities and or barriers to implementation of renewable energy plans** in Benin, Ghana, Togo and Nigeria. These could include political, policy, economic and cultural opportunities and barriers.

Precisely, this research is expected to identify points of action that will allow local civil society groups to leverage opportunities and provide better support to renewable energy and climate adaptation and mitigation in the individual four countries through evidence-based advocacy and lobbying using facts, figures, graphs, tables and infographics.

2 Case Studies

II. Case Studies

II.1 Benin



II.1.1 Benin's climate change and energy profile

Benin's energy situation is characterized by an energy balance in which biomass represents 58% of primary energy in 2017, followed by 37% of hydrocarbon imports, 2% of coal, 1% of natural gas and 2 % of electricity through thermal plants. (DGRE, SIE-Benin, 2021[1]). In 2020, the rate of national access to electricity, is estimated at 36.5% at the national level (10.4% in rural areas and 64.9% in urban areas) and increases by 2.49% between 2016 and 2020[2]. Benin relies on electricity imports for a significant part of its energy supply and in 2018, the electricity access rate in Benin was 33.2%. These relatively low figures indicate a total absence of motorization both in the production and processing of agricultural products.

The household fuels sub-sector occupies an important place in Benin's environmental and energy policy. There are several reasons for this:

- The harvesting of wood to meet the energy needs of populations, particularly urban populations in the form of charcoal, the significant contribution to the disappearance and degradation of forest resources,
- Its importance in urban-rural relations,
- The multiplicity of public and private actors concerned and,

1 BENIN.- Chiffres clés 2021 : Bilans énergétiques et indicateurs 2016 à 2020. Cotonou : SIE, DGRE, 2021.- 26p. https://direction-energie.gouv.bj/telecharger-chiffres-cles

2 Idem

- Links with many other sectors (agricultural, forestry and energy policy, legislation, regulations and taxation, gender relations, decentralization, etc.).

Apart from biomass, we note this characteristic of strong dependence on imported petroleum products for the transport sector, industries and for the production of electricity which, also, depends just as heavily on imports from neighbouring countries.

The development of renewable energy sources has enabled Benin to implement several projects and programs since the 1990s. However, the significant potential of renewable energy resources remains very poorly exploited (solar, wind, hydroelectricity, agricultural and animal biomass).

In fact, with reference to the National Policy for the Development of REs, it has been noted the use of renewable energy technologies at a large scale is not yet a reality due to institutional, regulatory, technical, economic and organizational barriers to their development. This development of REs has not been a priority so far and has not been integrated into the legal and regulatory framework of the energy sector and other related sectors such as agriculture, the environment, town planning or even the business environment.

Apart from the large hydroelectricity of the Compagnie Electrique du Bénin (CEB), there is no large electricity production infrastructure based on renewable energy connected to the SBEE (Société béninoise d'énergie électrique) network. About 2% of localities have been electrified by mini solar power plants and 6% by solar PV kits. Energy services such as water heating, solar drying or even motive power for various activities (irrigation, pumping, grain milling, etc.) are very poorly developed. Micro-hydroelectricity, wind power and modern biomass applications are very rare or even non-existent.

Situation of Renewable Energies

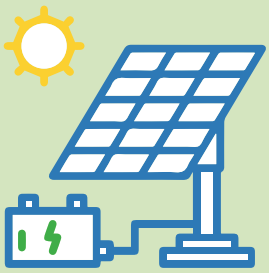
Despite the country's immense potential, Benin does not yet experience large-scale use of renewable energy technologies. A vigorous policy will be necessary for the exploitation of renewable energy resources which are more or less sufficiently known. The country's potential is as follows (PONADER[3]):

3 BENIN.- Politique nationale de développement des énergies renouvelables (PONADER).- Cotonou : Bénin, 2020.- 20p. https://direction-energie.gouv.bj/documents/politique-nationale-de-developpement-des-energies-renouvelables-2020.html

Hydroelectricity

Several studies (UNDP, ABERME, TECSULT-ACDI, IED) confirm the hydroelectric potential of sites in two favourable areas. However, their characteristics (high intermittency, low flow rates, lack of demand for proximity and inaccessibility, among others) in addition to competition from the interconnected network (nearly half of the developable sites are in the immediate vicinity (<2km) of the current high voltage network, the furthest being approximately 15 km away) restricts the profitability of the implementation.

Solar



From Table 1 earlier, the potential of solar energy is available with a share of 20% of total RE resources. The solar radiation in Benin is between 3.5 and 5.5 kWh/m2/day going in an increasing direction from the south towards the center-west and the north with a strong component of diffuse radiation compared to live. Thus, for an installed capacity of one kWp, the annual producible is estimated at 1560 kWh in the north, 1460 kWh in the center and 1400 kWh in the south (in wetlands). Large-scale electricity production (thermal or photovoltaic) would therefore be ideally located in the north and centre-west. The trend around the world tends to confirm that solar photovoltaic (PV) technology is now a viable option for the supply of electricity.

Wind

The wind measurements available in Benin indicate that only the coastal strip has an appreciable potential and wind speeds with a constant frequency throughout the year. These speeds, measured between 10 and 12m from the ground, vary from 4 to 6 m/s in the coastal zone and from 1 to 2 m/s in the north of the country. Despite the weakness of these different speed levels, studies have shown that they are favourable to the construction of small wind turbines. Some specialists rightly point out that the possibilities of off-shore wind turbines off the coast of Benin are insufficiently explored.

Bioenergy

Benin has a large potential of agricultural residues, which currently remains untapped and is largely burnt in the fields like in most countries. Biomass has a rather marginal contribution to electricity production within the West African Economic and Monetary Union (WAEMU) member states. It is mostly exploited in self-generated electricity units only. For example, only around 1% of the electricity produced in WAEMU in 2018 is obtained from biomass energy (DGRE, SIE-Benin, 2021).

However, in 2008, WAEMU carried out a feasibility study for a pilot unit for decentralized electricity production by gasification of agricultural residues (UEMOA, 2008). This study has shown that Benin has biomass energy resources whose exploitation can contribute to curbing the repeated crises in electrical energy. Indeed, according to WAEMU, 70% of Benin's GDP production is based on agricultural raw materials for the clothing and food industry.

Moreover, according to studies carried out by the city of Cotonou, the city generates more than 700 tons of garbage per day. This existing potential could allow the installation of a power plant with a minimum capacity of 5 MW by biochemical means from household solid waste.

In 2017, bioenergy provided 46.2% of final energy consumption in Benin. The wood energy potential resides in private and state plantations, protected and classified forests, natural plant formations and old fallows. More than 90% of biomass is provided by wood fuels, i.e. wood and charcoal from Beninese forests.

Vegetable waste (agricultural and forestry), animal waste and household waste also constitute a considerable potential in biomass that can be recovered in different forms of energy.

Many crops that can be used for biofuels are present in Benin. Mention may be made of sugar plants (sugar cane, sweet sorghum), starch plants (maize, cassava, wheat, potato), cellulosic materials and oilseeds (palm, soya, groundnut, Jatropha curcas). Experiments in the laboratory and in the field have been carried out and the policy envisages retaining sugar cane, cassava and the Jatropha plant as the basic materials for a possible biofuel strategy.

Although many initiatives have been developed for the use of biomass for the production of energy and then dropped in the past, in 2012 a strategy followed by an action plan has been developed and the government clearly stated its vision to "make biomass energy in general, and biofuels in particular, a factor in reducing energy dependence in Benin, with a positive effect on economic growth, the environment and people's access to basic energy services". In line with this vision, the project "Promotion de la production durable de biomasse électricité" was launched in 2017 for a five-year period[4].

In 2020, this target has been reiterated in the National Policy for the Development of REs to "ensure the sustainable recovery of biomass energy for the production and use of biofuels". Thus, the government is thus considering using biomass as RE and CSOs should get prepared from their point of view.

Energy and climate change in Benin

Like many African countries, Benin has experienced rapid urbanisation. This has resulted in increased energy consumption and greenhouse gas emissions (IPCC, 2007). A World Bank study on "Air quality in Cotonou" (2007) reports a daily emission of about 83 tonnes of CO2, the majority of which is attributable to motorised two-wheelers.

The energy challenge is therefore twofold. On the one hand, Benin's energy dependence on external imports of energy and fuel must be reduced; on the other hand, the development of clean and/or renewable energy sources must be promoted. Benin's electricity supply comes mainly from the Akossombo dam on the Volta River (Ghana) and the Nangbeto dam on the Mono River (Togo). Because of its dependence on externally produced hydropower, the energy sector is vulnerable. Climate change could indeed lead to a decrease in hydroelectric production. Increased frequency and intensity of storms and rising sea levels pose a significant risk to infrastructure. Extreme events and rising sea levels could damage an already fragile power grid and bring the entire country's economy to a standstill.

Benin is geographically well positioned to use clean energy. The southern part of Benin, under the influence of the Atlantic Ocean, is characterised by a high availability of wind and tidal energy. The northern part of Benin, more influenced by the Sahelian climate, has a high potential for solar energy.

On the other hand, there are opportunities to produce hydroelectricity in the country. Thus, 35 potential sites for hydroelectric power stations have been identified by the Communauté Électrique du Bénin (CEB) since 1984, of which five (5) have been deemed to be priorities: Adjarala on the Mono, Kétou, Olougbé and Assanté on the Ouémé and Batchanga on the Pendjari.

In addition, with 8,000 hours of average annual insolation, Benin's radiation balance offers enormous possibilities for the development of solar energy. The longest periods of sunshine are observed between January and April in the Sudanian and Atacorean regions, from 10°N. Further to the need to develop autonomous energy sources, there is a need to manage household energy consumption. The consumption of petroleum products and firewood leads to greenhouse gas emissions, which are responsible for

4 SATOGUINA, Honorat ; KOUTCHIKA EHINNOU, Romaric.- Evaluation à mi-parcours du projet Promotion de la biomasse électricité au Bénin.- Cotonou : UNDP, 2019. 153p. https://erc.undp.org/evaluation/documents/download/15295

climate change. Stricter regulation of these energy sources could be envisaged while facilitating autonomous electrical installations. This could even have a positive effect on prices.

The example of Ouagadougou is interesting in this regard. The city has banned the introduction of firewood. This is supported by a hard pricing policy towards gas. It is now half the price of gas in Cotonou, even though some of the gas found in Ouagadougou is imported from the port of Cotonou. It is known that rising incomes and global population growth are two factors in the increase of CO2 emissions linked to energy consumption (IPCC, 2007). The notion of ecological footprint has emerged in recent years as an important tool for monitoring sustainable development policies. Benin must improve its energy performance and prepare its economy for the increasing scarcity of conventional energy sources.

II.1.2 – Existing policies and laws including the country's NDC and national, regional and local legislation relating to climate change and energy

Renewable Energy policies and laws

Benin has two basic laws on electricity:

- The Benin-Togo Electricity Code of 2003 based on an energy agreement concluded between the two countries in 1968;
- and the 2006 Benin Electricity Code that governs only the electricity sector in Benin and complements the Benin-Togo electricity code5.

However, in 2020, given the low exploitation of renewable energy sources and the lack of large-scale use of renewable energy technologies as part of the contribution to the reduction of greenhouse gas emissions, the country decided to somehow update its policy strategy and instruments and adopted the National Policy for the Development of Renewable Energy for 2020 - 2030 (PONADER)[6]. This ten-year policy aims to take measures and put in place planning, orientation, coordination and monitoring-evaluation frameworks for actions linked to the development of renewable energies, and intervention mechanisms to make the existing and future institutional and legal frameworks adequate, harmonious and complementary. At the institutional and regulatory level, the search for greater harmony and synergy of intervention concerns several actors, including the State, its branches, the Electricity Regulation Agency (ARE), the decentralised authorities and the populations who are the main beneficiaries.

The implementation of PONADER should lead to the following changes:

- In the short term: (i) improved knowledge of resources, (ii) capacity building of actors and (iii) promotion of renewable energy resource technologies;
- In the medium term: reduction of Benin's dependence on energy imports
- In the long term: access to the largest number of the population at the lowest cost to energy services based on RE and contributing to sustainable development while promoting socio-economic activities in the rural world through modern energy.

5 https://are.bj/wp-content/uploads/2017/09/LOI-N-2020-05-PORTANT-CODE-DE-LELECTRICITE-EN-REP-DU-BENIN_1.pdf

6 BENIN.- Politique nationale de développement des énergies renouvelables (PONADER).- Cotonou : Bénin, 2020.- 20p. P5 https://direction-energie.gouv.bj/documents/politique-nationale-de-developpement-des-energies-renouvelables-2020.html

1994

Benin ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994.

Even if it is too early to assess the state of implementation of the PONADER, a new government-driven dynamic can be observed in the electricity sector during the last few years in line with the PONADER. In this regard, several projects have been developed including the 25 MW Forsun Project funded since 2021 by the French Agence Française de Developpement (AFD) and the four (04) solar power plants of 50MW to be funded from 2022 by the Consortium Greenyellow / Egnon Consulting, an independent power producer (IPP).

Although the PONADER may be questioned with regard to the objective of using biomass as RE or for the production of biofuels, its ownership by the various actors and their commitment to achieving at least some of the strategic objectives of this policy are of paramount importance for its successful implementation. Indeed, the awareness of the importance of renewable energy and political will are necessary to achieve the desired changes.

Climate change policies and laws

Benin became aware of the challenges of climate change very early and ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994. Since then, the country has been committed to the implementation of activities related to this convention. It has thus embarked on the development, adoption and implementation of several policies, laws, strategies and response programmes. Thus, it has defined its priority actions, standards and mechanisms for environmental protection and management.

At the policy level, one of the important instruments defined is the National Development Plan 2016 - 2025 adopted in 2018. This law aims to combat climate change and its negative effects and consequences and to increase the resilience of living communities.

On the legal front, a law was passed in 2018 regulating climate change in the country: law N°2018 - 18 of 06 August 2018 on climate change in the Republic of Benin[7].

In terms of climate finance, Benin has created the National Environment and Climate Fund (FNEC) accredited by the Green Climate Fund (GCF).

Other most recent climate policy instruments include:
- Third National Communication on Climate Change, 2019[8]
- Benin's updated Nationally Determined Contribution to the Paris Agreement (NDC), 2021[9]
- Benin's National Climate Change Adaptation Plan, 2022[10]

II.1.3 Overview of opportunities and barriers

The PONADER is a great first for Benin and constitutes a major participatory challenge. It can only be met with the contribution of all actors at various levels (public sector, private sector, institutions of the Republic, civil society organisations, social partners, Interprofessional Association of Renewable Energy Specialists, Technical and Financial Partners, Universities, etc.). To achieve the government's vision in this area, that of "making renewable energies the priority source of sustainable and optimal satisfaction of national energy needs by 2030".

The main challenges for the PONADER and hence the whole country are
- the need for a roadmap for renewable energy development
- the need for a formal institutional and regulatory framework to promote the

7 https://climate-laws.org/geographies/benin/laws/law-no-2018-18-regulating-climate-change-actions

8 BENIN.- Troisième communication nationale du Bénin : à la Convention-cadre des Nations Unies sur les changements climatiques. Cotonou : Benin, 2019. 272p. https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/39685271_Benin-NC3-1-BENIN_TCN_2019.pdf

9 BENIN.- Contribution déterminée au niveau national actualisée au titre de l'Accord de Paris.- Cotonou : DGEC, 2021.- 74p https://unfccc.int/sites/default/files/NDC/2022-06/CDN_ACTUALISEE_BENIN2021.pdf

10 BENIN.- Plan national d'adaptation aux changements climatiques du Benin.- Cotonou : DGEC, 2022.- 175p. https://unfccc.int/sites/default/files/resource/PNA_BENIN_2022_0.pdf

development of renewable energies11;
- the need for popular acceptance and massive adoption of renewable energies (PV and wind);
- the need for adapted equipment for the integration of renewable energies into the electricity networks;
- the need to put in place a financial mechanism to accompany the development and adoption of REs at the community level.

II.1.4 Points of Action for local civil society organisations

- Raise awareness on energy saving among the population to ensure better knowledge of the benefits of REs and RETs, hence their adoption
- Sensitize on and promote adoption of REs
- Advocate and promote the benefits of REs, including promotion of street lights for popular ownership of REs
- Promote clean cooking with improved cookstoves as a credible alternative to reduce the consumption of firewood and charcoal.
- Advocate for the participation of NGOs and CSOs in the development and implementation of power plants, in order to ensure local acceptance, the introduction of local content and commitment and ownership of the local communities
- Organize policy dialogues to promote participation of all actors (in particular local authorities and CSOs) to take into account the concerns of local populations
- Advocate for the establishment of a platform for multi-actor dialogue, to ensure awareness raising, information sharing and ownership
- Advocate for the development of local competencies for installation and maintenance, to ensure the development of sufficient and reliable qualified local workforce
- Advocate for the development of legislation (on land, tax, loan) to encourage the use of solar energy

Recommendations to local authorities could include:[12]
- Commitment to energy independence by diversifying Benin's clean supply sources.
- Definition of preferential rights (e.g. in terms of equipment cost reduction or subsidies for people who adopt RETs) in housing for instance for renewable energy technologies.
- Development of legislation for building to encourage the large adoption of solar energy
- Set or increase taxes and reduce subsidies for fossil fuels
- Develop an efficient and clean public transport system.

11 Such as the agencies for the promotion of REs created in countries like Senegal (ANER) or Mali (ANADER), etc.,

12 BOKO, Michel ; KOSMOWSKI, Frederic ; VISSIN, Expedit, W.- Les enjeux du changement Climatique au Bénin.- Cotonou : Konrad Adenauer, 2007. 72p

Case Studies

II.2. Ghana

II.2.1 Ghana's energy and climate change profile

Ghana has a dynamic power generation sector that involves public and private sector companies. It has one of the highest rates of access to electricity with more than 87% in urban areas and around 50% in rural areas (IRENA). However, millions of Ghanaians still lack access to electricity.

Ghana's Energy Profile

The country is very well endowed with a good potential of renewable energy resource and its main sources of power supply include hydro, thermal, natural gas, diesel and crude oil. Thermal power generation represents 66% of power generation. The country also exports power to its neighbouring countries namely Benin, Burkina Faso and Togo, and imports from La Cote d'Ivoire. Ghana uses both renewable (10%) and non-renewable (90%) forms of energy, but biomass (46.667%) and oil (40.52%) are the commonly used energy resource. This is followed by natural gas (10%), hydroelectric power (7%), and solar energy (0%)[13]. Renewable sources of energy meet roughly 23.7 percent of global energy demand and energy access is crucial to achieving development goals.

Generation Sources	GWh
VRA Solar (Navrongo)	3
VRA Solar (Kaleo/Lawra)	26.6
Bui Solar Farm	68
BxC Solar	27
Safisana	0.7
Meinergy	27
Total Renewable Supply	152.3

Expansion of the grid is going on and will allow further exports to neighbouring countries and more access to electricity by the population. In the 1980s, the country initiated reforms in the power sector and it resulted in the removal of barriers to allow the involvement of independent power producers (IPPs). In 2021, the total installed capacity is 5,134 MW, with ensured dependable capacity of 4,710 MW. The share of renewable energy in this capacity has been insignificant.

Climate change Profile

Ghana is a highly vulnerable country to global warming and it has demonstrated its commitment to face climate change issues both nationally and internationally. Climate change is expected to affect several areas of socio-economic development of the country. These areas include water resources, energy supplies, crop production and food security. Current and projected negative effects of climate change are expected to unequally affect the country locally, nationally and regionally.

Although Ghana contributes to 0.07% of GHG emissions of the world, it has taken steps to face the negative effects of climate change. Ghanaian authorities have made considerable efforts putting in place the needed institutions and suitable policy conditions to enable the country to carry concrete climate actions. The most recent policy initiatives include the publication of national climate change policy in 2012 and that of the low carbon development strategy in 2015. It also ratified the Paris Agreement in 2016 and has started implementing the measures in the Nationally Determined Contributions (NDC, 2021).

13 TAKASE, Mohamed, et al.- A review on renewable energy potentials and energy usage statistics in Ghana.- In: Elsevier, Fuel Communications n° 11, 2022. 9p.

The country has already started implementing the measures and programmes of these policy initiatives with the objective of promoting renewable energy, lowering deforestation, promoting the adoption of clean cooking, low carbon electricity generation, green industrialisation and rural development (Ghana NC4, 2020[14]).

II.2.2 Existing policies and laws, including the country's NDC and national, regional and local legislation relating to climate change and energy

Ghanaian authorities have developed numerous policies with a view to improve the adoption of renewable energy for electricity production and ensure efficient use of electrical energy setting targets and implementation periods. Some of these policies aimed to support the modernization and expansion of the energy infrastructure to meet the growing demands, ensure reliability and accelerate the development and utilisation of renewable energy and energy efficient technologies.

Similarly, environmental policies have also been put in place. Ghana became a party to the United Nations Framework Convention on Climate Change (UNFCCC) in September 1995 after the ratification. Since then, it has committed itself to reduce greenhouse gas emissions (GHG) and the climate change impacts on its population.

Renewable energy policies and laws

In Ghana the primary legislation for the development, management, utilisation and adequate supply of renewable energy for the generation of heat and power and for other related matters is the Renewable Energy Act of 2011 (Act 832). It also aims to provide an enabling environment to attract renewable energy sector investors. It targets a 10% renewable energy share of energy generation by the year 2020. Actually, this target was already set in 2006 and was never met. In 2018, in spite of this 2011 law, the percentage of renewable energy in the electricity mix still remained less than 2% due to a number of factors. This objective of generating 10% of renewable energy in the national energy mix was then pushed back to 2030 (Kuamoah, 2020)[15].

On the regional level, Ghana as a country member of the ECOWAS, was the first to develop a Sustainable Energy for All (SE4ALL) Action Plan[16], showing the strong policy commitment of the government.

In 2019, Ghana has launched its Renewable Energy Master Plan (REMP)[17] to address the consequences of policy issues mentioned here above, short-term planning for the overall development of the renewable energy sector and reduce adverse climate change effects. It was developed in the framework of the implementation of the SE4ALL Action Plan, with the goal to provide investment-focused framework for the promotion and development of the country's rich renewable energy resources for sustainable economic growth, contribute to improved social life and reduce adverse climate change effects.

2019

In 2019, Ghana has launched its Renewable Energy Master Plan (REMP)

The specific objectives of the REMP are to achieve the following by 2030:

- Increase the proportion of renewable energy in the national energy generation mix from 42.5 MW in 2015 to 1363.63 MW (1);
- Reduce the dependence on biomass as main fuel for thermal energy applications (2);

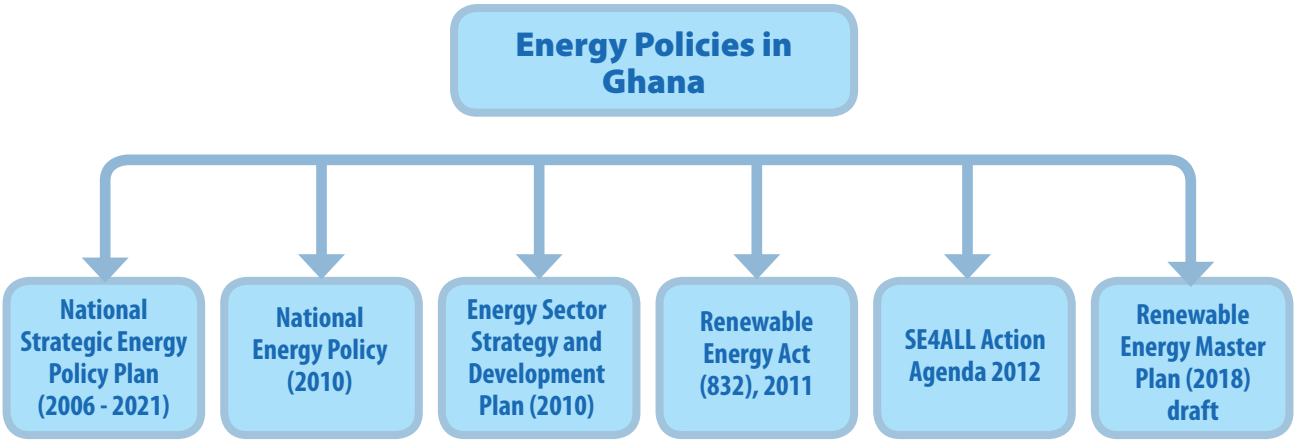
14 https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/562873149_Ghana-NC4-2-Gh_NC4.pdf

15 KUAMOAH, Catherine.- Renewable Energy Deployment in Ghana : The Hype, Hope and Reality.- Shangai : African Studies, 2020. 20p.

16 In September 2011, the UN Secretary General launched the Sustainable Energy for All (SE4All) initiative with the aim of achieving three goals by 2030: 1. ensuring universal access to modern energy services; 2. doubling the global rate of improvement in energy efficiency; and, 3. doubling the share of renewable energy in the global mix from 18% to 36%. Africa is at the forefront of the implementation of SE4All.

17 GHANA Renewable Energy Master Plan. Accra : Ghana, 2019. 98p. https://www.energycom.gov.gh/files/Renewable-Energy-Masterplan-February-2019.pdf

- Provide renewable energy-based decentralised electrification options in 1000 off-grid communities (3);
- Promote local content and local participation in the renewable energy industry (4).



The reason behind these repeated planning was that the growth of renewable energy was very low because of policy issues related to the transition to renewable energy, as well as the potential for renewable energy, policies concerning the move towards renewable energy, etc. Studies also show network and technical barriers such as system failure and financial barriers[18]. The assessment of these policies and the review and evaluation of the country's climate change policies and programmes will certainly allow for more topical interventions.

Despite the shown strong policy commitments to the development and promotion of renewable energy, investment in the industry has been limited due to a difficult capital market. The high upfront capita cost or capital investment is the main challenge in deploying and using renewable energy.

Power sector bodies, regulators, financiers, domestic investors, and national technology and service providers appear to have inadequate understanding and experience with developing and deploying renewable energy technologies. There are difficulties getting equipment and spare parts for some technologies, and poor facility operations and maintenance.

The high dependence on charcoal and wood fuels, renewable energy market size, high-interest rate to finance RE projects, among others, are also the main obstacles of renewable technology transfer in Ghana[19].

Climate change policies and laws

Following the ratification of the United Nations Framework Convention on Climate Change (UNFCCC) in 1995, Ghana has demonstrated its commitment to contribute to the fight against climate change and its adverse effects both nationally and internationally. Thus in 2013, the country has put in place a National Climate Change Policy (NCCP) to ensure a climate-resilient and climate-compatible economy that addresses a low-carbon growth pathway while achieving sustainable development.

As a party to the UNFCCC and the Paris Agreement, Ghana submitted its updated Nationally Determined Contribution (NDC) in November 2021 as one of its latest climate

18 ODURO, Margaret Adubea, et al.- Evaluating the Success of Renewable Energy and Energy Efficiency Policies in Ghana: Matching the Policy Objectives against Policy Instruments and Outcomes.- Algiers : IntechOpen, 23p.

19 KIPKOECH, Rogers.- Renewable Energies in Ghana in Relation to Market Condition, the Environment, and Food Security.- In : Journal of Renewable Energy, vol. 2022, Article ID 8243904, 8 pages. Accessed on 21 March 2023.

change policy instruments. This NDC is aligned with priority areas in the National Climate Change Policy (NCCP).

On the regional level, Ghana is also involved in the following selected initiatives:
- Regional ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)
- West African Science Centre on Climate Change and Adapted Land Use (WASCAL), headquartered in Accra
- West African Alliance on Carbon Markets and Climate Finance
- Climate change, Agriculture and Food Security, West Africa (CCAFS)
- West Africa Gas Pipeline that is used by Ghana, Benin and Togo to import natural gas from Nigeria
- Sustainable Greenhouse Gas Inventory in West Africa.

The regional initiative in the framework of the Regional ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) in particular is noteworthy. Confronted with the challenge of the population welfare and the dire effects of climate change, ECOWAS heads of states decided to adopt the regional renewable energy and energy efficiency policies in 2013[20]. In order to implement these policies as well as the SE4ALL initiative in West Africa, ECREEE helped member countries to develop, implement and monitor National Renewable Energy Action Plans (NREAPs), National Energy Efficiency Action Plans (NEEAPs), and SE4ALL Action Agendas. Ghana like the other member countries has also developed these reports.

However, for Ghana, the essential part of the NREAP has been taken up by the Renewable Energy Master Plan.

II.2.3 Overview of opportunities and barriers

From the analysis of the studies and reports on renewable energy in Ghana, the key issues that are highlighted include the following:
- Lack of financing and high costs of financing (initial investment): to the cost of RETs is very high capital costs, with regards to the first investment, for solar power for instance
- Unavailability of Government support agreements: for the support of the private sector
- Low payment ratio by utilities: low profit margin;
- Land acquisition challenges;
- Low level of research, development, demonstration and deployment (R&DDD) on Renewable Energy;
- Poor knowledge management and information sharing on RE technologies;
- Concerns on waste disposal of renewable energy appliances;
- Inadequate indigenous capacity building to drive the development and deployment of renewable energy technologies: lack of well trained personnel at all levels[21].

With reference to the Renewable Energy Master Plan, the country has shown solid policy commitments towards the development and promotion of renewable energy. However, a number of barriers and constraints could be listed. These include:
- limited investment
- limited technological capacity
- Limited awareness on renewable energy potential and opportunities at the local level;
- insufficient experience in RE development: limited knowledge and experience in the development and deployment of RE technologies
- human and socio-cultural challenges

20 http://www.ecreee.org/sites/default/files/documents/ecowas_renewable_energy_policy.pdf
http://www.ecreee.org/sites/default/files/documents/ecowas_energy_efficiency_policy.pdf
21 https://www.legal500.com/guides/chapter/ghana-renewable-energy/

- lack of or insufficient partnerships
- lack of qualified personnel at all levels
- limited business-oriented models for private sector involvement.

Being endowed with RE resources, Ghana offers several opportunities for the development and deployment of renewable energies. These include:

- wide range of possible application of resources such as solar energy (mini-grids, standalone street lighting, traffic controls, telecommunication, light electronic devices, household uses, etc.;
- demand side management (example: introduction of REs in existing or new buildings);
- applications of solar, wind energy or hydropower in agriculture;
- development of local market;
- establishment of assembling or manufacturing plants;
- capacity building for skills development;
- green job creation,
- climate finance: funding from climate change schemes relating to deforestation and afforestation for instance, (such as REDD+)
- promotion of incentive schemes put in place by the Energy Commission, etc.

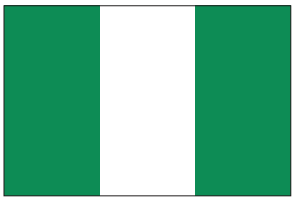
II.2.4 Points of Action for local civil society organisations

CSOs could engage in the following actions:

- Advocate to realign the target of 10% of renewable energy share in the energy mix by 2030 (considering that the Renewable Energy Act (832) has been amended to take into account large hydro) to be more ambitious
- Campaign for better knowledge of legislation including the Local Content and Participation Regulations for better ownership and involvement at local level ;
- Promote local content and local manufacturing and assembly in the renewable energy industry
- Encourage capacity building to get skilled technicians for maintenance and installation
- Disseminate information on costs and benefits of REs and RETs
- Advocate/Encourage the development of national programmes on specific/ prioritized REs
- Encourage the dedication of funds for the deployment of REs;
- Sensitize on the various incentive schemes put in place by the Energy Commission (including the Rooftop Solar PV Programme; the Import Duty Exemptions; the VAT Exemptions; the Mandatory Purchase Policy for the procurement of a percentage of electricity from a renewable energy source for electricity distributors or bulk customers; the Competitive Procurement Scheme; the Mandatory Connection Policy, etc., and advocate for more incentives;
- Sensitize the private sector on the existence of funding related to CC, such as deforestation and afforestation programmes (REDD+)

One of the key elements that needs to be considered in line with the SE4ALL approach, is the need for partnership building and concertation between government, civil society, research and academia communities, and the private sector, with a view to addressing the identified gaps, challenges and barriers of the energy sector. Coordination between different stakeholders is essential to ensure a successful deployment and development of REs in Ghana. Without a stable policy environment offering commercial opportunities, and without action by private companies or civil society organizations, national policy programmes will not achieve the desired goal. Civil society organisations have an important role to play in this approach by trying to approach all the other stakeholders through policy dialogue.

Case Studies



II.3 Nigeria

II.3.1. Country's energy and CC profile

The Federal Republic of Nigeria, known as Nigeria, is located in the Gulf of Guinea in the West coast of the African continent. Although it has one of the largest economies since 2012, it is still a lower middle-income country with more than 200 million people in 2020. With its 36 states plus the Federal capital territory (FCT) of Abuja, the country faces developmental challenges, including the need to reduce the dependency on oil. It also faces serious environmental challenges worsened by climate change and its adverse effects on sectors such as agriculture, water resources, etc.

Nigeria is well endowed with oil, natural gas, and biomass that constitute the main sources of energy. However, around 60% of the population lack access to electricity and the majority of the rural inhabitants remain off-grid. In 2021, the installed power capacity is 12,600 MW but the actual available capacity is only 5,000 MW. At the same time, electricity demand is estimated at around 20 GW[22].

Indeed, the electricity sector suffers from a lack of production but also from a failure of the transmission and distribution infrastructure. According to the Energy Progress Report 2021 published by The World Bank (WB), the IEA, the International Renewable Energy Agency (IRENA), the United Nations (UN), and the World Health Organization (WHO), Nigeria was ranked as the world's worst country with regards to access to electricity with about 90 million of the total population without power supply, representing about 46% of the total population. On-grid consumers experience frequent power cuts ranging from 4 up to 15 hours per day, with huge losses and pollution for businesses and populations[23].

22 AMBASSADE DE France au Nigeria.- Les énergies renouvelables au Nigeria. Lagos: Ambassade de France au Nigeria, 2019. 3p.

23 WORLD BANK.- Tracking SDG 7: The Energy Progress Report 2021.- Washington, DC: World Bank, 2021. 234p.

In these circumstances, renewable energies could be an alternative. However, the energy mix remains undiversified, consisting mainly of gas-fired thermal (81% of the electricity mix) and hydro (19%)[24]. Thus, a large part of the population and almost all companies are obliged to equip themselves with means of self-generation of electricity, mainly polluting generators.

In light of these realitiess, the Nigerian government has set three (3) important and ambitious targets to reach by its electricity sector by 2030: namely, inclusive access to electricity for 90% of the population, renewable energy development with electricity capacity expansion target of 30GW including renewable energy, and GHG emissions reduction through its NDC (see below).

II.3.2 Existing policies and laws, including the country's NDC and national, regional and local policies and legislation relating to climate change and energy

Nigeria is one of the major exporters of oil and has large reserves of natural gas. It is known to have the second largest proven crude oil reserves in Africa with oil fields located in the south, specifically in the Niger Delta and offshore in the Gulf of Guinea. In spite of all that, it daily suffers of recurrent power supply problems resulting from inefficient power generation and distribution.

Being also endowed with various renewable energy resources such as solar, wind, biomass and hydropower, the country recognizes the importance of using these renewable sources of energy as an alternative to the perennial power deficit. Therefore, in these times of fight against climate change, the Nigerian authorities have introduced a number of policies and laws to encourage the development of renewable energy in Nigeria and contribute to the reduction of greenhouse gas emissions.

24 AMBASSADE DE France au Nigeria, Idem.

Renewable Energy policies and laws

A few laws provide a legal framework for renewable energy in Nigeria. These include the Electricity Power Sector Reform (EPSR) Act of 2005 which is the main law that governs the power sector in Nigeria. The Nigerian Electricity Regulatory Commission (NERC), the primary regulatory body of the sector has been established under this Act. The NERC has thus established several policies and regulations in relation to renewable energies including:

- Environmental Impact Assessment Act
- Renewable Energy Policy Guidelines 2006
- National Renewable Energy and Energy Efficiency Policy of 2015 (in response to the ECOWAS Renewable Energy and Energy Efficiency Policy (EREP and EEEP));
- NERC Renewable Energy Feed-In Tariff Regulations of 2015;
- NERC Mini-Grid Regulation 2016.

In this context, various plans have been formulated for the exploitation of renewable energies. The key documents that have been developed include the following:

- The National Energy Policy (2003) which emphasizes on the effective use of sustainable energy resources with a focus on solar energy and advocates for the integration of solar energy in the national power supply. Ten years later, this policy was reviewed and replaced by the National Energy Policy of 2013;
- The Renewable Energy Master Plan (REMP) (2006): recommends to increase the share of renewable electricity from 13% of electricity generation - mainly met by large hydro - in 2015, to 23% in 2025 and 36% by 2030. A main driver for such increase is the diversification of the national electricity mix, and attempts to provide an implementation strategy;
- National Energy Efficiency Action Plans 2015-2030 (with the support of the ECOWAS Centre for Renewable Energy and Energy Efficiency).

Climate change policies and laws

Like most Parties to the UNFCCC, Nigeria regularly submits reports to the Secretariat. Three National Communications have been submitted. In 2021, Nigeria has embarked on the adoption of the National Climate Change Act 2021 which seems to be the first stand-alone comprehensive climate change legislation in West Africa. It has been conceived as a strategic tool for climate change advocacy and a legal foundation for potential climate litigation in the country. It is meant to ensure that climate change policies and actions are integrated with other related policies such renewable energy policies for the promotion of socio-economic development and environmental protection.

This Act is coupled with the National Climate Change Policy 2021-2030 that outlines the country's vision of climate change and aims at promoting low carbon, climate resilient and gender-responsive sustainable socio-economic development.

Nigeria has also submitted its updated Nationally Determined Contribution (NDC) to the UNFCCC in 2021. In the energy sector, this updated NDC has set (conditional) targets of 30% of electricity generation of on-grid electricity from renewables (12GW of additional large hydro, 3.5 GW small hydro, 6.5 GW solar PV and 3.2 GW wind). Other mitigation measures include 13 GW off-grid renewable energy (i.e, 5.3 GW mini-grids, 2.7 GW solar home systems and street lights, and 5GW self-generation).

II.3.3 Overview of opportunities and barriers

It appears from the review of documentation as seen above, that a lot of policies and plans have been developed over the years in favour of renewable energy development and use. One of them is the master plan (REMP) for the development of REs which clearly sets goals for different future moments, as well as points out possible external collaborations and partnerships with international summits and programmes like the Paris agreement.

However, the full implementation of those policies and plans is greatly lacking. Many objectives have been defined but the following actions are scarce[25].

In this context, the opportunities and barriers identified are numerous and include the following:

- Inadequate solar initiative's research,
- Lack of technological know-how,
- Short-term policies,
- Lack of awareness and political instability
- Lack of information and education on renewable energy

Key barriers to solar initiatives in Nigeria [26]

Despite the many benefits that can be accrued from the use of solar energy , its adoption is still very low. The major impediment to the technology adoption are series of barriers which make it hard to implement.

Technical Barriers include:

- Lack of skilled personnel,
- Lack of maintenance and operation,
- Lack of training facilities and entrepreneur's development mechanism,
- Lack of Reliability.

Social; Cultural Behaviour:

- Lack of consumer awareness about the product,
- Lack of understanding of benefit of solar PV and public resistance to new technology
- Proliferation of low quality equipment and unqualified staff

Economic/ Financial Barriers:

- Lack of access to capital, credit to consumers and financial instrument
- Lack of support to R & D,
- High interest rate,

25 MONTELLA, Rosario; GIUSTINO, Vera Domenica.- Barriers to Renewable Energy Development in Nigeria and how to overcome them. Copenhagen Business School, Master's Thesis, 2021, 115p. https://research-api.cbs.dk/ws/portalfiles/portal/68333846/1113099_Final_project_S133844_S133384.pdf

26 ABDULLAHI et al.- Key Barriers to the Implementation of Solar Energy in Nigeria: A Critical Analysis.- In: IOP Conf. Ser.: Earth Environ. 2017, 8p.- Sci. 83 012015.

Institution al/ Legal barriers:
- Institutional barriers, legal framework,
- Regulatory issues, non-integration of energy mix,
- Non-participation of private sector, poor R & D culture and stakeholder's non-interference.
- Poor communication mechanism to reach the institutional policy makers for improvement and Negative perception about the technology

Political/ Policies Issues:
- Lack of long term policies,
- Lack of political will to diversify into clean energy, constantly changing of government and reshuffling of institutions.

Market Distortions Issues:
- Trade barrier for new product,
- Energy sector controlled,
- Lack of access to diversified technology,
- Lack of facilities and backup technology,
- Non-market oriented research for solar energy technology and application

II.3.4 Points of Action for local civil society organisations

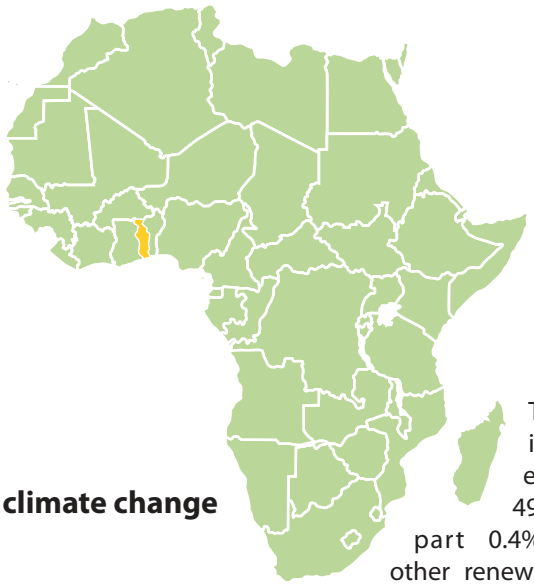
In the collaborative fight to find solutions against climate change in Nigeria, both local and international NGOs and pressure groups have played an important role, providing support to the development of the RE sector through capacity building, provision of financing, and awareness raising[27]. These can be considered as a great opportunity for a more efficient promotion of sustainable energy, to break the constraints the country is facing, increase energy demand through awareness spreading.

CSOs in Nigeria could consider the following actions:
- Awareness raising concerning benefits and advantages of RE to enable its adoption
- Sensitisation and awareness creation on REs and initiatives
- Advocate for the creation of training institutions, for the development of the necessary workforce capacity;
- Establishment of a special fund to facilitate access to RE on the demand side;
- Advocate to subsidise raw materials needed for the installation and production of solar panels;
- Advocate for research as a framework to mitigate challenges: one example is that not many studies have been carried out over the years on wind power. As a consequence, there is hardly any reliable estimation of a nationwide potential analysis for wind-derived energy that could attract the interest of policymakers or investors; on geothermal, most of the accredited data date from a study conducted more than 40 years ago. More recent studies focussing on this source may be very useful for the development of this technology;
- Advocate for long term programmes on specific RETs: such as rooftop solar home systems programme for existing and new buildings.
- Advocate for quality control and testing centres to prevent such barriers as the proliferation of untrustworthy retailers and some other barriers such as inconsistent standards and compliance requirements, policy uncertainty about incentives including feed-in-tariffs, energy buyback scheme.

Partnership between government, NGOs, academia, and the private sector in a cohesive and integrated manner will be the decisive key to take the situation forward, in the same way that the Nigerian Energy Support Programme (NESP) jointly funded by the European Union and the German cooperation agency, GIZ, since 2013 and the International Centre for Energy, Environment and Development (ICEED) are providing evidence on the ground for such a partnership and the need for third entities.

27 MONTELLA, Rosario; GIUSTINO, Vera Domenica.- Barriers to Renewable Energy Development in Nigeria and how to overcome them. Copenhagen Business School, Master's Thesis, 2021, 115p.

Case Studies



II.4. Togo

II.4.1 Togo's energy and climate change profile

In Togo, the energy situation remains very different between urban and rural areas like in many African countries. The rate of access to electricity is however increasing (from 17% in 2000 to 45% in 2018), but with large differences between urban (access rate = 88.8%) and rural areas (access rate = 8%)[28]. The structure of final energy consumption shows the predominance of biomass energy consumption. From 2010 to 2018, the share of biomass energy in final energy consumption increased from 64% to 75%, and consumption increased from 1,279 ktoe to 1,521 ktoe. In 2018, electricity accounted for 5% of the country's final energy consumption. The country's electricity consumption increased from 69 ktoe to 107 ktoe between 2010 and 2018. The consumption of oil products decreased from 663 ktoe in 2010 to 414 ktoe in 2018. These oil products accounted for 20% of the country's final energy consumption in 2018[29].

The majority of energy generated in Togo is thermal. The two largest energy suppliers are hydropower with 49% and fossil fuels with 50.6%. A small part 0.4% is obtained by burning biomass or other renewable energy. Togo generates some of its own electricity but imports the majority of its needs from Nigeria and Ghana.

Renewable Energy Profile

Togo's potential of renewable energies is considerable taking into account the size of the country. It is estimated that from a potential of 100% renewable energy resources, the country has 20 % of PV resource, 30% biomass and 50% of small scale hydro. Wind resource is considered not available or not economically feasible[30].

In 2010, the population served by mini-grids and isolated renewable energy systems was well below 1% and will not exceed 8.92% in 2030 in rural areas according to national forecasts. This form of energy is not even taken into account in the national energy balance (PANER, 2015).

28 https://energypedia.info/wiki/Togo_Energy_Situation

29 IFDD ; UEMOA.- Atlas de l'énergie dans l'espace UEMOA - Rapport 2020.- Quebec : IFDD, 2020. 156p. (francophonie.org)

30 ECOWAS Renewable Energy Policy (2015). Praia: ECOWAS, 2015. 82p http://www.ecreee.org/sites/default/files/documents/ecowas_renewable_energy_policy.pdf

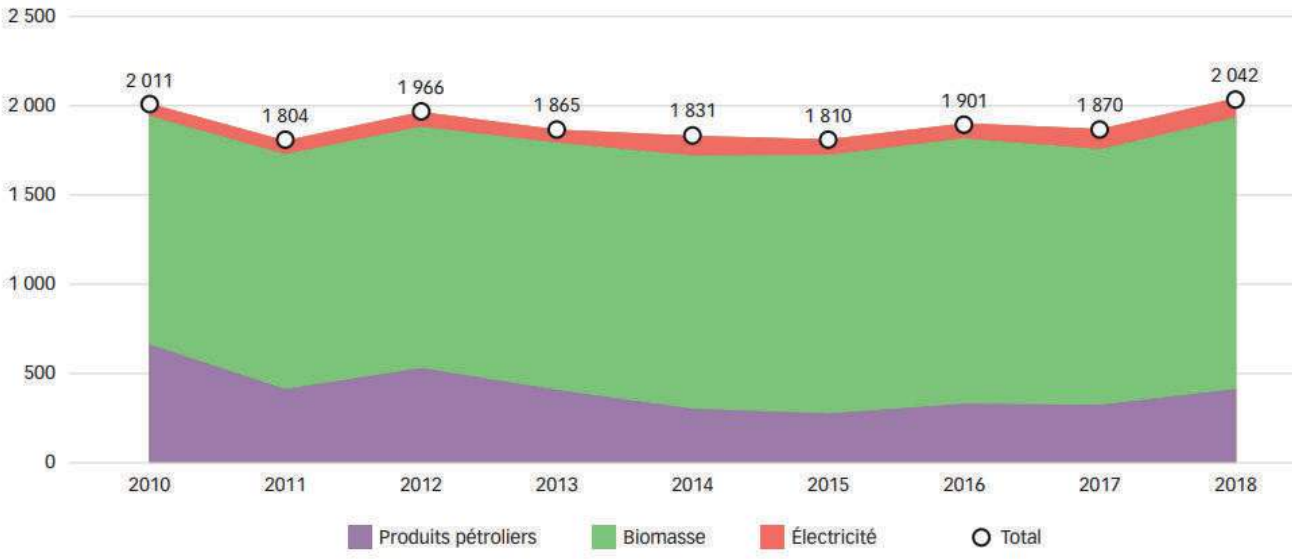


Figure: *Evolution of final consumption by energy source in Togo from 2010 to 2018 (ktoe)*
Source: *Atlas, IFDD*

The modern use of solar energy has long been limited to a few private use such as solar water heaters in some places like hotels, maternity hospitals, panels on the roofs of some NGO buildings, or religious representations and houses.

II.4.2 Existing policies and laws, including the country's NDC and national, regional and local policies and legislation relating to climate change and energy

Renewable Energy policies and laws

In Togo, in spite of the huge potential for the generation of renewable energies, this sub-sector is still in its infancy, except for hydroelectricity. Consequently, there is very little policy that applies directly to renewable energy in the country's current policies.

In 2016, the Government established the "Agence togolaise d'électrification rurale et des énergies renouvelables", Togolese Agency for Rural Electrification and Renewable Energy (AT2ER) which aims to provide electricity to rural communities. The objective of the national electrification was to provide access to energy to all Togolese by 2030.

The first renewable energy development law was then passed in July 2018. Its aim was to make up 50% of the national energy mix with renewables by 2030. The government also published a roadmap to reach 100% electrification by the same year. In June 2021, the Sheikh Mohammed Bin Zayed Solar Power Plant, one of the largest solar power plants in West Africa, was inaugurated. With an installed capacity of 50 MW, the plant is co-financed in PPP (Public Private Partnership) to an amount of 60 million US dollars or 35 billion FCFA by the Togolese government, the Abu Dhabi Fund for Development (ADFD), the West African Development Bank (BOAD), ADEX (Abu Dhabi Exports) and AMEA Togo Solar. This plant is expected to extend to 70MW in the coming months. The construction of additional solar power plants are also expected in the near future. According to the BOAD, which will co-finance a new project alongside the IFC (as part of its Scaling Solar program), the new PV plant will increase the share of renewables in the energy mix from 27 % in 2021 to 40% in 2024, and increase the country's electrification rate from 59% in 2021 to 75% in 2025.

Climate change profile, policies and laws

As early as 1995, Togo demonstrated its determination to participate in the global effort to combat climate change by ratifying the Framework Convention on Climate Change and in 2017 the country ratified the Paris Climate Agreement. This commitment is reflected in the government's 2020-2025 roadmap.

To achieve the goals set out in the Paris Agreement, Togo submitted its updated Nationally Determined Contribution (NDC) in October 2021. It has also begun that same year the process of producing its Fourth National Communication. This NDC covers all sectors, despite Togo's small contribution to global greenhouse gas emissions.

Togo's commitment is finally reflected in the submission of its first biennial update report (BUR) and the implementation of several projects, including most recently the project to launch 10 smart cities.

II.4.3 Overview of opportunities and barriers

From the review of relevant documentation on possible renewable energy development in Togo, it appears that raising the renewable energy business share in Togo through

accelerated access to small-scale solar photovoltaics and hydropower is the most feasible route for electrification[31].

However, an assessment identifies the monopoly, non-liberalization of the energy sector, and the lack of a trained workforce as the main inhibitors for private investment. The optimization of the system for better performance and the creation of local manufacturing plants to promote the national production of solar system components along the assembly lines can therefore be recommended[32].

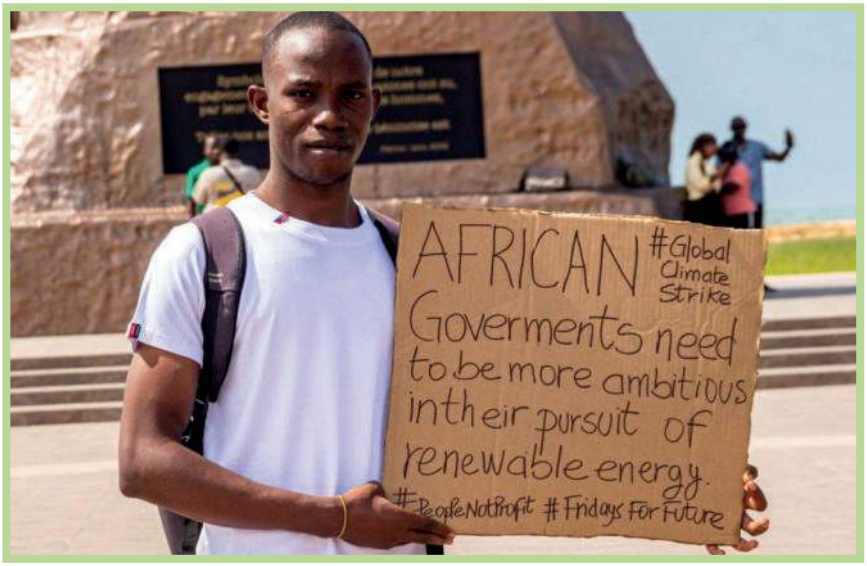
In terms of policy, there are only few adopted rules and regulations within the Togolese energy sector such as standardised Power Purchase Agreements and Power purchase tariffs. In addition, few incentive measures in taxation exist which only favour companies with a public interest and not private organizations. Furthermore, the non-liberalisation of the energy sector does not help investment from private investors to participate.

Finally, the lack of formal institutional framework for the promotion of renewable energies is also another barrier to the development of renewable energies in the country (PANER, 2015).

II.4.4 Points of Action for local civil society organisations

From the opportunities and barriers noted above, the following points of action for local CSOs could be proposed:

- Put in place a framework or coalition of local CSOs for the promotion of RE and dialogue with the authorities
- Advocate for the creation of local manufacturing plants to promote the national production of solar system components along with assembly lines, showing the lack of such plants in the region and the benefits in terms of capacity building, green job creation in the value chain, import cost reduction, etc.
- Advocate for the creation of training centres with a view to develop a critical mass of qualified RE professionals to solve to lack of trained workforce and ensure the reliability on local workforce
- Advocate for the Government to create enabling conditions (establishment of a clear and attractive investment framework; PPP promotion; incentive taxation and duty measures for private sector; land access; possible export of surplus; clear local content law or regulations, etc.) for the investment of the private sector and review the monopoly and non-liberalization of the energy sector.



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3 Conclusion

III. General conclusion

In spite of the significant renewable energy resources available in the targeted countries, a large number of the population still lack access to energy and a large number still rely on biomass to meet their domestic needs.

The authorities of the various countries are making tremendous efforts to face this issue of access to energy by taking important steps adopting national and regional policies to introduce renewable energies as part of the solution. However, a lot of barriers still exist hindering the countries to take full advantage of their potential in renewable energies. These barriers to an increased adoption of renewable energies such as hydro, solar or wind, include general unawareness of the benefits of REs, technical competence and know-how, lack of sufficient finance, lack of incentives, lack of local manufacturing and assembly plants, regulatory environment and legal frameworks, among others.

Clearly, it appears through the research that REs need to be strongly and steadily promoted in the four targeted countries, both by raising awareness due to their many advantages and by encouraging innovation and research as well as staff training for a qualified workforce. In this regard, civil society organisations have an important role to play in this need for promotion and advocacy. The task in each of the country is huge and in order to succeed, these CSOs will need to come together, build capacity both in advocacy and in familiarizing with REs and develop synergies in concerted efforts.

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