

BACKGROUND ON THE BIOMASS SITUATION

The socio-economic situation in the region is characterised by weak and inadequate infrastructure, lack of access to modern energy services and poverty including energy poverty particularly in the rural and peri-urban areas. As the populations increase, productivity in agriculture and other factors decline and the energy access situation worsens, more and more people migrate to the urban centres in search of better living. This contributes to increase in urban populations and thereby exerting more pressure on the weak and inadequate infrastructure and social amenities, thus aggravating the already precarious poor social service delivery systems and increase poverty. Most urban centres in ECOWAS are finding it difficult to maintain the weak and inadequate energy infrastructure operating. The energy services in the urban areas are marred by inadequate and power outages, that has and continues to stifle the little gains in economic transformation of the region, leading to higher unemployment rates, increased poverty and social exclusion.

Increased poverty in the urban areas results in the poorer segment of the population, who form the majority to rely entirely on the traditional use of biomass to meet their energy demand. While the few well-to-do people can afford some efficient and alternative fuels and stoves, majority of the poor depend exclusively on the traditional use of biomass. This over-dependence on the traditional use of biomass principally for cooking by the increasing population, especially in the urban areas using unsustainable biomass utilization is putting pressure on the limited and fragile natural forests, the ecosystems and the environment in general. Gains that have already been made in the promotion and utilization of efficient cookstoves, wood plantations created in the past to supplement the demand for energy and other wood products, and introduction of alternative cooking fuels have been eroded due to factors cited above.

One of the leading problems related to healthy and productive environment is the unsustainable production and the traditional use of biomass. Traditional biomass use continues to be prevalent in the region as the principal source of energy for majority of the population, accounting for almost 80% of the total energy consumption.

Recent developments in the area of biofuels production created new challenges for the Region. The beginning of the 21st century witnessed a new demand for biofuels globally as the concerns for the global environment and cost of fossil fuels increase. The ECOWAS region therefore became one of the regions targeted to realise the demand for biofuels. The 'rush' for biofuels production in the Region (and Africa) resulted in major concerns on social, economic, food security and other environmental considerations. According to some reports, the demand for biofuels production led to farmers losing their farmlands to biofuels developer and therefore lead to social problems.

Previous interventions

Fuelwood: Fuelwood (firewood and charcoal) is the most important household energy resource in the region with many families in the rural areas predominantly using the traditional three-stone for cooking. Cognizant of the negative consequences of unsustainable use of fuelwood in the region, all the Governments of the region introduced the use of improved firewood and charcoal stoves from the late 1970s. In the urban set-up, studies conducted revealed that majority of households use at least one form of efficient

wood cookstove. In majority of households in the rural ECOWAS region, the use of improved stoves is very limited even though the stoves were introduced. However, due to economic factors, the utilization of the improves could not be sustained in most instances.

Alternative cooking fuels: Liquefied Petroleum Gas (LPG) - Majority of urban households use LPG mainly for heating food/breakfast preparations. It is however use widely in commercial food preparations. The low access rate to LPG has been attributed to its high cost. The use of kerosene is mainly used for cooking, particularly in Nigeria due to its affordability. In the rural households, hurricane lamp was the most important appliance. Kerosene has been cheap but considered smelly by many people;

Agro-industrial waste:

Direct burning: In some communities, some agricultural/industrial wastes are used directly as source of energy for cooking. Some of these wastes include cow dung, sawdust and millet straw used in innovative stoves in some circumstances to cook.

Briquetting and carbonization: This technology requires densification of agro-industrial wastes in the form of compressed biomass to make it more compact, easy to carry and dense to last longer for cooking. In some instances, the waste is carbonised first before and then made into carbonized briquettes. Some of the agro-industrial wastes used include groundnut shell, cotton stalks and an invasive plant called typha australis.

Biogas: Biogas production from animal waste through anaerobic digestion was introduced to the region from the late 1970s as a programme. In some countries, the programme was not successful due to technical factors and in other circumstances cultural consideration. In recent times, biogas production has seen major developments in the region and used for both cooking and power generation from different waste streams.

Waste as a Resource: The utilization of waste from domestic and other sector (industrial) for energy generation received quite a lot of interest from investors in the recent past. Various attempts to use municipal solid and liquid waste as a means of bringing multiple benefits include: clean and healthy environment, power or gas generation and job creation, amongst others. The use of municipal waste as a source of energy has however not been successful yet in the region. In some countries, the quantity and characteristics of the waste made the programme not feasible due to low quantity and the quality of the waste. In some countries, there is too much sand that gives erroneous impression on the quantity of the available municipal solid waste.

Multifunctional Platform (MFP): This is a multi-faceted device powered by a diesel engine that performs multiple functions simultaneously. It produces simultaneously electricity while pumping water, charging battery and grinding cereals. The MFP is being used for

providing energy access to rural communities in the region. It runs on diesel. The adaptation of biodiesel/pure plant oil on this engine has made this device very attractive to some rural communities especially where the communities produce their own fuel using jatropha to power the MFP.

Forest management: A number of forest management concepts were introduced as early as the 1950s including plantations project, woodlots and recently participatory forest management, Community-controlled State forests and Joint Forest Park Management models. These models yielded various results. However, there is strong need to revise the legal and regulatory frameworks, institutional, and organizational set-up for the involvement of the rural communities in the administration and management of the natural forest to enforce the regulatory regimes to improve lives of the people and enhance the management.

Bio-fuel production:

Jatropha: The 'dash' for biofuels from jatropha in the mid-2000s, was seen as an alternative to the fossil fuels and for circumventing the high oil prices unfortunately turned out to be a myth. Oil prices in 2008 reached almost US\$150/barrel and the volatility of prices in the international oil market resulted in biofuels production from jatropha gaining centre stage as a supplement to reduce the very high oil prices. Jatropha plantation was revered as a miracle plant that could provide the much needed fuel supplement at the regional and international levels. This therefore attracted many investors in the production of jatropha oil for fuel in Africa, including the ECOWAS region.

Bioethanol production however took a different form in Africa and mainly from residue of sugar production. Ethanol was promoted in the late 1990s under the World Bank programme 'Review of Policies in the Traditional Energy Sector' (RPTES) and implemented in selected African countries. It was promoted as a cooking fuel substitute to firewood and charcoal particularly in the urban and peri-urban areas. The ethanol fuel turned into gel called gelfuel and used on specially designed stoves had little success.

Rational for A Regional Strategy

One factor that is evident in most ECOWAS Member States is the absence or inadequate clear-cut policy on bioenergy. As a result, bioenergy development follows an ad hoc path in the absence of clear and well-defined direction and leadership. Studies reveal that other factors that would seriously affect the implementation of any Bioenergy Programme include: lack of capacities of institutions and individuals in the member states; lack of

adequate information and data for planning and investment; lack of awareness on the resource potentials, benefits for bioenergy use and investment opportunities; lack of financing opportunities and investment programs; and lack of demonstration projects that showcase the socio-economic and technical feasibility of bioenergy projects for regional scaling-up.

In the midst of these challenges, the ECOWAS Bioenergy Strategy was developed to promote sustainable Bioenergy Development in the ECOWAS region.

ECOWAS Bioenergy Strategy

Theme: Transitioning from traditional to modern Bioenergy

Adopted at the
ECOWAS Regional Bioenergy Forum
Bamako, Mali

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Introduction

In the process to develop a Regional Bioenergy Strategy, ECREEE and the Global Bioenergy Partnership (GBEP) co-organized the ECOWAS Bioenergy Forum held in Bamako, Mali, from March 19 to 21, 2012. This event was supported by the Governments of Mali, the United States of America, Canada, Brazil, the United Nations Development Programme Regional Energy Programme for Poverty Reduction (UNDP), the United Nations Environment Programme (UNEP), the Global Alliance of Clean Cookstoves, and the UN Foundation.

The Forum brought together representatives of the ministries Energy, Agriculture/Forestry, and Environment of ECOWAS member states, government agencies, Partners and Observers from the Global Bioenergy Partnership, regional and international organizations, academia, business and industry, civil society and financial institutions active in the field of Bioenergy. The delegates and partners discussed and adopted this Regional Bioenergy Strategy at the end of the Forum.

The ECOWAS Bioenergy Strategy seeks to enable and promote domestic and foreign investments that help address energy poverty prevailing in the region both in rural and peri-urban populations, without compromising food security and environment. In the implementation of the Strategy, consideration would be given to local production of components/devices and fuels to spur local socio-economic development through creation of added value, employment, alongside food and energy security.

The Regional Strategy for the ECOWAS Region is therefore based on the following key components:

1. Resource Assessment and Planning
2. Policy and Strategy development
3. Information and Knowledge sharing
4. Capacity building and technology transfer
5. Financing mechanisms and resource mobilization

1. Resource Assessment and Planning

For effective and efficient planning of bioenergy production and use in the region, resource assessments are critical. The resource assessments should cover natural resources such as land use, soil and water, environment and ecological systems, climate and weather characteristics. Also waste and residue streams should be assessed. In addition, this should be considered with other relevant information such as demographic distribution and infrastructure. The result should translate into agro-ecological zoning indicating areas suitable and available for bioenergy development, indicating feedstock options. Components should include:

- a. Resources assessment and mapping, based on a methodological framework that covers:

- resource inventory;
 - climatic and weather scenarios; and
 - resource availability and utilization such as land, water and other environment considerations;
- b. Catalogue experiences relating to:
- Resource potential uses and threats, e.g. Climate Change Adaptation needs;
 - Socio-economic context evaluation; and
 - rapid assessment methodologies; and
- c. Complemented by assessment and sharing of experiences, and an inventory of existing maps.

2. Policy and Strategy development

Policy and regulatory frameworks on Bioenergy have to be developed and adopted by the member states (including targets, regulations, codes and quality standards). This should include regional and national policies and legislations and national/regional targets for Bioenergy services penetration, incentives for their widespread adoption and implementation. In the development of this activity, the following key activities are important for consideration:

- Establish a vision (political will- bottom up is critical to sustain a long term vision) on Bioenergy as part of a sustainable development strategy;
- policy coherence with other sectoral policies (consultation through inter-ministerial task teams and regulatory processes);
- capitalize on experiences in region and rest of the world;
- Define political principles, based on subsidiarity between countries in the region; and
- Coordination of Implementation strategy and strengthening of related institutions.

3. Information and Knowledge sharing

Information, education and communication are vital to the process of rolling out modern Bioenergy products and services to a different audience ranging from farmers, policy makers to bankers. All methods and means of communication should be embraced to get the message and ideas across. In the process of implementing this activity, the following salient points are worthy of note:

- identify knowledge holders;
- knowledge management, sharing and transferring (communication tools), creation of an ECREE database and an observatory;
- knowledge monitoring; and
- put in place knowledge management system.

4. Capacity building and technology transfer

Education and training to improve knowledge and skills is a necessary pre-requisite for any successful programme in Bioenergy. This cuts across the entire industry for both institutional and human resources and across the different levels of society, including literate and illiterate individuals and farmers. It is essential that any capacity building activity gives serious consideration to gender balance. Capacity building activities should include but are not limited to:

- Increasing awareness among high-level actors in agriculture and energy;
- Reinforcing existing institutional and human structures;
- Providing professional and on the job training;
- Transferring knowledge and promoting innovation and technology across all levels of production; and
- development of job training and professional profiles , including on existing sustainable bioenergy tools.

5. Financing mechanisms and resource mobilization

Rolling out Bioenergy technologies and services requires innovative and tailored funding mechanisms and schemes, especially for rural and peri-urban applications. These include subsidies and subventions, financial guarantee funds, and participation of international and local financial institutions. Therefore, in the exploration of financing mechanisms and resource mobilization, due consideration should be given to:

- mapping of financing schemes for every step of the Bioenergy value chain;
- identifying barriers to accessing financing schemes;
- capitalizing on innovative financing mechanisms and experiences such as climate related financing mechanisms (incl. Use of NAMAs to access Green Fund), ranging from enterprise support to end user finance;
- mobilizing local finance institutions, particularly private sources of capital; and
- Coordination of donor.