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United Nations
Economic Commission for Africa

Africa Bioenergy Policy Framework and Guidelines

Towards Harmonizing Sustainable Bioenergy De-
velopment in Africa

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The purpose of this Framework and Guidelines is neither to develop a normative framework intended to be binding upon, nor to draft a bioenergy policy for adoption by member States. It is not the objective of this Framework and Guidelines to instruct member States on how to formulate bioenergy policies in their specific country situations. The main objectives of this Framework and Guidelines are to (a) build a consensus on a shared framework that inspires and provides guidance to individual countries in developing policies and regulations; and (b) enhance awareness among African leaders and the civil society about the need for environmentally friendly and socially responsible bioenergy development policies.

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List of Abbreviations

ACPC	African Climate Policy Centre (of UNECA)
AfDB	African Development Bank
AFREC	African Energy Commission
AU	African Union
AUC	African Union Commission
BAPs (of EU)	Biomass Action Plans
BFS	Bioenergy and Food Security (of FAO)
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CEMAC	Economic Community of Central African States
CHP	Combined Heat and Power
CSP	Concentrated Solar Power
COMESA	Common Market for Eastern and Southern Africa
ECOWAS	Economic Community of West African States
EAC	East African Community
EIS	Energy Information System
EPA	Environmental Protection Agency (of the US)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FITs	Feed-in Tariffs
GDP	Gross Domestic Product
GHGs	Greenhouse Gases
GBEP	Global Bioenergy Partnership
IEA	International Energy Agency
IGAD	Intergovernmental Authority on Development
IPCC	Intergovernmental Panel on Climate Change
LFG	Landfill Gas
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MFP	Multifunctional Platform
MSW	Municipal Solid Waste
NEPAD	New Partnership for Africa's Development
ODA	Official Development Assistance
PRBE	UEMOA Regional Biomass Energy Programme (<i>Programme Régional de la Biomasse Energie</i>)
PREDAS	Promotion of Household and Alternative Energies in the Sahel
PPPs	Public Private Partnerships
PVs	Solar Photovoltaics
R&D	Research and Development
RECs	Regional Economic Communities
RED	Renewable Energy Directive (of the EU)

SSA	Sub-Saharan Africa
SADC	Southern African Development Community
UEMEO	<i>L'Union Économique et Monétaire Ouest Africaine</i>
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNF	United Nations Foundation
UNDP	United Nations Development Programme
WISDOM	Woodfuel Integrated Supply/Demand Overview Mapping

Executive Summary

1. SETTING THE SCENE

The **Africa Bioenergy Policy Framework and Guidelines** is a joint product of the collaboration effort of the African Union Commission (AUC) and the United Nations Economic Commission for Africa (UNECA), which was initiated in 2010 to enhance energy security and access, as well as rural development in Africa. It aims to provide principles and guidelines for RECs and African countries to guide policies and regulations that promote a viable sustainable bioenergy sector. It integrates previous efforts by the NEPAD Coordination and Planning Agency (NPCA), various United Nations (UN) agencies and Regional Economic Communities (RECs) on bioenergy development in Africa.

The escalating and fluctuating costs of fossil fuel internationally, as well as concerns over supply deficits and environmental degradation, are the catalyst for the development of alternative forms of energy. Bioenergy is emerging as a suitable renewable energy alternative as its quality constituents can match that of petroleum-based products, while having the potential to pollute less and can contribute significantly to rural development.

Support policies are needed to create a sustainable bioenergy sector, as changes in land use and crop production affect directly the availability and price of food, especially for the rural poor. The food crisis of 2007-2008 observed in several African countries was partly attributable to biofuels market development, which diverted food crops into energy production.

The food versus energy problem is also an issue in terms of land tenure system prompting the need to strengthen the rights of indigenous populations and smallholders against the increasing interest of the local elite, foreign countries and multinational firms. The social and environmental consequences such as the depletion of biodiversity, water resources, soil fertility and landscape have not been fully assessed. However, Africa can benefit from the booming bioenergy market.

Against this background, there is an urgent need to define and adopt sustainability criteria that could enhance food security, rural development, poverty alleviation, land rights and tenure, environmental protection, social equity and wellbeing, cultural heritage and macroeconomic impacts.

With reference to the above, and for reasons of policy coherence and harmonization at regional and continental level, the AUC initiated a comprehensive consultative process to define an Africa Bioenergy Framework that fosters the development of a modern and sustainable bioenergy sector in Africa.

2. WHY SHOULD AFRICA COORDINATE AND HARMONIZE ITS APPROACH TO BIOENERGY?

The development of a Pan-African bioenergy policy framework needs a high-level coordination and harmonization in order to address inherent constraints, as well as to maximize the benefits of an expanding bioenergy industry. Bioenergy production, trade and use transcend national boundaries because of its

socioeconomic and environmental implications. Bioenergy policies become ineffective when they are not broadly supported at the regional level. The lack of similar measures in one country or region can annihilate efforts taken in another. As a result of the absence of proper and harmonized regulatory frameworks, short-term gains are often sought in place of long-term sustainability goals. RECs can take the lead in harmonizing policies that facilitate the development of a viable modern bioenergy sector.

An inclusive African bioenergy framework is also justified on the grounds that bioenergy has a great potential to contribute to African cross-border energy trade. A harmonized approach can lead to the development of shared and agreed-upon standards, codes, behaviours, etc. for a common bioenergy market. Africa needs to modernize its bioenergy sector due to a number of reasons, including:

- Traditional use of biomass mainly in the form of charcoal, firewood, crop residues and manure continue to comprise the main staple form of energy in many parts of Africa. Biomass accounts for the bulk of energy consumption for households, as well as an important share of the total final energy consumption. However, it is characterized by low efficiencies along the entire value chain. Therefore, substantial gains can be realized by modernizing existing technologies and behaviours.
- In the past decade, the bioenergy sector has gained importance as a modern source of energy particularly to fuel the transport sector. As a result, there is a need for coherent policy, as well as the development of necessary regulations to mitigate the negative effects of bioenergy production.
- The global trend is to develop and strengthen institutions in order to manage the impacts of bioenergy on food production, poverty and the environment. Institutions to manage bioenergy development are not strong in Africa.
- In spite of many national programmes in Africa, achievements are still few and far in between. There is a need to develop complementary national sustainable bioenergy policies and strategies, as well as regulatory frameworks based on Africa's collective vision, which is consistent with NEPAD, the Millennium Development Goals (MDGs) and global conventions.

Therefore, the following guiding principles to harmonize the bioenergy sector with other sectoral and global processes are proposed:

- Embedding bioenergy development within poverty reduction policies and strategies, as well as within the ambit of the MDGs.
- Integrating bioenergy into energy mix strategies and national development strategies that improve energy access, particularly rural electrification.
- Integrating policies, measures and actions (for example, standards) with regional initiatives so as to achieve economies of scale, as well as preventing good measures in one country becoming compromised by the lack of similar supporting policies in surrounding countries.
- Develop structured cooperation with industrialized countries to benefit from knowledge and technology transfer, and facilitate South-South collaboration.

- Adapt sustainability criteria, MRC process (measurement, reporting and validation) and certification methodologies adopted elsewhere or as proposed at the international level.

3. HOW CAN AFRICA DEVELOP AND SUSTAIN ITS BIOENERGY SECTOR?

The formulation of a sustainable bioenergy policy framework requires the consideration of a number of issues, including (i) economic, social, environmental, political and cultural dynamics; (ii) civil society organizations and institutional coordination; (iii) regional and global cooperation on energy trade and investment; and (iv) development finance, stakeholders participation as well as technical issues such as sound methodologies, R&D and availability of reliable data. The process of ensuring that there is a strong political commitment and capacity to enforce regulatory measures is also important. Key policy options to be considered include:

- A well-articulated bioenergy policy has huge multiplier effects and cross-sectoral impacts that positively influence agricultural and industrial growth, and trade development. Therefore, a national bioenergy policy cannot, and should not, stand-alone but be integrated into national energy development, industrialisation, agriculture and transport sector strategies – as well as linking bioenergy development to national macroeconomic development strategies.
- Regulations that promote the satisfaction of “own needs first”, and make export possible only in case of excess can be encouraged as it is highly preferable that Africa do not provide only feedstock for exports, but also address the energy need of its own population and industry.
- It is essential that the bioenergy and food production should be made mutually supportive. A “nexus” approach is recommended as water, energy and food availability are interconnected; actions in one sector may either help or harm the other sectors.
- Africa should be strategic in selecting its bioenergy feedstock options. Only feedstock that does not compromise food security; nor degrade soils and nor requiring substantial water should be promoted. Developing second-generation biofuels such as ligno-cellulosic and algae-based feedstock should be given attention.
- The development of bioenergy projects that encourage the participation of local communities and empowering rural inhabitants, especially women should be promoted.
- Governments and RECs should take the lead in promoting bioenergy by setting up regulatory frameworks at regional levels. This is necessary to avoid adverse major impacts on, for example, land-use change, biodiversity and greenhouse gas emissions, water, soil fertility, etc. This type of impact assessment implies a regional approach, as the ecosystems encompass more than one country and tend to have cross-border impacts.
- A framework should include comprehensive bioenergy legislation such as (i) product labeling and control, (ii) certification schemes, and (iii) fiscal policy and taxation.

4. HOW SHOULD AFRICA DESIGN AND DEVELOP SUSTAINABLE BIOENERGY POLICIES?

In designing and developing sustainable bioenergy policies, it is necessary to provide an African reference framework that helps to address key issues such as benefits, costs, risks and opportunities in an integrated and transparent manner in order to ensure that benefits are maximized while risks on society

and environment are minimized. This involves developing sustainability criteria, as well as improving the governance of the bioenergy sector.

4.1 Sustainability criteria

This Framework proposed sustainability criteria that provide references and benchmarks to evaluate and compare expectations and performance to best practices in the following areas of GHG emissions, competition for food or other local applications, biodiversity, environment, prosperity and social well-being.

4.2 Bioenergy governance

The following guidelines are proposed for the African bioenergy governance.

- i. National and local governments must play a leadership role in initiating and formulating policies and legislation, and the promotion of production, investment and trade in bioenergy products. The key functions of government are:
 - Policymaking: Develop a sustainable bioenergy policy as an integral part of the national development strategy with adequate legal provisions for the production, distribution, use and trade in bioenergy.
 - Regulatory: Set environmental standards, create attractive investment climate and provide supportive monetary, fiscal and pricing policies.
 - Developing capacity and convening: Strategically choose best feedstock and technology options, and conclude economically, socially and environmentally acceptable deals. In addition, create forums and mobilize various government departments, the private sector, civil society, and the academic community to rally behind the bioenergy agenda.
 - Inter-ministerial coordination: Involve all ministries that may be linked with the promotion, production and trade of bioenergy to strengthen complementarities and avoid rivalries.
- ii. The private sector is ultimately the engine of bioenergy development, but requires enabling policies presented above.
- iii. Civil Society Organizations serve as watchdogs for government and business actions, and advocate for bioenergy at the national and community levels. The active participation of the civil society in the promotion and capacity building of bioenergy is certainly crucial to promote sustainable development of bioenergy.

5. WHAT ARE THE AVAILABLE INSTRUMENTS FOR IMPLEMENTING BIOENERGY POLICIES?

5.1 Regulation

A robust legal and institutional framework is necessary to scale up the sustainable use of bioenergy as a key component of energy strategies. The main purpose of regulations is to reduce fossil fuel dependence, promote growth and rural livelihoods without affecting food security.

5.2 Bioenergy targets and timetables

Guidelines should be enacted by the RECs and targets set on the share, and mandatory use of sustainable and certified bioenergy in the household, transport, industry and power sectors. However, laws should be passed to protect land considered essential for food production, or for biodiversity.

5.3 Guidelines and standards

The International Sustainability and Carbon Certification System developed the first internationally-recognized certification system for biomass. More recently, the work of FAO/GBEP can serve as a model.

5.4 Awareness

In most African countries, resources, such as agro-processing and farming residues and urban waste, are not recognized as sources of energy, but rather burned in open fields as a way to avoid disposal costs. The small amount of bioenergy that is mobilized or available at household level is wasted through inefficient consumption devices, such as traditional kilns, and behaviours that promote inefficiency.

5.5. Mechanism for engaging stakeholders

- Strengthen the capacity of the private sector to source, integrate, install, operate, maintain and service bioenergy systems, as well as provide business training and incubation support.
- Train policymakers on policies and programmes for accelerating adoption of bioenergy by small landholders. It is important to bring to their attention the benefits of bioenergy particularly with the production of sugar and bioethanol in Malawi, Tanzania, Mozambique and Zambia, and how such prospects can help boost regional trade.
- Train the finance and banking sectors (senior management/loan officers) on the risks/rewards of financing bioenergy projects, through pilot projects and programmes that minimize initial investment risks.
- Provide training and technical assistance on standards for bioenergy development, drawing on international efforts in this area.
- Provide training to governments and the private sector on the official and voluntary carbon markets.
- Conduct communications and outreach on bioenergy benefits/challenges, consumer awareness campaigns etc.

5.6 Removal of financial barriers

- Engage local financial institutions and micro-credit agencies on bioenergy, and conduct banker-training workshops to increase awareness of bioenergy risks/rewards by investment officers and managers.
- Establish risk mitigation facilities to spur local financing for bioenergy projects, particularly at the small-scale level.
- Foster development of “bankable” project portfolios in bioenergy; offer assistance to entrepreneurs in areas such as R&D, seed capital funding, pre-feasibility and feasibility assistance, reimbursable grants, etc.
- Explore opportunities for diaspora finance and innovative financial schemes such as the carbon finance at the national/regional levels.

- Engage the private sector in project identification and development, and understand its issues or requirements with respect to financing projects in developing countries.

5.7 Policy incentives to unlock the potentials

- Provide pragmatic instruments to promote rural development, gender equity and sustainable agriculture.
- Establish national/regional targets and timetables for bioenergy, including small farmers.
- Develop and implement regulatory frameworks to accelerate bioenergy development.
- Link bioenergy to agricultural and industrial priorities.
- Establish lead organizations in each national government to coordinate bioenergy activities across the interested ministries (e.g., agriculture, energy, rural development, environment, etc.).
- Establish guiding principles for bioenergy-based land use development.
- Foster a regional market for sustainable bioenergy, to include cross-border trade.
- Engage the private sector in policy/regulatory development, including producer organizations, SMEs, cooperatives, etc.
- Monitor and evaluate the impacts and performance of bioenergy activities at the national and regional levels.

6. HOW TO MONITOR DEVELOPMENT AND IMPLEMENTATION OF BIOENERGY POLICIES?

6.1 Developing monitoring systems

Monitoring systems should be able to detect, measure and register all relevant changes, as well as provide updated information to policymakers and other stakeholders. Agricultural and forestry services, as well as electricity sector institutions will be called upon to provide updated information. In addition, ministries or authorities can regularly contract expert opinions or studies to provide and review data, which can be done by:

- Gathering and analyzing statistics data that are directly fed into the national energy statistics or the existing Energy Information Systems in several countries.
- Measuring and analyzing the impacts of national bioenergy policies (achievement of targets, budget control and impact assessment).
- Assessing achievements of government targets.
- Analyzing sustainability of land use, GHG emissions, biodiversity and other socioeconomic effects.
- Development of certification scheme to guarantee sustainability and traceability.
- Tracking system for capturing transfers of ownerships and cancellations.
- Recording legal cases (frauds, penalties, etc.).

6.2 Relevant data to be monitored

The monitoring of the following data can be of great importance for the purpose of ensuring that the criteria are applied and that corrective measures can be taken timorously:

- Access to energy and impact for the poor

- Land prices
- Food prices
- Property relations (land tenure)
- The availability of food
- Relocation of food production and cattle breeding
- Deforestation
- Change in the type of vegetation

7. WHAT IS THE WAY FORWARD?

Africa is home to substantial bioenergy resources and potentials, though the resources are mostly underdeveloped (agri-processing, farming and household wastes) or poorly used (inefficient energy conversion process and poor cooking devices). There is urgent need to formulate policies that can mobilize resources and stakeholders to make proper use of the resources to the benefit of humans and the ecosystems.

The following key messages provide the way forward for the development of the bioenergy sector in Africa, and recognize the importance it plays in the energy economy of the region currently and in future:

- Sustainable energy transition will not succeed without paying attention to the modern bioenergy.
- Bioenergy is already an important source of energy for households, but the mode of production, transformation and consumption is very inefficient.
- To reach a sustainable energy mix, it is crucial to modernize the traditional biomass sector and develop modern bioenergy encompassing other sectors.
- A holistic approach to bioenergy development is essential; a broad development agenda that takes bioenergy beyond the transport sector aiming at improving access to energy at the household level (rural and urban) for cooking and lighting, as well as at the commercial or industrial levels; focusing on non-food feedstock; and evaluating each bioenergy feedstock for its economic, social and environmental benefits and costs prior to issuing investment contracts.
- The process of policy development is as important as the policy itself. Assessing global and regional dynamics and opportunities, identifying the needs and societal concerns, putting in place the necessary legal and institutional frameworks for coordinating and integrating economic, social and environmental objectives, mobilizing and building capacities (human and institutional), consulting and engaging stakeholders, and setting up monitoring mechanisms are all critical to the success of a sustainable bioenergy policy.
- Developing bioenergy is not without risks and sustainable criteria are paramount to ensure sound scaling up of bioenergy.
- Technology is only one component of the sustainable energy solution and low carbon emissions. Financing, regulatory frameworks, research and development and capacity building are crucial to bioenergy deployment on a sustainable basis.
- Policies and regulatory frameworks should be harmonized across countries to facilitate regional cooperation and trade.
- The “Africa Bioenergy Policy Framework and Guidelines” is an important tool to overcome the barriers to the deployment of sustainable and modern bioenergy and ensuring that bioenergy is

contributing to economic growth, energy and food security, poverty reduction and the protection of natural resources.