



# First High-level Biofuels Seminar in Africa Bulletin

## A Summary Report of the First High-level Biofuels Seminar in Africa

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### FIRST HIGH-LEVEL BIOFUELS SEMINAR IN AFRICA: 30 JULY - 1 AUGUST 2007

The first High-level Biofuels Seminar in Africa was held at the African Union (AU) headquarters in Addis Ababa, Ethiopia, from 30 July - 1 August 2007. The seminar, held under the theme of "Sustainable Biofuels Development in Africa: Opportunities and Challenges," was jointly organized by the African Union Commission, the Government of Brazil and the United Nations Industrial Development Organization. It brought together some 250 participants representing AU member states, African regional economic communities, UN agencies, the scientific community, the private sector and non-government organizations.

The major objectives of the seminar were to: brief policy makers, the private sector and regional institutions on the importance of biofuels development in Africa; explore possibilities for developing this new energy source while ensuring a balance between its potential, risks and trade-offs; bring together stakeholders to formulate a common strategic vision for biofuels development throughout the continent; and facilitate the development of viable policies and strategies for the African biofuels industry.

The three day meeting consisted of plenary and parallel sessions, and a Ministerial Roundtable that was held on Wednesday, 1 August. In the plenary sessions, held from Monday, 30 July through Wednesday, 1 August, participants discussed a range of matters, including the Brazilian biofuels experience and its potential application in Africa. During the parallel sessions, held on Tuesday, 30 July, participants addressed biofuel conversion technologies for ethanol, biodiesel, biogas and biomass gasification, and cross-cutting issues relating to policy and regulatory frameworks, financing and investment, and environmental sustainability.

Recommendations from these sessions were consolidated into an Action Plan for Biofuels Development in Africa, which was annexed to the Addis Ababa Declaration on Sustainable Biofuels Development in Africa, adopted at the Ministerial Roundtable. This declaration calls for, *inter alia*: developing enabling policy and regulatory frameworks; participating in global sustainability discussions; formulating guiding principles on biofuels to enhance Africa's competitiveness; and minimizing the risks of biofuels development for small-scale producers. It further calls for the engagement of development partners to enable North-South and South-South cooperation, urges the engagement of public financing institutions to support biofuels projects, and proposes the establishment of a forum to promote access to biofuels information and knowledge.

This bulletin provides background information on African energy institutions and initiatives, and summarizes the discussions and outcomes of the seminar.

### A BRIEF OUTLINE OF AFRICAN ENERGY INSTITUTIONS AND INITIATIVES

This section of the bulletin places the biofuels seminar within the broader context of general energy governance in Africa. It outlines the main African institutions that address energy issues, provides an overview of major continental initiatives concerning energy-related matters and summarizes decisions and declarations of key significance.

#### ENERGY INSTITUTIONS

**AFRICAN UNION:** The AU is the principal organization for the promotion of socioeconomic integration across the continent. It includes 53 African countries as member states, while Morocco has special status. The heads of state and government of the Organization of African Unity (OAU) called for its establishment in the Sirte Declaration on 9 September 1999, as a means to accelerate integration, so that Africa can play a significant role in the global economy, and to address shared social, economic and political problems. The objectives of the AU include: achieving greater unity and solidarity between African countries and the peoples of Africa; promoting and defending common African positions on various issues; encouraging international cooperation; establishing

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enabling conditions for the continent to play its rightful role in the global economy and in international negotiations; promoting sustainable development and integration of African economies; and advancing the continent's development through research in all fields. The principal organs of the AU include its Assembly, Executive Council, Commission, Permanent Representatives Committee, Peace and Security Council, Pan-African Parliament, Economic, Social and Cultural Council, Court of Justice, financial institutions, and specialized technical committees.

**AU Commission Directorate of Infrastructure and Energy:** The Directorate of Infrastructure and Energy of the African Union Commission (AUC) comprises the Division of Infrastructure and Tourism, which deals with transport, communications and tourism, and the Division of Energy, which addresses energy-related matters. This latter division aims to initiate, promote and facilitate policies and strategies to bring about the integrated development of energy infrastructure and services. It also aims to enable the exploitation and rational utilization of energy resources while ensuring environmental protection. The current AU Commissioner for Infrastructure and Energy is Bernard Zoba (Republic of Congo).

**AFRICAN ENERGY COMMISSION:** The Extraordinary Economic Summit of the OAU Heads of State and Government held in Lagos, Nigeria, from 28-29 April 1980, resulted in the adoption of the Lagos Plan of Action, which contains short-, medium- and long-term actions to solve Africa's energy problems. Identifying the need to establish an appropriate institutional framework for the continent's energy sector, the summit also proposed the creation of an African energy commission.

Following a series of regional meetings between 1980 and 2001, African Ministers of Energy met in Algiers, Algeria, on 23-24 April 2001, and decided to create the African Energy Commission (AFREC). The convention establishing AFREC was agreed at the thirty-seventh OAU Summit, held in Lusaka, Zambia, from 9-11 July 2001 (Decision AHDAHG/Dec. 8 (XXXVII)). The preamble to the AFREC Convention states that Africa must harness its energy resources and make them available to meet the energy needs of its peoples in order to develop and provide an alternative to deforestation and the use of firewood as a primary source of energy.

AFREC is mandated to:

- elaborate energy development plans, policies and strategies based on subregional, regional and continental development priorities, and identify means for their implementation;
- create and maintain an energy sector database for the continent, and promote the rapid transfer and exchange of information between member states and regional economic communities;
- identify, elaborate and launch inter-African energy projects, which promote subregional, regional and continental integration;
- elaborate policies, plans and projects of inter-African cooperation in the field of human resources development, particularly through training and education in the energy sector; and
- establish a network of technical assistance between member states, and promote energy sector partnerships between African countries, in order to promote inter-African trade in energy products and services.

**FORUM OF ENERGY MINISTERS OF AFRICA:** The Forum of Energy Ministers of Africa (FEMA) was inaugurated during a meeting held on 3 August 2005, in Entebbe, Uganda. FEMA was established to provide political leadership, policy direction and advocacy to increase access to, and better utilization and management of, energy resources for the continent's sustainable development. Designed as a member-driven network, FEMA participants volunteer to undertake actions consistent with the organization's goals.

The FEMA work plan for 2005-2008 aims to strengthen FEMA's institutional arrangements, inform Africa's international advocacy, and promote regional intergovernmental dialogue. The main objective of the work plan is to assist African states and subregional organizations to contribute to the achievement of the Millennium Development Goals (MDGs), the Johannesburg Plan of Implementation (JPOI) targets, and the energy objectives of the Political Declaration and International Action Plan of the 2004 Bonn Renewables Conference.

At their first meeting, FEMA members set continent-wide energy targets designed to support Africa's capacity to meet the MDGs. These targets include the following:

- the consumption of modern energy services should be doubled, including through exploring the use of modern biomass technologies for industrial purposes;
- 50% of rural inhabitants should use modern energy for cooking, including through the use of improved cook stoves, pressurized kerosene stoves and liquefied petroleum gas stoves;
- 75% of the urban and peri-urban poor should have access to modern energy services for basic needs; and
- 75% of schools, clinics and community centers should have access to electricity.

#### **UN ECONOMIC COMMISSION FOR AFRICA:**

Established in 1958, the United Nations Economic Commission for Africa (ECA) is one of five regional commissions working under the administrative direction of UN headquarters. As the regional arm of the UN in Africa, it is mandated to support the economic and social development of its 53 member states, foster regional integration and promote international cooperation for Africa's development. One of the ECA's key tasks is to ensure improved cooperation and coordination between UN agencies and African organizations for the effective implementation of the New Partnership for Africa's Development (NEPAD).

One of the ECA's six substantive divisions, the Sustainable Development Division plays an active role in the energy field, in addition to working in the areas of agriculture, water, environment, and science and technology.

**UN-ENERGY/AFRICA:** Convening in Nairobi, Kenya, on 8 May 2004, African Energy Ministers adopted a recommendation for the creation of UN-Energy/Africa (UNEA) to serve as a regional collaborative framework to promote coordinated actions by the UN and other organizations working on energy for Africa's development. In May 2004, the ECA, the United Nations Industrial Development Organization (UNIDO), the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and UN-HABITAT agreed to the creation of UNEA, as a regional arm of UN-Energy, to ensure a link between global and regional energy issues and to serve as the UN sub-cluster on energy in support of NEPAD.

The UNEA programme of work is based on priorities and needs identified by UN agencies, and AUC and NEPAD energy initiatives. It includes: mainstreaming best practices in rural energy development; facilitating the integration of socioeconomic and environmental concerns into energy sector reforms; developing reliable low-cost rural energy services; assessing energy services in informal settlements in African cities; and reviewing progress in implementation of the JPOI.

**AFRICAN DEVELOPMENT BANK:** The African Development Bank (AfDB) is Africa's principal financial development institution. Its mission is to promote economic and social development through loans, equity investments and technical assistance. Its main energy activities involve investments in member countries aimed at: developing energy supply; creating wider and affordable access; connecting electric networks; strengthening institutions; and establishing a favorable environment for private sector participation.

The AfDB is currently revising its 1994 Energy Policy. The objectives of the new energy policy are expected to include mainstreaming sustainable energy and climate change considerations into policies, programmes and projects, and setting minimum targets for lending and grant assistance programmes related to climate change and sustainable energy. Additionally, the Financing Energy Services for Small-Scale Energy Users (FINESSE) Africa programme is currently being implemented by the AfDB's Sustainable Development and Poverty Reduction Unit. This programme aims to assist African countries in formulating appropriate policy and regulatory frameworks and in developing capacity to generate a pipeline of investment projects in renewable energy and energy efficiency.

**AFRICAN ECONOMIC COMMUNITY:** The treaty establishing the African Economic Community (AEC), commonly known as the Abuja Treaty, was adopted at the twenty-seventh Ordinary Session of the OAU Assembly, held in Abuja, Nigeria, from 3-5 June 1991. The treaty, which entered into force in May 1994, provides for the AEC to be developed through a gradual process of integrating the activities of existing and future regional economic communities in Africa. The current regional economic communities are the Arab Maghreb Union, the Economic Community of Central African States, the Common Market of Eastern and Southern Africa, the Southern African Development Community, and the Economic Community of West African States.

The aim of the AEC, as specified in the Abuja Treaty, is to promote economic, social and cultural development, and African economic integration, so as to increase self-sufficiency and endogenous development, and to create a framework for developing and mobilizing Africa's human and material resources. It further aims to assist in: raising the standard of living of African people; maintaining economic stability; and establishing close and peaceful relationships between member states. Among its more specific aims, the AEC seeks to ensure the harmonization and coordination of environmental protection policies in Africa. Additionally, the Abuja Treaty recognizes the importance of the energy sector for sustainable economic and social development in Africa, and calls on member states to cooperate in the fields of energy and natural resources, particularly in promoting and developing new and renewable energy sources (Article 54. 2(c)).

## **ENERGY-RELATED INITIATIVES**

### **NEW PARTNERSHIP FOR AFRICA'S**

**DEVELOPMENT:** NEPAD was adopted at the thirty-seventh Session of the OAU Assembly of Heads of State and Government. The objective of NEPAD is to stimulate Africa's development by bridging existing gaps in priority sectors, including agriculture, health, education, infrastructure, information and communications technology, environment, tourism, and science and technology. NEPAD was designed to meet the AU's development objectives and serves as a programme of the AU.

**NEPAD Energy Activities:** In the NEPAD Framework Document, governments adopted several energy-related targets, including targets to: increase African peoples' access to reliable and affordable commercial energy from 10 to 35% or more within 20 years; improve the reliability and lower the cost of energy supplies to productive activities, in order to enable a 6% annual economic growth; and reverse environmental degradation associated with the use of traditional fuels in rural areas. Key actions to address the targets include accelerating the provision of energy supply to low-income housing, and broadening the scope of the current programme for biomass energy conservation from the Southern African Development Community to the rest of the continent. Additionally, NEPAD's Energy Infrastructure Initiative aims to fully develop the energy resources of the continent in order to deliver affordable energy services to economic and social sectors. The work of NEPAD in the energy sector has been supported by the international community, with the JPOI identifying the need to establish and promote programmes, partnerships and initiatives to support NEPAD's energy objectives.

### **AFRICA'S SCIENCE AND TECHNOLOGY**

**CONSOLIDATED PLAN OF ACTION:** At its second meeting, held from 29-30 September 2005, in Dakar, Senegal, the African Ministerial Conference on Science and Technology (AMCOST) adopted Africa's Science and Technology Consolidated Plan of Action (CPA). The overall goals of the CPA are to enable Africa to harness and apply science, technology and related innovations to eradicate poverty and achieve sustainable development, and to ensure that Africa contributes to the global pool of scientific knowledge and technological innovations. The CPA identifies five flagship research and development programmes to be implemented between 2006 and 2010: biodiversity, biotechnology and indigenous knowledge; energy, water and desertification; material sciences, manufacturing, laser and post-harvest technologies; mathematical sciences; and information, communication and space science technologies.

Under its energy programme, within the flagship programme on energy, water and desertification, the CPA identifies the need for research and development of bioenergy technologies and other renewable energy sources, with an emphasis on the sustainable use of the continent's biological resources. As part of this programme, designated African centers, in collaboration with international partners, will conduct research and development into liquid biofuels production, among other activities.

### **GREEN WALL FOR THE SAHARA INITIATIVE:**

Named by the former President of Nigeria, Olusegun Obasanjo, the Green Wall for the Sahara Initiative was formally launched



at the AU Summit on Food Security in Africa, held in Abuja, Nigeria, from 4-7 December 2006. It was subsequently endorsed by the eighth AU Summit (Assembly/AU/Dec.137 (VIII)), held in Addis Ababa, Ethiopia, from 22-30 January 2007.

The overall objective of the initiative is to arrest the advance of the Sahara desert southward and to improve the livelihoods of the inhabitants of the Sahelo-Saharan zone. The initiative also aims to strengthen the implementation of the UN Convention to Combat Desertification (UNCCD) in Africa, and to promote the use of renewable and alternative energy sources to reduce direct reliance on biomass for domestic energy consumption. The initiative is additionally expected to focus on community-based and public forest management and development, as well as the establishment of woodlots for domestic energy and construction needs, in order to reduce pressure on fragile forest ecosystems in arid zones.

**AFRICAN RENEWABLE ENERGY NETWORK ON COMBATING DESERTIFICATION:** Ministers attending the African Ministerial Meeting on Sustainable Energy Development, held in Nairobi, Kenya, on 8 May 2004, officially launched the African Renewable Energy Network on Combating Desertification. This network brings together organizations operating in the fields of renewable energy and desertification, with a view to enhancing cooperation and harmonizing measures designed to promote renewable energy. The ministerial meeting was also held as part of the regional preparatory process for the International Conference on Renewables, which took place from 1-4 June 2004 in Bonn, Germany.

#### **KEY ENERGY DECLARATIONS AND DECISIONS**

**MINISTERIAL STATEMENT ON RENEWABLES IN AFRICA:** At the 2004 African Ministerial Meeting on Sustainable Energy Development, ministers adopted a Statement on Renewables in Africa, which calls for, *inter alia*: promoting the sustainable production of biomass and its efficient utilization in all sectors, given its current and foreseeable predominance in the overall energy supply of most African countries; and enhancing the development of renewables as a way to enable the successful implementation of the UNCCD and to advance sustainable development in Africa.

**STATEMENT FROM THE ENERGY SECTOR STAKEHOLDERS' POLICY DIALOGUE FORUM:** The Stakeholders' Policy Dialogue Forum, organized by the ECA, in collaboration with UNEP and the UN Department of Economic and Social Affairs, was held in Addis Ababa, Ethiopia, from 15-16 December 2005. The Forum was attended by senior officials and high-level decision makers from 19 African countries, and representatives from nine international and regional organizations. Participants considered a detailed study prepared by UNEP and the ECA Sustainable Development Division, entitled "Making African Power Sustainable," and adopted a Policy Statement on Market Reform. This statement calls on development partners, particularly international financial institutions, to cooperate with African countries to, *inter alia*, facilitate the harnessing of renewable energy to broaden Africa's energy services mix.

**DECLARATION OF THE FIRST AU CONFERENCE OF MINISTERS RESPONSIBLE FOR ELECTRICITY:** The first AU Conference of Ministers Responsible for

Electricity took place in Addis Ababa, Ethiopia, from 20-24 March 2006, under the theme "Common Vision and Strategic Framework for a Continental Policy." Delegates from 36 African countries adopted a ministerial declaration and decision, agreeing to work together to realize the continent's energy potential, particularly in hydropower as a major renewable energy option, and to establish an African Fund for Electricity with an emphasis on rural electrification.

**DECLARATION OF THE FIRST AFRICA-SOUTH AMERICA SUMMIT:** Heads of state and government from Africa and South America met for the first Africa-South America Summit in Abuja, Nigeria, on 30 November 2006, when they adopted a joint declaration on cooperation issues. Regarding energy, South American and African leaders agreed to give priority to establishing interregional partnerships and promoting South American investment in African renewable energy resources, such as hydro, biofuel, solar, geothermal and wind energy.

**CAIRO DECLARATION ON AFRICAN COOPERATION AND SOLIDARITY:** Convening in Cairo, Egypt, from 11-15 December 2006, the first AU Conference of Ministers Responsible for Hydrocarbons adopted the Cairo Declaration on African Cooperation and Solidarity (AU/EXP/OG/Decl.(I)) and an associated Action Plan (AU/MIN/OG/Pl.Ac.(I)). These instruments were later endorsed by AU heads of state and government at the eighth AU Summit. Among other things, the Cairo Declaration calls on the AUC to define and implement development strategies for clean and renewable energy, particularly for hydrocarbons, while the action plan calls on the AUC to elaborate policies and strategies for the development of renewable energy, namely biofuels. At the conference, ministers also agreed to set up, under the auspices of the AUC, a permanent Conference of African Ministers Responsible for Hydrocarbons, as a continental coordination body for policies and strategies in this field.

**EIGHTH AU SUMMIT DECLARATION ON CLIMATE CHANGE:** At the January 2007 eighth AU Summit, heads of state and government adopted decisions on, *inter alia*: climate change and development; implementation of the Green Wall for the Sahara Initiative; and the strengthening of research and development, particularly in renewable energy, forestry and agriculture, to increase the continent's resilience and adaptation to climate change. A ministerial declaration adopted at the summit encourages the transfer of relevant climate-friendly technologies within and among developing countries.

**OUTCOMES OF THE AFRICA-EUROPE ENERGY PARTNERSHIP MEETING:** An Africa-Europe Energy Partnership meeting took place in Berlin, Germany, from 6-7 March 2007, and was attended by more than 220 representatives from African and European countries, international financial institutions, UN agencies and non-government organizations (NGOs). The Co-Chairs' Summary of the meeting notes, *inter alia*, that access to modern, affordable energy services is key to sustainable development and attainment of the MDGs, and that improving energy services is crucial for meeting basic needs and generating income.

The Partnership itself is expected to be formally launched during the EU-Africa Summit, scheduled for November 2007, having already been endorsed by FEMA and the EU General Affairs and External Relations Council.

## OUTCOMES OF THE MINISTERIAL CONFERENCE ON ENERGY AND ENVIRONMENT FOR SUSTAINABLE DEVELOPMENT:

The Tokyo International Conference on African Development (TICAD) Ministerial Conference on Energy and Environment for Sustainable Development took place from 22-23 March 2007, in Nairobi, Kenya. The aim of the conference was to share experiences and lessons learned in Africa and other regions, and to identify effective ways to address key energy and environment issues in the context of sustainable development. The Chair's Summary of the meeting emphasizes that clean energy development has great potential for the private sector, including for new businesses in off-grid and community energy systems in areas such as biofuels and low-cost, off-grid lighting products.

**MAPUTO DECLARATION:** African Ministers convening under FEMA met in Maputo, Mozambique, from 28-30 March 2007, when they adopted the Maputo Declaration on Energy Security and Sustainability in Africa. In the declaration, Ministers identified the need to:

- increase access to modern energy services, and address the significant negative health and environmental implications of heavy reliance on traditional biomass energy;
- utilize Africa's rich energy resources, which are currently underexploited or exported without benefiting the majority of Africa's citizens;
- increase financial flows to match Africa's energy investment needs; and
- promote a better mix of energy supply options, ranging from existing conventional options to renewable energy sources, to strengthen Africa's energy security.

## REPORT OF THE MEETING

On Monday, Aboubakari Baba-Moussa, Director, Infrastructure and Energy, AUC, welcomed participants to Addis Ababa and reported on preparatory meetings for the seminar held under the auspices of the AUC.

Guilherme Cassel, Minister of Agrarian Development, Brazil, suggested that the Brazilian experience in biofuels had direct relevance to the seminar's theme of opportunities and challenges for biofuels development in Africa. He underscored that biofuels can help to achieve energy security, promote agricultural development, increase employment opportunities, protect the environment and reduce greenhouse gas emissions. He also noted that the world is currently facing an energy crisis, due to the depletion of fossil fuels, and that there is an urgent need to find substitutes that can meet both energy demands and the needs of the rural poor.

Robert Okello, Director, NEPAD and Regional Integration, ECA, on behalf of ECA Executive Secretary Abdoulie Janneh, noted the unprecedented interest in biofuels in both developed and developing countries. He said key reasons for this interest include: high and volatile oil prices; opportunities for job creation in rural areas and for revitalizing the agricultural sector; the availability of new and more efficient biomass technologies; and the need to address global environmental

challenges. Noting that Africa is increasingly seen as a potential major player in the field of biofuels, he called on policy makers to develop appropriate policies and strategies for sustainable biofuels development.

Maria Michela Morese, Global Bioenergy Partnership (GBEP), UN Food and Agriculture Organization (FAO), on behalf of GBEP Chair Corrado Clini, highlighted bioenergy as an emerging international priority, and pointed to the triple challenge of achieving food security, energy security and sustainable development. She noted the opportunity to harness Africa's vast biomass resources, along with the continent's challenge to transition from traditional to modern bioenergy. She stressed that sustainability should be the key element of biofuels development and called



Maria Michela Morese, Global Bioenergy Partnership (GBEP), UN Food and Agriculture Organization (FAO)

for global standards on biofuels, including in relation to full lifecycle analysis, labeling and certification.

Ato Alemayehu Tegenu, Minister of Mines and Energy, Ethiopia, provided an overview of the energy situation in his country, suggesting that renewable energy, especially biofuels, could make a substantial contribution to reducing energy import costs and promoting rural development. He elaborated on Ethiopia's potential and efforts in the area of biofuels development, including its recent biofuels strategy, and underscored the importance of considering the environmental impacts of biofuels and of creating commercial opportunities in the biofuels sector for farmers.

UNIDO Director-General Kandeh Yumkella suggested that there is an ongoing "biofuels revolution" that Africa cannot afford not to be a part of, and underscored that the global fight against poverty needs to address the "energy poverty" question. Highlighting the importance of sustainability in biofuels development, he noted the need to: create a better policy climate, develop both first- and second-generation biofuel technologies; and add value to African commodities in international markets. He pledged UNIDO's support to the ECA and the AU in their elaboration of relevant policies and strategies, and outlined related UNIDO initiatives, including the development of an interregional bioenergy network.

AU Commissioner for Infrastructure and Energy, Bernard Zoba (Republic of Congo) said the seminar



UNIDO Director-General Kandeh Yumkella

represented a concrete outcome of the political will, expressed at the first Africa-South America Summit, to promote South-South partnerships for biofuels development, along with the decision taken at the eighth AU Summit to develop a new renewable energy policy and strategy for Africa. He stressed that Africa should not become a mere consumer of biofuels and



a producer of raw materials, but should take full advantage of available technologies and the experiences of leading biofuel-producing countries. In closing, he thanked the Government of Brazil and UNIDO for jointly organizing the seminar and declared the meeting open.

**PROCEDURAL MATTERS:** Delegates adopted the meeting's agenda and programme of work, agreeing to conduct their work in some plenary and some parallel sessions. They elected UNIDO and the AU as Co-Chairs of the seminar.

This report summarizes the discussions and outcomes of the meeting in chronological order.

## PLENARY SESSIONS

**SEMINAR OVERVIEW AND OBJECTIVES:** This session took place on Monday and was chaired by Mafa Chipeta, FAO.

Philippe Niyongabo, Directorate of Infrastructure and Energy, AUC, presented an overview of biofuels development in Africa. He highlighted opportunities presented by the vast area of land available for food and energy crops, favorable climatic conditions and the relatively inexpensive labor force, while noting environmental and socioeconomic concerns. Stressing that biofuels can help achieve the MDGs and address climate change, he said the proposed vision for biofuels in Africa focuses on enhancing rural economies through integrated bioenergy development. For developing the African biofuels sector, he recommended, *inter alia*: the creation of appropriate policy, institutional and legal frameworks; increased stakeholder awareness; incentive measures; a focus on poverty reduction; drawing on experiences from other regions; and research and development into small-scale production.

Outlining global energy trends, Heinz Leuenberger, UNIDO, drew attention to the fact that around half of Africa's energy is derived from traditional biomass, and that only one in four Africans presently has access to electricity. He also noted that the future increase in electricity demand will be greatest in developing countries, and that global energy consumption is expected to triple by 2050 if the MDGs are achieved. Regarding the export potential for biofuels, he noted the EU's target of sourcing 10% of transport energy from biofuels by 2020 and climatic constraints on growing biofuel crops in Europe. Stressing that the sustainability of production will be crucial for the future of the biofuels market, he suggested the formulation of regional biofuels action plans within a sustainable development framework and with an initial focus on self-sufficiency.

Noting that biofuels is a growing market with huge potential in Africa, Njeri Wamukonya, UNEP, presented on the sustainability aspects of biofuels development. She highlighted a number of associated risks, such as potential implications for food security and water scarcity. She outlined an initiative being carried out by UNEP and other partners to formulate guidelines for biofuels that focus on both producers and consumers, and that uses certification as a key tool. She also noted that



Heinz Leuenberger, UNIDO

UNEP is ready to develop criteria and standards for biofuels development in Africa that accommodate environmental and social concerns.

Noting Africa's food production challenges, dependence on food imports and decreasing share in global trade, session Chair Chipeta suggested that countries capitalize on energy development to boost food production.

**Discussion:** During the ensuing discussion, participants drew attention to, *inter alia*: the implications of the World Trade Organization's Doha Round of negotiations for the future biofuels market; the importance of research and development; and avoiding biofuel crop "commodity booms" that lead to food shortages. An industry association called for a moratorium on the African export of raw materials for biofuels until the continent has further developed its capacity in finished products. Pointing to the example of the oil industry in Africa, one participant expressed concern that biofuels might become an export-based industry, rather than one that serves the domestic market. In response, another participant commented that Brazil is a case in point for developing and using biofuels for national consumption and for addressing small-scale producers' needs. Participants further discussed the need to: broaden certification schemes to other energy sectors, such as coal, oil and gas; develop country-driven certification schemes; and produce and consume biofuels locally.

**COUNTRY AND SUBREGIONAL EXPERIENCES:** Held on Monday, this session was chaired by Robert Okello.

Stephen Karekezi, Energy, Environment and Development Network for Africa, presented an overview of national and regional perspectives on and experiences with biofuels. He said that the African energy sector has three main clusters: hydrocarbons in North Africa; biomass across most of the continent; and coal in South Africa. Urging a transition from traditional biomass energy technology to modern technologies such as biofuels, he highlighted opportunities presented by biofuels, including for: enhanced energy security and diversification; higher convertible currency revenues; new revenue streams for agro-industries and farmers; the encouragement of carbon financing; the creation of jobs; and meeting local energy needs. He further underscored the need to capitalize on the global growth in the biofuels market, illustrated by the 95% increase in ethanol production from 2001-2005 and the projection that biodiesel could meet up to 25% of the world's energy needs in the next 20 years.

Summarizing the continent's experiences, he prioritized biomass cogeneration as a readily available option, and ethanol as the most developed option, noting that it is largely concentrated in Southern Africa. He advocated pre-determined tariffs and compulsory requirements for the blending of ethanol and oil. He further noted, *inter alia*: Ghana's experience with biogas; West Africa's efforts to explore biodiesel; and



Robert Okello, Director, NEPAD and Regional Integration, ECA

the limited continental experience with biomass gasification. Addressing sustainability concerns associated with biofuels, he argued that positive outcomes outweigh negative ones.

**West Africa:** Essel Ben Hagan, Institute of Industrial Research, Ghana, noted that the biofuel technologies under development in West Africa are biogas and biodiesel. He said that key barriers to the wider production and use of biofuels include the reluctance of financial institutions to advance loans for their development, and he urged the establishment of bioenergy development funds for use by the private sector. Discussing biofuels development in Ghana, he outlined a number of initiatives, such as the creation of a national biofuel committee in 2005, and the efforts of institutions such as the Council for Scientific and Industrial Research.

Ibrahim Togola, Mali Folkecenter N'yetaa, described biofuels development in Mali, highlighting the development of a local jatropha press, the introduction of jatropha use in the transport sector and the establishment of rural energy service centers. He also identified inefficient coordination between stakeholders as a key barrier to biofuels development.

**Central Africa:** Demba Diop, Environmental Market and Product Consulting, the Netherlands, noted that despite the presence of oil in Central Africa, the population's access to energy remains a challenge, and poverty and hunger are still widespread. Regarding prospects for biofuels development, he noted the high dependence of some countries on oil exports, the ongoing decline of oil production and a projected depletion in subregional oil reserves. Comparing possible scenarios for African oil and biofuel exports, he said more than 60% of the value added post-production in the case of biofuels could remain in producer countries, while an estimated 80% of the value added post-production for oil goes abroad. He underscored various measures necessary for promoting biofuels development, including: adequate political will; multi-stakeholder partnerships; appropriate financing mechanisms; institutional, legal and regulatory frameworks; security of land tenure; and gender mainstreaming.

**Eastern and Southern Africa:** Stephen Karekezi focused on subregional experiences with two major biofuels options:



Stephen Karekezi, Energy, Environment and Development Network for Africa

ethanol and biomass cogeneration. On ethanol use, he highlighted Malawi as the country with the longest experience, and Kenya and Zimbabwe's initiatives on ethanol blending. He noted that since ethanol is already used in the sugar industry, it provides greater security against market fluctuations. He also stressed the importance of exploring local markets for biofuels

before engaging in international trade.

On biomass cogeneration, Stephen Karekezi described the experience of Mauritius, where the sugar industry provides close to 40% of national electricity supply. He highlighted national policies that have helped to: promote industry involvement through appropriate energy pricing and fiscal incentives; achieve economies of scale for power generation

through the centralization of sugar factories; and increase equity through revenue-sharing schemes with farmers and local communities.

**Discussion:** In the ensuing discussion, Mauritius highlighted an initiative to produce petrol from plastic waste, and Sudan and Senegal reported on their experiences in using jatropha as a biofuel. Participants stressed the potential benefits of biofuels for rural communities, showcasing Malaysia as a country where there has been simultaneous biofuels development and poverty reduction. Participants further discussed the need to assess the environmental impact and potential income generation from biofuels development. One participant highlighted the challenge of reduced employment opportunities in the case of extensive mechanization in the biofuels sector. On ethanol use, several participants stressed the need for proper pricing and the consideration of ethanol gel fuels. Brazil underscored the importance of considering the comparative advantages of various biofuels and the need to build an international market for ethanol once domestic markets have been developed.

**THE BRAZILIAN EXPERIENCE:** Lawrence Darkwah, Kwame Nkrumah University of Science and Technology (KNUST), Ghana, chaired this session, which was held on Tuesday.

Guilherme Cassel provided an historical overview of Brazil's biofuels programme, noting that its main objectives are to combat poverty and social inequality in rural areas, particularly relating to energy access. Explaining the family nature of farming in rural Brazil, he underscored that biofuels are a viable option for both small- and large-scale farms. He emphasized the programme's policy and institutional features, including biodiesel legislation, legal protections for investors, a mandatory limit on biofuels production, marketing of products with social objectives, and tax benefits at different levels of production. He also discussed the "social fuel seal," a national certification scheme that encourages participation in the biofuels programme through favorable credit policies and bidding processes. Suggesting that other countries could learn from the Brazilian experience, he stressed that biofuels development does not lead to the spread of a monoculture, namely single-crop plantations, nor does it compete with food production activities.

Ricardo de Gusmão Dornelles, Ministry of Mines and Energy, Brazil, noted that the main objectives of the Brazilian biofuels policy include increasing national production and consumption, and promoting a global market in biofuels. He elaborated on the national experience with ethanol, suggesting that ethanol can be produced at competitive costs and from different raw materials. He also noted the predominant use of sugarcane for ethanol production, and stressed that sugarcane production does not contribute to deforestation in the Amazon. He described ongoing government efforts to improve labor relationships and harvest practices at the crop production stage and to improve water usage at the industrial stage of ethanol production. He also discussed the steps involved in developing



Guilherme Cassel, Minister of Agrarian Development, Brazil





L-R: Guilherme Cassel, Minister of Agrarian Development, Brazil; Antonio Simões, Ministry of Foreign Affairs, Brazil; José Nilton de Souza Vieira, Brazilian Ministry of Agriculture, Livestock and Food Supply; and Ricardo de Gusmão Dornelles, Ministry of Mines and Energy, Brazil

an ethanol programme and suggested that Brazil could help other countries by, among other things, providing information and technical support on breeding sugarcane varieties.

**Discussion:** Responding to a question on the legal framework for protection of land rights in biofuel contracts, a Brazilian representative said that biodiesel companies are granted fiscal exemptions only if they can prove that they have obtained the raw materials from farmers. He added that contracts are prepared in consultation with trade unions. He also noted that, *inter alia*, conversion from food- to ethanol-based crops is a simple procedure that is easily adapted by subsistence farmers, and that sugarcane and food crops can be grown together. Participants discussed the protection of intellectual property rights (IPRs) in biofuels technology and the costs associated with current incentives for biofuels development. Some also expressed concern regarding the effects on farmers of land acquisition for biofuels development and the spread of a single-crop monoculture.

**AFRICAN CONTEXT:** Discussions on the application of the Brazilian experience in Africa took place on Tuesday and Wednesday, and were chaired by Heinz Leuenberger.

Thomson Sinkala, Chair, Biofuels Association of Zambia, presented on biofuels for poverty reduction, stressing that unless Africa develops biofuels, poverty will be perpetuated. Drawing a comparison between biofuels development and mining, he argued that the ongoing “biofuels hype” exaggerates concerns related to food security, land requirements and sustainability. He also emphasized the importance of biofuels development for the empowerment of marginalized rural communities, the promotion of family cohesion and the development of skills and technologies.

Abeeku Brew-Hammond, KNUST, emphasized the centrality of government leadership for kick-starting the biofuels industry and for ensuring the protection of small-scale farmers. Noting that biofuel technologies are knowledge-intensive, he called for sharing experiences and know-how at the international, regional and national levels, mobilizing regional resources, and identifying the comparative advantage of African countries in using various feedstocks and biofuel technologies.

Mpoko Bokanga, African Agricultural Technology Foundation, discussed the research and development aspects of biofuels development based on the Nigerian experience. He noted that as the world’s largest cassava producer, Nigeria has been involved in ethanol production since 1973, is exploring it as an alternative to oil, and has recently adopted a 10% ethanol blending standard for the transportation sector. He identified the need to move from ethanol to butanol production in the future and to establish bioenergy scientific intelligence units for promoting innovation in the energy and agricultural sectors.

Among other policy measures, he proposed introducing “smart subsidies,” examining land tenure systems, securing access to IPRs, and sharing the benefits derived from biofuels.

Francis Yamba, Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa

(COMPETE) Project, outlined prerequisites for biofuels development in Africa and noted the existence of biofuels markets, especially in Southern Africa. He explained that biofuels markets are influenced by, *inter alia*, requirements for the mandatory blending of biofuels with fossil fuels, the suitability and availability of land and feedstocks, technological and research capacities, production costs, international crude oil prices, national fiscal policies, and environmental considerations. He emphasized the need to select appropriate feedstocks and technologies, and to undertake economic cost-benefit analyses. Among other policy measures, he recommended: implementing national biofuels strategies; developing legal and regulatory frameworks; ensuring the sustainable use of lands and resources; promoting integrated agro-energy programmes; and supporting biofuels research.

Youssef Arfaoui, AfDB, presented on the Bank’s perspective on renewable energy development in Africa, noting that the AfDB’s focus areas include geothermal energy, small hydropower, cogeneration technologies and biofuels. Among AfDB’s strategic interventions, he identified: raising the interest of private sector investors in renewable energy projects; mobilizing the funding required for project preparation; performing feasibility studies; and developing “promising” projects. Reporting on a recent study on wind energy potential in Africa, he suggested a similar study be undertaken on biofuels. He also noted that in developing biofuel-related projects, investors should consider legal frameworks, concession arrangements, feedstock agreements and security, and relevant environmental factors.

Reviewing biofuels production technologies, Stanislav Miertus, UNIDO International Center for Science (ICS-UNIDO), noted the need to improve the performance of first-generation technologies, and to focus on the development of second-generation technologies that are still transitioning toward large-scale production. He outlined a number of recent ICS-UNIDO activities, including in the area of improving biodiesel production in Malaysia.

**Discussion:** In the ensuing discussion, Cote d’Ivoire stressed the importance of research and development. Guinea emphasized the significance of traditional know-how, while Senegal highlighted the importance of assessing whether biofuel crops can be productive when grown on marginal lands. One participant stressed the importance of examining the environmental impacts of biofuel technologies, while another noted the need to create guidelines for entrepreneurs engaging in biofuels development. Highlighting its national certification scheme and its success in involving small-scale farmers in the



Mpoko Bokanga, African Agricultural Technology Foundation



scheme, Brazil said that an international certification scheme was not desirable and that efforts should be directed towards the development of national biofuels industries.

### PARALLEL SESSIONS

On Tuesday afternoon, two sets of parallel sessions were held. First, three parallel sessions addressed biofuel conversion technologies, namely: ethanol; biodiesel; and biogas and biomass gasification. Following from these sessions, another two parallel sessions examined cross-cutting issues relating to: policy and regulatory frameworks, and financing and investment; and environment and sustainability. Reports and recommendations from these sessions were presented in plenary on Wednesday and consolidated into the Action Plan for Biofuels Development in Africa, adopted by ministers as part of the Addis Ababa Declaration on Wednesday afternoon.

#### BIOFUEL CONVERSION TECHNOLOGIES: Ethanol:

Session Chair Daniel Liwimbi, Ethanol Production Limited, opened the session on ethanol technologies.

Bothwell Batidzirai, Chinhoyi University of Technology, Zimbabwe, provided an overview of ethanol



L-R: Daniel Liwimbi, Ethanol Production Limited and Francis Johnson, Stockholm Environment Institute, Sweden

technologies and discussed challenges to promoting this type of energy in Africa. He noted that sugarcane-based ethanol can be produced cheaply in Africa and highlighted African initiatives, including existing ethanol blending programmes in Kenya, Malawi and Zimbabwe, new programmes in South Africa and Ethiopia, and a proposed partnership between Nigeria and Brazil. He noted that lessons learned from existing programmes include the importance of ongoing government support, the creation of public-private partnerships and sustained feedstock availability.

Francis Johnson, Stockholm Environment Institute, Sweden, noted his institute's work on the use of sugarcane and sweet sorghum for ethanol production, and provided an analysis of production and export potential in African regions. He highlighted high land availability and crop productivity in certain Southern African countries. He also said that the development of ethanol programmes requires multisectoral and multipurpose strategies, along with the use of the most productive feedstocks. Presenting global scenarios for ethanol blending by 2030, he suggested that the biofuels market could become competitive with the removal of international trade barriers.

In the ensuing discussion, one participant noted the need to identify crops and technologies suited to local conditions. Some participants questioned the likelihood of achieving an equitable distribution of benefits from biofuels when the concept of economies of scale encourages larger-scale production. One participant pointed to limitations with regard to the use of sorghum for ethanol production.

Reporting on the session's outcomes in plenary on Wednesday, Nogoye Thiam, environnement et développement du tiers-monde (ENDA), noted that participant's

recommendations for an action plan on ethanol development concerned building stakeholders' capacity, developing local expertise in technology, and establishing an expert network for promoting best practices. He said session participants also recommended, *inter alia*: focusing on domestic energy demands over exports; meeting needs in relation to both energy availability and rural development; creating inventories of biofuel technologies; considering the environmental impacts of such technologies; developing cogeneration plants; undertaking feasibility studies on potential competition between food and energy crops; and pricing biofuels appropriately.

**Biodiesel:** The session on biodiesel was chaired by Rainer Janssen, WIP, Germany.

Ibrahim Togola highlighted differences between pure plant oil and biodiesel technologies. He described the characteristics of pure plant oil development, including: the adaptation of an engine to the fuel; small, decentralized production; and low investment requirements. He explained that, in contrast, biodiesel requires adaptation of the fuel to the engine, centralized production and higher investments. He noted that biodiesel is not a solution for many countries and suggested pure plant oil production as most appropriate for the Sahel region. He stressed that, regardless of the technology used, a clear regulatory framework is needed. He also recommended the establishment of centers of excellence for sharing good practices and lessons learned.

Regarding pure plant oil processes, some participants discussed press size, outputs, costs and availabilities at the local level. Noting biodiesel is still at the experimental stage in Africa, one participant recommended establishing research centers where in-depth research on biodiesel can take place, while another suggested establishing facilities to exchange experiences.

Session Chair Janssen noted that there are advantages to both biodiesel and pure plant oil, and cautioned against comparing the two as they fulfill different needs. One participant said biodiesel should not be discredited on the continent before it is further developed, while another cautioned against promoting rural development at the expense of industrial development. Other



Rainer Janssen, WIP, Germany

recommendations included: investigating biofuel technologies and equipment already available in Africa; taking into account human rights issues when allocating land for biofuels; satisfying domestic consumption needs before exporting; establishing a fund to encourage biodiesel production; and developing policies to support small-scale biodiesel development.

In plenary on Wednesday, Chair Janssen reported on the session's outcomes, noting that discussions highlighted a similar approach to ethanol and biodiesel development. He presented participants' recommendations for the plan of action on biofuels' development in Africa, including:

- developing regional and national strategies and policies and appropriate financing tools to ensure the contribution of biofuels to economic development;

- harnessing opportunities presented by both biodiesel and straight vegetable oil at the village level, and the benefits offered by agro-industrial development for national consumption and future exports;
- assessing social and environmental impacts;
- performing research and development on, and maximizing the benefits of, the whole “value chain”; and
- establishing centers of excellence to disseminate information on crops, production methods and conversion technologies, in cooperation with UNIDO and AFREC.

**Biogas and Biomass Gasification:** Session Chair Pradeep Monga, UNIDO, noted that biomass gasification technology



L-R: Srinivasaiah Dasappa, Indian Institute of Science; John Afari-Idan, Biofuel Task Team Leader, African Roundtable on Sustainable Consumption and Production; and Graziano Bertogli, ICS-UNIDO

dates back to the 1940s, has had varied experiences worldwide, and has been commercialized mostly in India and China.

Srinivasaiah Dasappa, Indian Institute of Science, examined the potential

of biomass gasification in Africa, noting that it can replace existing oil-based electricity generation in remote communities without major capital investments, thus contributing to rural development and climate change mitigation. He identified several barriers to the wider application of this technology, including the lack of comprehensive data on: regional demand; existing fossil fuel-based power generation; and estimates of the region's biomass potential.

Graziano Bertogli, ICS-UNIDO, noted that while bioenergy production presents a promising opportunity for African countries, broader renewable energy options, such as geothermal energy, should also be considered. Noting that 70% of global water consumption occurs in the agricultural sector, he cautioned that biofuels may increase pressure on water resources, especially as biofuel crops are among the most water-intensive.

John Afari-Idan, Biofuel Task Team Leader, African Roundtable on Sustainable Consumption and Production, presented on the industrial application of biogas technology, highlighting Ghana's experiences in introducing this technology into the food, healthcare, hospitality and other sectors. Pointing to weaknesses in current waste management practices, he stressed the potential of biogas for generating energy, achieving better sanitation, reducing pollution and mitigating climate change. Noting that financing remains the greatest challenge, he called for increased stakeholder awareness, appropriate institutional frameworks, capacity building and secure IPRs.

During the discussion that followed, participants, *inter alia*, welcomed biomass gasification and biogas generation as promising technologies, discussed their application for meeting household energy needs and encouraged studies on Africa's market potential.

Presenting the session's recommendations in plenary on Wednesday, session Chair Monga noted that participants identified the need for: an enabling policy environment; incentives for technology and knowledge transfer; training

and capacity building, particularly regarding the maintenance of biofuels facilities; strengthened research and development; dedicated financial mechanisms; and information sharing on lessons learned and best practices.

**CROSS-CUTTING ISSUES: Policy and Regulatory Frameworks:** Ibrahima Konate, West African Economic and Monetary Union (UEMOA), chaired this session.

Jacques Molout, ECA, presented on policy and regulatory frameworks for biofuels development in Africa. He stressed the need to elaborate policies that reflect national and regional priorities, clarify the role of stakeholders, and develop implementation strategies. He suggested that policy and regulatory guidelines could: identify priority feedstocks; favor the usage of existing crops; provide safeguards for food security; set national consumption targets; promote small-scale production; remove barriers to national and international investments; and create incentives for private sector participation. He said future priority actions should include supporting policy makers at the national and regional levels, and organizing national dialogues on the opportunities and challenges of biofuels development.

In the ensuing discussion, participants suggested implementing a biofuels levy, enhancing private sector incentives, creating national institutional and consultative frameworks, and harnessing local funding and expertise.

Reporting on the session's recommendations in plenary on Wednesday, Jacques Molout noted that, in order to harness biofuels for poverty reduction and energy security, African policy makers should develop policies and regulations that are linked to national and subregional development visions. He also noted that policies should be targeted at poverty reduction, and at ensuring food security, economic and environmental sustainability, social equity and inclusiveness. He added that policies should: encourage the use of marginal lands; induce local transformation; promote research and development and technology transfer; include capacity building; and foster private sector participation.

**Environment and Sustainability:** The session on environment and sustainability was chaired by Yogesh Vyas, AfDB.

Maria Michela Morese, GBEP, emphasized the need to develop and harmonize sustainability principles for biofuels, cautioning that standards and certification schemes should not create unnecessary trade barriers.

Njeri Wamukonya, UNEP, highlighted the importance of recognizing subregional contexts in developing sustainability criteria, and discussed risks associated with biofuels production, including increased water demand, fertilizer use and the degradation of marginal lands.



Participants during the session on policy and regulatory frameworks





Panel on Environment and sustainability session. L-R: Stanford Mwakasonda, University of Cape Town; Rocio Diaz-Chavez, Imperial College London; Yogesh Vyas, AfDB; Njeri Wamukonya, UNEP; and Maria Michela Morese, GBEP

Rocio Diaz-Chavez, Imperial College London, briefed participants on European initiatives to develop sustainability criteria for biofuels, spearheaded by the UK, the Netherlands and Germany. She said that the proposed environmental sustainability criteria relate to biodiversity conservation, soil quality, water quantity, air pollution and greenhouse gas emissions reductions.

Stanford Mwakasonda, University of Cape Town, advocated: biofuels specialization based on a country's comparative advantage; integrating biofuels into existing sectoral policies; and developing regional programmes and initiatives that can withstand the "sustainable development test."

During the ensuing discussion, some participants voiced concerns about the possible imposition of standards and certification schemes by developed countries, and the unaffordability of such standards for small-scale farmers. Many participants called for a "home-grown" African certification approach that would recognize regional circumstances and capacity constraints. Some participants suggested drawing on the experience of certification in the flower industry. They further identified areas for future research, including available technologies for, and impacts associated with, various feedstocks. They also emphasized North-South and South-South cooperation.

In plenary on Wednesday, session Chair Vyas presented the participants' outcomes, noting consensus on the need for establishing a biofuels industry in Africa and developing policies and guidelines to ensure environmental sustainability and social equity. He also underscored the need for a comprehensive study on feedstocks, technologies, end-use applications, and environmental impacts before developing biofuels policies and guidelines, and said the group thought that UNIDO, UNEP, the FAO and the AfDB, among others, should lead such a process. On biofuel certification, he emphasized: the relevance of learning from international certification schemes in the forestry and agricultural sectors; considering the implications of certification schemes for small-scale farmers; and exercising continental political leadership in international negotiations.

**Financing and Investment:** Session Chair Kwadwo Asenso-Okyere, International Food Policy Research Institute, noted the need to focus on the economics of biofuels, especially with regard to small-scale farmers.

Ernest Tettey, AfDB, elaborated on the AfDB's financial products and key areas of intervention, including direct lending to private sector entities and loan syndication. Discussing loan types, such as floating and variable loans, he said that the payment period for AfDB loans is longer than that of commercial banks and that there is a "grace period" on

repayments. He also noted that the AfDB sometimes grants loans in local currencies. He elaborated on loan eligibility criteria, including the requirement that a qualifying company may be owned by a foreign enterprise but must also be established in Africa.

Participants discussed the preparedness of the AfDB to finance biofuels projects, particularly through start-up loans, alternative funding options and the financial risks associated with biofuels projects. Several participants urged greater private sector support by the AfDB, while others advocated financing options that address the concerns of small-scale farmers and poverty alleviation. Participants also discussed the need for regional leadership, given that financing challenges cannot be met by countries individually.

Recalling the Maputo Declaration on Energy Security and Sustainability in Africa, adopted by FEMA on 30 March 2007, and its provisions on increasing funds for agricultural development, session Chair Asenso-Okyere highlighted the role of the public sector in creating enabling environments and financing for biofuels development.

## PLENARY SESSIONS

**REGIONAL BIOFUELS ACTIVITIES:** On Wednesday, Lami Keun, Director of Energy, Senegal, chaired a plenary session on regional biofuels activities.

Nzola Mahungu, International Institute of Tropical Agriculture, presented on the NEPAD Pan-African Cassava Initiative (PACI), established in



Nzola Mahungu, International Institute of Tropical Agriculture

2004 to promote food security and income generation. He noted that PACI invests in cassava cultivation, primary processing and feedstock supply, and stressed that the overall objective of the initiative is to make cassava production sustainable and competitive for ethanol production in Africa. He underscored the role of the private sector in this area and the need for governments to create enabling conditions for private sector participation.

Mohamedain Seif-Elnasr, Common Market for Eastern and Southern Africa (COMESA), presented on COMESA programmes that relate to biofuels and other renewable energy sources. He noted large-scale ethanol programmes in Malawi and Swaziland, and biogas electricity generation in Kenya. Outlining the COMESA energy programme, he noted ongoing efforts to adopt a model energy framework for promoting biofuels and to develop guidelines for promoting investment in the renewable energy sector.

Mamadou Dianka, UEMOA, noted the subregion's dependence on oil imports and biomass, and UEMOA's common energy policy. He recommended, among other things, development of national policies and strategies based on resource availability, and adoption of a continental action plan focused on rural development and local entrepreneurship.

Stressing the need for an institutional framework to oversee biofuels development on the continent, Hussein Elhag, AFREC, outlined the concept of an African biofuels center. He said the center could be created as a subsidiary of AFREC and could seek to achieve sustainable energy security for Africa through establishing an integrated biofuels industry characterized by a consistent “value chain.” He added that the center’s proposed vision would be to create a pathway towards an African “green” alternative to the Organization of Petroleum Exporting Countries.

Pradeep Monga outlined a UNIDO initiative to establish an interregional bioenergy network, noting it could play a catalytic role in: information sharing; the linking of technological, trade, investment and environmental issues; and the promotion of interregional cooperation. He also noted that the network will initially focus on Africa, particularly on sharing industrial conversion technologies and information, and on addressing economic and sustainability issues.

Rex Brown, D1 Oil, Swaziland, presented on his company’s *jatropa* activities in Swaziland. He said that D1 Oil signed an agreement with the Swaziland Government and World Vision to provide alternative livelihoods for farmers through *jatropa* production. He elaborated on a number of related activities, including the development of superior *jatropa* varieties and the training of farmers.

#### **ACTION PLAN FOR BIOFUELS DEVELOPMENT**

**IN AFRICA:** In plenary on Wednesday, Stephen Karekezi presented a draft ten-year action plan for biofuels development in Africa. He explained that the plan’s priority sectors included ethanol, biomass gasification, biodiesel and cogeneration. He listed certain short- and long-term measures for various ecoregions, suggesting – in the case of wetland ecosystems – ethanol and cogeneration as short-term measures and biomass gasification and biodiesel as long-term measures.

He also identified a number of cross-cutting programme areas, namely, policy and institutional frameworks, financing mechanisms, resource assessments, capacity building and the strengthening of technical expertise. Highlighting potential outputs and indicators for monitoring progress on each of the cross-cutting areas, he suggested that for policy and institutional frameworks, technical policy studies should be produced as outputs, with the number of countries establishing supportive policy measures acting as an indicator.

Elaborating on immediate priorities, he recommended that countries focus on proven options relating to existing agro-industries, undertake regular resource assessments, encourage the exchange of technical skills nationally and internationally, build a platform for implementing a regional biofuels network, and establish centers of excellence for bioenergy.

Commenting on the proposed action plan, Guinea noted the need for better research and development of biofuel crop varieties and the need to include agriculture and environment ministers in biofuels discussions. The action plan was agreed with this amendment and subsequently annexed to the Ministerial Declaration, discussed below.

#### **MINISTERIAL ROUNDTABLE**

Held on Wednesday afternoon, the Ministerial Roundtable was chaired by Michael Nyambuya, Minister of Energy and Power Development, Zimbabwe, who noted that the seminar had helped to identify the current status of biofuels development in Africa and practical ways forward for non-oil producing countries.

Ato Alemayehu Tegenu, Minister of Energy and Mines, Ethiopia, noted that world oil prices are no longer affordable for his country, and urged a “fast-track” approach to biofuels development on the continent.

Angelina Jan Teny, State Minister of Energy, Sudan, emphasized that the establishment of a sustainable biofuels industry in developing countries would not be a luxury, but a tangible contribution to poverty reduction. Noting that while Sudan is a major oil producer, only 30% of its population has access to electricity, she called for African countries to avoid the pitfalls of Africa’s experience with the oil industry by becoming a part of the “global biofuels equation.”

Mahmoud Camara, Minister of Agriculture, Livestock, Environment, Water and Forests, Guinea, noted that the principal objective of biofuels development should be to improve the livelihoods of the rural poor, which he said account for 60% of his country’s population. He stressed the need to ensure that Africa’s resources are exploited to the benefit of its population and to satisfy domestic demand for biofuels before entering international markets.

Following these comments, roundtable Chair Nyambuya presented the conclusions of the Ministerial Roundtable discussions, entitled “Sustainable Biofuels Development in Africa: Opportunities and Challenges.” He noted recommendations relating to: the coordinating role of the AU; government leadership; support for an African biofuels partnership; investment incentives; the establishment of a biofuels fund; technological assessments; information exchange; synergies between African and international initiatives; food security and environmental issues; and certification and sustainability concerns.

Brazil suggested there was a lack of consensus on the development of certification measures, contending that such measures might result in cumbersome and costly schemes that would jeopardize the development of an African biofuels industry. Sudan and others highlighted the importance of sustainability issues and proposed referring to national, rather than global, certification schemes. Delegates agreed to the conclusions with these amendments.

Philippe Niyongabo then presented the draft Addis Ababa Declaration on Sustainable Biofuels Development in Africa. Commenting on the draft declaration, Brazil suggested referring to the need to stimulate private sector participation and access to international markets, emphasizing its readiness to cooperate with Africa on biofuels development. Supporting the



Philippe Niyongabo, Directorate of Infrastructure and Energy, AUC

declaration, Mozambique suggested referring to the Brazilian experience in the document. Senegal called for conducting an inventory of local crop varieties and improving them for biofuels development. Guinea proposed the insertion of an annex containing a list of biofuel crop varieties and their yields, costs and benefits. The Democratic Republic of Congo called for the establishment of a regional consultative



framework for biofuels development, consideration of biofuels by all research institutes and UNIDO's support for biofuels-related activities.

The declaration was adopted following these comments.

**Addis Ababa Declaration:** In the Addis Ababa Declaration on Sustainable Biofuels Development in Africa, the preamble notes that biofuels development is an important priority for Africa, given increasing oil prices, agricultural and trade policy reforms, local and global environmental challenges, and the availability of new technologies.

The declaration calls for, *inter alia*:

- developing enabling policy and regulatory frameworks, linked to overall development policies, that promote equity, participation, local consumption and energy security;
- integrating biofuels in broad energy-related frameworks;
- taking the lead on biofuels research and development aspects relevant to Africa;
- harmonizing national biofuels policies and standards through the regional economic communities;
- increasing stakeholder capacity;
- participating in global sustainability discussions and preparing guiding principles on biofuels to enable Africa to compete internationally;
- engaging public financing institutions to support biofuels development;
- engaging development partners to enable North-South and South-South cooperation;
- minimizing the risks for small-scale producers in captive markets;
- formalizing the organization of similar high-level seminars at continental and regional levels; and
- establishing a forum to promote access to information relating to best practices, technology transfer and investments.

Through the declaration, African ministers also commit to implementing the identified priority actions on biofuels and request the AU to present the declaration to upcoming ministerial conferences on sectors relevant to biofuels.

**Action Plan:** The declaration also contains an Action Plan for Biofuels Development in Africa, which covers a ten-year period. The action plan is based on an ecoregional approach, and encompasses the development of ethanol, biodiesel, biogas, biomass gasification, and cogeneration as priority sectors.

The action plan also contains a number of cross-cutting programme areas, including policy and institutional frameworks, financing mechanisms, resource assessments, capacity building and strengthening technical expertise. The action plan proposes outputs and indicators for monitoring progress in these cross-cutting areas. Immediate priority areas identified in the action plan include: a focus on proven options relating to existing agro-industries; regular resource assessments; and the establishment of a regional biofuels network.

### CLOSING SESSION

Heinz Leuenberger thanked participants for their contributions, emphasized UNIDO's commitment to supporting biofuels development, and expressed hope that the second high-level seminar on biofuels would be held in Africa in 2009.

Antonio Simões, Ministry of Foreign Affairs, Brazil, acknowledged the seminar as an important first step toward making biofuels a reality in Africa, and noted that much work remains to be done.

AU Commissioner Bernard Zoba thanked ministers, AU member states and other participants for the quality of work carried out. He noted that the seminar helped to identify social, economic and environmental concerns regarding biofuels development in Africa, and to formulate guidance for an African vision for biofuels



AU Commissioner for Infrastructure and Energy, Bernard Zoba (Republic of Congo)

policies and strategies. He pledged the AU's support for the sustainable development of biofuels in Africa, in cooperation with international organizations and leading biofuel-producing countries, and closed the meeting at 5:11 pm.

### UPCOMING MEETINGS

**UNCCD COP-8:** The eighth meeting of the Conference of the Parties (COP-8) to the UNCCD will take place from 3-14 September 2007, in Madrid, Spain. COP-8 will consider, *inter alia*: the 2008-2009 programme and budget; a review of the implementation of the Convention; the promotion of relationships with other relevant organizations; and a review of the 2006 International Year of Deserts and Desertification activities. For more information, contact: UNCCD Secretariat; tel: +49-228-815-2800; fax: +49-228-815-2898; e-mail: [secretariat@unccd.int](mailto:secretariat@unccd.int); internet: <http://www.unccd.int/cop/cop8/menu.php>

**ISES SOLAR WORLD CONGRESS 2007:** The International Solar Energy Society (ISES) Solar World Congress will be held from 18-21 September 2007, in Beijing, China, and will focus on, *inter alia*: solar energy use in buildings; solar collector and energy storage technologies; solar thermal systems; solar energy and society; and solar cities. For more information, contact: Zhen Yingjun, SWC2007 Secretariat; tel: +86-10-6218-0145/6255-1665; fax: +86-10-6218-0142/6256-0904; e-mail: [registrar@swc2007.cn](mailto:registrar@swc2007.cn), [paper@swc2007.cn](mailto:paper@swc2007.cn), [exhibiter@swc2007.cn](mailto:exhibiter@swc2007.cn); internet: <http://www.swc2007.cn/english/indexEn.htm>

**HIGH-LEVEL DIALOGUE ON FINANCING FOR DEVELOPMENT:** This meeting will take place from 22-23 October 2007, at UN headquarters in New York, United States. Pursuant to UN General Assembly resolution 61/191, this dialogue will be held in accordance with the modalities used at the 2005 High-level Dialogue. For more information, contact: FFD Secretariat; tel: +1-212-963-2587; fax: +1-212-963-0443; e-mail: [ffd@un.org](mailto:ffd@un.org); internet: <http://www.un.org/esa/ffd/>

**CSD REGIONAL IMPLEMENTATION MEETING FOR AFRICA:** Organized by the ECA, this meeting will take place from 22-25 October 2007, in Addis Ababa, Ethiopia. Participants will prepare for the sixteenth session of the UN Commission on Sustainable Development (CSD-16). For more information, contact: Josué Dioné, ECA; tel: +251-11-544-3547; fax: +251-11-551-0350; e-mail: [jdione@uneca.org](mailto:jdione@uneca.org); internet: <http://www.uneca.org>

**SECOND ANNUAL BIOFUELS MARKETS AFRICA CONFERENCE:** This conference will be held from 5-6 November 2007, in Cape Town, South Africa, and will address strategies to develop biofuel business opportunities in Africa, including regulation policies, investment opportunities, success

stories and next generation technologies. For more information, contact: Annie Ellis, Conference Secretariat; tel: +44-207-801-6333; e-mail: annie.ellis@greenpowerconferences.com; internet: [http://www.greenpowerconferences.com/general/event\\_listings.html](http://www.greenpowerconferences.com/general/event_listings.html)

#### **AFRICAN ENERGY COMMISSION MEETING:**

This meeting is taking place from 6-7 November 2007, in Algiers, Algeria, and is being organized by the AUC. For more information, contact: Philippe Niyongabo, Department of Infrastructure and Energy, AUC; tel: +251-11-551-9310; fax: +251-11-551-0290; e-mail: niyongabop@africa-union.org; internet: <http://www.africa-union.org>

**TWENTIETH WORLD ENERGY CONGRESS:** This meeting will be held from 11-15 November 2007, in Rome, Italy. Taking place under the theme of "The Energy Future in an Interdependent World," the twentieth World Energy Congress will focus on social issues that developing and emerging countries face in relation to the international energy market, and sustainable progress for industrialized countries. For more information, contact: The World Energy Council; tel: +44-20-7734-5996; fax: +44-20-7734-5926; e-mail: [info@worldenergy.org](mailto:info@worldenergy.org); internet: <http://www.worldenergy.org>

**REGIONAL WORKSHOP ON SUSTAINABLE BIOFUELS PRODUCTION AND USE IN CENTRAL AND EASTERN EUROPE:** This meeting will be held from 12-13 November 2007, in Dubrovnik, Croatia, and is being organized by UNIDO. For more information, contact: Pradeep Monga, UNIDO Secretariat; tel: +43-1-26026-3018; fax: +43-1-26026-6855; e-mail: [p.monga@unido.org](mailto:p.monga@unido.org); internet: <http://unido.org/en/doc/69350>

**UNFCCC COP 13 AND COP/MOP 3:** The thirteenth Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 13) and the third Meeting of the Parties to the Kyoto Protocol (COP/MOP 3) will take place from 3-14 December 2007, in Bali, Indonesia. It is expected that COP 13 and COP/MOP 3 will be accompanied by a UNFCCC Dialogue on Long-Term Cooperative Action on Climate Change and various other events. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: [secretariat@unfccc.int](mailto:secretariat@unfccc.int); internet: [http://www.unfccc.int/meetings/cop\\_13/items/4049.php](http://www.unfccc.int/meetings/cop_13/items/4049.php)

**GCSS-10/GMEF:** The tenth Special Session of the UNEP Governing Council and Global Ministerial Environment Forum will take place from 20-22 February 2008, in Monaco. For more information, contact: Beverly Miller, Secretary of the UNEP Governing Council; tel: +254-20-7623411; fax: +254-20-7623929; e-mail: [beverly.miller@unep.org](mailto:beverly.miller@unep.org); internet: <http://www.unep.org>

**RENEWABLE ENERGY CONFERENCE FOR AFRICA:** This meeting is tentatively scheduled to take place in February 2008 in Dakar, Senegal. For more information, contact: Pradeep Monga, UNIDO Secretariat; tel: +43-1-26026-3018; fax: +43-1-26026-6855; e-mail: [p.monga@unido.org](mailto:p.monga@unido.org); internet: <http://www.unido.org>

**CSD-16:** The sixteenth session of the CSD will be held from 5-16 May 2008, at UN headquarters in New York, United States, and will focus on agriculture, rural development, land, drought, desertification and Africa. For more information, contact: DESA Secretariat; tel: +1-212-963-8102; fax: +1-212-963-4260; e-mail: [dsd@un.org](mailto:dsd@un.org); internet: <http://www.un.org/esa/sustdev/csd>

**CBD COP-9:** The ninth Conference of the Parties (COP-9) to the Convention on Biological Diversity (CBD) will be held from 19-30 May 2008, in Bonn, Germany. For more information, contact: CBD Secretariat; tel: +1-514-288-2220; fax: +1-514-288-6588; e-mail: [secretariat@biodiv.org](mailto:secretariat@biodiv.org); internet: <http://www.biodiv.org/meetings/default.shtml>

**GLOBAL RENEWABLE ENERGY CONFERENCE:** This meeting is tentatively scheduled to take place in May 2008, in Brazil. For more information, contact: Pradeep Monga, UNIDO Secretariat; tel: +43-1-26026-3018; fax: +43-1-26026-6855; e-mail: [p.monga@unido.org](mailto:p.monga@unido.org); internet: <http://www.unido.org>

## LIST OF ABBREVIATIONS

AEC	African Economic Community
AfDB	African Development Bank
AFREC	African Energy Commission
AUC	African Union Commission
AU	African Union
COMESA	Common Market for Eastern and Southern Africa
CPA	Consolidated Plan of Action
ECA	Economic Commission for Africa (UN)
FEMA	Forum of Energy Ministers of Africa
FAO	Food and Agriculture Organization (UN)
GBEP	Global Bioenergy Partnership (FAO)
JPOI	Johannesburg Plan of Implementation
ICS-UNIDO	International Center for Science UNIDO
IPRs	Intellectual Property Rights
MDGs	Millennium Development Goals
NEPAD	New Partnership for Africa's Development
OAU	Organization of African Unity
UNCCD	UN Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEA	UN-Energy/Africa
UNIDO	United Nations Industrial Development Organization
UEMOA	West African Economic and Monetary Union



Group photo of heads of delegations