

**3rd meeting of the GBEP Working Group on Capacity Building
for Sustainable Bioenergy (WGCB)
Rome, FAO Headquarter, 16 November 2012**

Co-Chairs Conclusions

Background

The GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB) held its 3rd meeting on 16 November 2012 in Rome, FAO Headquarters. Argentina, Brazil, Denmark, Egypt, France, Gambia, Germany, Ghana, Indonesia, Italy, Japan, Netherlands, Paraguay, Spain, Sweden, Switzerland, United States of America, Viet Nam, ECOWAS, FAO, IRENA, OAS, UN Foundation, UNEP and the World Bank participated in the meeting as Partners and Observers. Representatives of the ECOWAS region, specifically from Benin, Cape Verde, Cote d'Ivoire, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone and Togo also participated as special guests. The meeting was co-chaired by The Netherlands and the United States of America.

The meeting of the 3rd Working Group on Capacity Building for Sustainable Bioenergy (WGCB) was preceded by the following related events:

- **12 November 2012 (afternoon)**
Field Trip at the “Azienda Agricola Maccaresse”, kindly hosted by the National Institute for Agricultural Economics (INEA), Italy. The “Azienda Agricola Maccaresse” was built in 2010. The biogas plant began to supply electricity to the national grid as of 1st October 2010. With an installed power of 625 Kw it is capable to generate 4.500.000 Kw/h per year. Anaerobic digestion takes place in two insulated concrete tanks having a diameter of 24 meters (80 feet) and a height of 9 meters (30 feet). The digesters are fed with cattle manure to a rate of 130 m³/day and silage to a rate of 22 t/day. The plant is equipped with a desulphurizer, a gas flare for fugitive gas, and an automated feedstock hopper system for the silage and the biogas is fed to a Jenbacher gas engine. The residual slurry (digestate) is employed on farm as fertilizer and soil amendment.
- **13-14 November 2012**
ECOWAS-GBEP Regional Biomass Resource Assessment Workshop (Activity Group 1). Summary in Annex I.
- **15 November 2012 (morning)**
Workshop on “Raising awareness, and sharing of data and experience on the implementation of the GBEP indicators” (Activity Group 2). Summary in Annex II.
- **15 November 2012 (afternoon)**
Workshop on “Study Tour for capacity building and training” (Activity Group 3). Summary in Annex III.

Discussions on Activity Groups

Activity Group 1 - “Regional Forums/Workshops on Sustainable Modern Bioenergy”

ECOWAS and USA, co-leaders of the second activity of Activity Group 1, updated the Working Group on the results of the second activity focused on the 15 Member States of ECOWAS.

- ✓ The ECOWAS-GBEP Regional Biomass Resource Assessment workshop took place in Rome on 13–14 November 2012. It was organized by the Global Bioenergy Partnership (GBEP) in cooperation with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), and with the support of the Government of the United States of America. It represented the follow-up to the Regional Forum held in Bamako, last March, that contributed to initiate a regional dialogue to support the development of regional and national bioenergy strategies. In that context participants identified biomass resource assessment and mapping as an essential first step, and the Rome workshop aimed at discussing these themes into details in order to further facilitate effective policy planning for a sustainable bioenergy sector in the region.

The workshop in Rome brought together around 80 representatives of the Ministries of Energy and Agriculture of the ECOWAS Member States, together with GBEP Partners and Observers, as well as regional and international organizations, academia, business and civil society representatives active in the region, in the field of bioenergy. It was highlighted that in some ECOWAS countries resource assessment and mapping was done 20 – 30 years ago and that an harmonization and shifting to modern standards is very important. It was recognized the need for a stepwise approach to the issue of resource assessment, given the complexity of the topic and the specific conditions of the ECOWAS region.

The Working Group highly appreciated the results of the Rome workshop. The need to involve regional banks to follow-up on the recommendation of the workshop, as well as the request to extend future related GBEP activities to other regions - Latin America was explicitly mentioned - were stressed by participants.

Activity Group 2 - “Raising awareness, and sharing of data and experience on the implementation of the GBEP indicators”

Germany and Indonesia, co-leaders of Activity Group 2 updated the Working Group on the results of the workshop held the day before.

- ✓ The workshop gave the opportunity to share very interesting experiences and lessons learned from the pilot testing of the GBEP indicators in some countries: Ghana, Germany, Indonesia and Colombia. In the workshop it was stressed how indicators are useful tools to catalyze flow of data from the bioenergy sector to research and government, that will then use it to develop policies to guide the industry practices. Simplification of indicators may be needed, but as such GBEP indicators were considered an extremely useful tool to facilitate the sustainable development of bioenergy, and their further implementation in many more countries was strongly suggested, also with the involvement of the private sector.

The Working Group highly appreciated the results of the workshop. The Working Group invited participants to make best use of the *discussion forum* available on the GBEP website as a powerful tool for sharing data and experiences on the implementation of the indicators. The further development of the *data platform* on the GBEP website was also highlighted, in order to store relevant documents for the activity group to be provided by Partners and

Observers. One Partner proactively committed to develop a review of the experiences and lessons learned from the implementation of GBEP indicators in several countries to date.

Activity Group 3 - “Study Tour for capacity building and training”

Brazil, leader of Activity Group 3, updated the Working Group on the results of the workshop, held in Rome the day before, to initiate an exchange of information on sustainable bioenergy experiences, in preparation of the “study tour/bioenergy week” to be held in Brasilia on 11-15 March 2013. The study tour will consist of short training courses analyzing technical and public policy aspects of bioenergy development, in line with GBEP 24 indicators of sustainability. Bioenergy technology and knowhow will be shared through fieldtrips to biodiesel and bioethanol plants.

- ✓ During the Rome preparatory workshop experiences from Brazil (leading Partner) and FAO (hosting organization of the workshop) were presented to give an initial overview of strong experiences already available to facilitate the sustainable development of bioenergy around the world.

The Working Group supported the establishment of the Activity Group 3 and appreciated the work done to stimulate discussion and exchange of views. Participants were invited to contribute with comments and suggestions on themes to be discussed during the study tour, as well as indication of potential speakers sharing experiences and lessons learned on the sustainable development of bioenergy around the world, towards the development of the agenda for the “bioenergy week”.

New Activity Groups

Activity Group 4 – “Towards sustainable modern wood energy development”

FAO, who developed a draft scope of work for this new Activity Group in cooperation with UNEP and the UN Foundation, gave a brief overview of the complexity of the focus of the Activity Group 4, highlighting the importance to further discuss the followings:

- traditional use of woody biomass; and
- the use of woody biomass for large-scale modern bioenergy.

The Working Group appreciated the initial discussion on these important themes; highlighted the importance of involving the private sector in these discussions; and invited participants to submit comments and suggestions on the focus of this new Activity Group in order to finalize its scope of work. These comments will be channelled to FAO, UNEP and the UN Foundation, as proposing Partners, for further review and submission to the next WGCB. In view of this, the co-Chairs informed the Working Group of the recent expression of interest of the Global Alliance for Clean Cookstoves (GACC) to collaborate with GBEP on capacity building related activities, including scaling up sustainable production of biomass-based fuels for cooking, incorporating women entrepreneurs in the fuels value chain and reaching the last mile for distribution.

Activity Group 5 – “The Global Renewable Energy Atlas”

IRENA presented the draft scope of work of the proposed Activity Group 5. The main outcome of the proposed Activity Group would be the development of a single joint platform providing free and open access to the most advanced datasets and tools, to help countries willing to initiate the assessment of their renewable potentials. The Internet-based platform would be designed to raise awareness of technology opportunities, to limit the financial risk for countries willing to investigate their technical potentials further, and for companies willing to invest in a new market. To this end, it would provide high quality resource maps from leading technical institutes worldwide, and simplified models for evaluating the technical

information. The ambition for this platform is to become a repository for high quality renewable energy resource data and a catalyst to trigger planning, policy development and attract investors in emerging and new renewable energy markets.

The Activity Group would contribute to overall objectives of the Working Group on Capacity Building for Sustainable Bioenergy, by providing a platform primarily for identifying and disseminating information about existing tools and resources available from both the public and private sources and facilitating appropriate linkages between them. The Activity Group would in addition identify opportunities for the Global Renewable Energy Atlas to share information, stimulate discussion, and identify opportunities for cooperation on sustainable bioenergy development and deployment.

The Working Group appreciated the initial discussion on this interesting proposal and recommended more discussion in order to better define the scope and timeline of the work to be done, as well as methodologies currently available to be used as a basis of the work. To this end, participants were invited to send suggestions and comments on the draft scope of work to the GBEP Secretariat that will work in cooperation with IRENA and WGCB co-chairs in order to develop a revised version to be submitted to the next WGCB meeting.

Communication Strategy

The Co-Chairs introduced a background paper developed with the main objectives of strengthening GBEP communication activities, further raising its profile, and strengthening GBEP relationships with other international institutions to streamline common activities and consequently maximise their efficiency and effectiveness.

The Working Group appreciated the paper and congratulated the GBEP Secretariat for the list of tools currently used to give visibility to the GBEP work, reaching a diverse range of target audience. The following new tools were particularly highlighted by participants during the discussion: the need to consider translations for printed GBEP reports; and the use of social media tools (like facebook and twitter); and the use of electronic media, such as CD-ROMs and thumb/flash drives in lieu of printed materials. These tools have budgetary implications and in light of this Partners and Observers were invited to support the GBEP Secretariat both financially or with in-kind contributions. Participants also highlighted the importance of a stronger interaction with private sector and civil society stakeholders. On this, it was recognized that organizing discussion/consultation sessions back to back to international conferences or business events would be very effective. Partners and Observers were also invited to contribute to the GBEP communication strategy by taking the lead to communicate GBEP nationally and internationally. In light of this fruitful discussion, participants were invited to send suggestions and comments on how to strengthen the GBEP communication, including expression of support both financially and in-kind (secondment of staff to the GBEP Secretariat based in FAO was specifically mentioned).

Conclusions and next steps

- ✓ *Establishment of Activity Group 3 to be recommended to the Steering Committee.*
- ✓ *E-group discussions of Activity Groups 1, 2 and 3 to continue.* Make best use of the *discussion forum* available on the GBEP website for the Activity Group 2 was particularly stressed. A cooperative work to further populate the *data platform* available on the GBEP website and related to the work of the Activity Groups was also highlighted.

- ✓ ***By 7 December 2012 – Provide the GBEP Secretariat with contributions on the followings:***
 - Agenda of the “Study tour/Bioenergy week” to take place in Embrapa Agroenergy, in Brasilia, from 11 to 15 March 2013 (Activity Group 3). Suggestions on themes to be discussed during the “Study tour/Bioenergy week”, as well as indication of potential speakers sharing experiences and lessons learned on the sustainable development of bioenergy around the world were kindly requested;
 - Activity Group 4 “Towards sustainable modern wood energy development”. Suggestions and comments on the focus of this Activity Group (traditional wood use and woody biomass for large scale modern bioenergy) were kindly requested;
 - Scope of work of the Activity Group 5 “The Global Renewable Energy Atlas – Biomass Component”. Suggestions and comments on the scope of work of this Activity Group were kindly requested.
 - Communication strategy. Suggestions and comments on the background paper, including expression of support both financially and in-kind (through secondment of staff to the GBEP Secretariat based in FAO Headquarters) were kindly invited.
- ✓ ***Next GBEP regular meetings, including the 4th WGCB, will be held on 28-31 May 2013 in Berlin, kindly hosted by the Government of Germany.*** The GBEP Secretariat will circulate further details in due time.

GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB)

Activity Group 1 - Workshop ECOWAS - GBEP Regional Biomass Resource Assessment Rome, FAO Headquarter, 13-14 November 2012

Background

The ECOWAS-GBEP Regional Biomass Resource Assessment workshop took place in Rome on 13–14 November 2012. It was organized by the Global Bioenergy Partnership (GBEP) in cooperation with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), and with the support of the Government of the United States of America.

It represented the follow-up to the Regional Forum held in Bamako, last March, that contributed to initiate a regional dialogue to support the development of regional and national bioenergy strategies. In that context participants identified biomass resource assessment and mapping as an essential first step, and the Rome workshop aimed at discussing these themes into details in order to further facilitate effective policy planning for a sustainable bioenergy sector in the region.

In order to promote biomass resource mapping in the ECOWAS region the workshop included discussions of the following technical topics:

- 1) Methodological framework for resource assessment and mapping of environmental, social and economic resources, and calculations of total available biomass; and
- 2) Cataloguing and sharing experiences to date related to biomass use, existing resource maps, and socio-economic conditions, including methods for the allocation and tenure of land.

The workshop brought together representatives of the Ministries of Energy and Agriculture of the ECOWAS Member States, together with GBEP Partners and Observers, as well as regional and international organizations, academia, business and civil society representatives active in the region, in the field of bioenergy.

Presentations and discussions

The opening messages of the workshop were delivered by the Executive Director of ECREEE, Mr. Mahama Kappiah, the Executive Secretary of GBEP, Dr. Michela Morese, and the representative of the government of the United States of America, Dr. Gerard J. Ostheimer, all of whom highlighted the commitment of their institutions to act as a catalysts for the development of biomass resource assessment in West Africa.

During the first session of the workshop, experts from the United States of America, the Netherlands, Brazil and Senegal presented and discussed the state-of-the-art in the field of biomass resource assessment. During the highly interactive Q&A session that followed this session on cutting edge technology for biomass resource assessment, the need for a simple, harmonized tool that serves as a useful model to be applied to all countries emerged, not only for ECOWAS but worldwide, for the assessment of the biomass resource availability in a given moment. On this item, the co-chairs mentioned the interest of GBEP in exploring the possibility to work together with IRENA (International Renewable Energy Agency) towards

the development of a global harmonized atlas for bioenergy. Another important aspect that emerged during this first phase of the workshop was the necessity to obtain high resolution data because, especially in West Africa, often this type of data is missing.

Representatives of the ECOWAS countries gave brief presentations of their countries' efforts to assess biomass availability domestically. The main findings of this interesting set of presentations were:

- the ECOWAS countries, because of cultural and historic reasons, on average rely heavily (up to 90% of their primary energy consumption) on wood-fuel for their energy supply;
- the energy conversion is very inefficient and releases large amounts of pollutants to which women and children are highly exposed (traditional cook stoves);
- the high wood-fuel consumption has led to deforestation, soil degradation and other environmental issues over large extension of many ECOWAS countries;
- policies concerning sustainable bioenergy in the ECOWAS region are beginning to appear (Regional Strategy on Bioenergy developed during the Bamako Forum was formally adopted in the ECOWAS Ministerial meeting during the first week of November);
- reliable future projections of biomass availability are needed;
- assessment has to be done with harmonized systems; and
- food security is a key issue in the region, strictly connected with biomass availability.

The second day of the workshop presented sessions geared at understanding the technical aspects of biomass assessment through an in-depth description of available tools such as WISDOM and other GIS based applications, as well as the importance of ground-truthing and data verification. Many powerful tools used by international experts are freely available online (Landsat; Google Earth, etc) but the level of expertise required for their application to biomass assessment studies is high. However, some international organization provide free tools for bioenergy assessment. FAO's Bioenergy and Food Security project presented the online operator tool for food security assessment and guided the participants through the use of this preliminary assessment tool.

Conclusions

The conclusions of the workshop were made by the chairpersons, Mr. Raffi Balian (U.S. Department of State) and Mr. Bah Saho (ECOWAS – ECREEE), with the contribution of many participants and international experts present.

An important conclusion of this fruitful workshop discussion was the recognition of the need for a stepwise approach to the issue of resource assessment, given the complexity of the topic and the specific conditions of the ECOWAS region.

Proposed next steps:

1. creation of a regional network of institutions to increase capacity and facilitate the bioenergy promotion in the ECOWAS region. This network will also serve as focal point for any future GBEP activity in the region;
2. at the national level, creation of a network of private sector and civil society stakeholders that are already working in bioenergy related matters, in order to create a reference list;
3. ECREEE to compile a matrix of info provided during the presentations related to the ECOWAS region on availability of resources, mapping, and contribution of bioenergy into the energy mix. This compilation will then be discussed and analyzed in the GBEP context;

4. gaps eventually highlighted in the matrix above will be discussed to find solutions;
5. additional data collection could be decided if deemed necessary;
6. compilation of best practices in the region, to be shared within the ECOWAS region. A powerful capacity building activity should begin with regular information exchange among the group members;
7. initiate a discussion with GBEP to identify financial opportunities to increase the collection of data for more accurate resource assessments;
8. need to attract business driven investments in the bioenergy sector as the ultimate step to help address the energy gap in the region. GBEP and ECOWAS have contributed to enable environment and attract investments in the region as an important driver of development. In the ECOWAS region there are several pilot scale projects on bioenergy that have demonstrated a potential under many points of view, however, further steps are necessary to upscale those successful stories to a level where many more people could benefit from them; and
9. compilation of a matrix of tools and methodologies on resource assessment and mapping and also for decision making for investments in bioenergy. The matrix would be prepared with the support of the GBEP Partners, cataloguing for each tool and methodology its potential use, applications, benefits and limitations for sharing with the ECOWAS member states.

The representatives of all ECOWAS countries were called to take leadership in their role of ambassadors of sustainable bioenergy as a means to foster energy access and food security, and improve health condition for their citizens. Their action as catalysts of the change in the energy sector of the ECOWAS region is fundamental for achieving the goals of the Sustainable Energy for All initiative.

ECREEE expressed the need to develop capacities of the member states in various disciplines of bioenergy at both professional and academic/research levels. In this vein, a special programme on training and capacity building was requested to be elaborated by GBEP for the ECOWAS member states.

GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB)

Activity Group 2 - Workshop

“Raising awareness and sharing of data and experiences from the implementation of the GBEP indicators”

Rome, FAO Headquarter, 15 November 2012

The Co-leaders, Mr. Horst Fehrenbach from Germany and Mrs. Maritje Hutapea from Indonesia, welcomed the participants and introduced the panelists of the session.

The pilot testing of the GBEP indicators is currently being performed in several countries. The cases of Ghana, Germany, Indonesia and Colombia were presented during the workshop.

In Ghana, 11 GBEP indicators out of the 24 were chosen due to financial constraints. The accomplishment of the assessment has been defined as very relevant to Ghana because it produced baseline values and information to understand how to go forward and improve the bioenergy sector of the West African country. This study also highlighted some limitations of testing the GBEP indicators in a country like Ghana: most of the data were collected from one time studies and it was clear that the indicators need to be monitored over a rather long period of time. The methodology was found to be not readily applicable for all indicators given the data available, and methodological tailoring therefore necessary. The information gained thanks to the measuring of the GBEP indicators were very valuable. The government of Ghana, in fact, continues to explore ways to find resources for the measurement of all 24 indicators in the near future.

The panelist from Germany described how the team of researchers will measure all 24 indicators with the highest degree of accuracy possible. In 2012, 8 over 24 indicators were measured while the remaining indicators will be measured in the next two years (2013-2014). The lessons learned from this exercise are felt to be extremely important for the sustainable development of the bioenergy sector in the country. The in-depth study of the indicators under the environmental pillar concerned the assessment of the bioenergy subdivision (liquid, gaseous, or solid biomass) and the ratio between import and export of biomass. Major efforts are being put into the measurement of indicator 1, GHG LCA. Preliminary results have shown that solid biomass, among all forms of biomass produced and employed in Germany, saves the most of the GHG emission for both heat and for electricity generation. It was then possible to estimate the net GHG saving from bioenergy for Germany which is 54 million tons of equivalent CO₂ per year. This data excludes indirect land use change factors, as these are still being calculated.

In Indonesia the testing of the indicators is in the proximity of its conclusion. The presenter highlighted that all the 24 indicators were measured, however discussion was emphasized on 6 indicators, 2 under each pillar. It was possible to draw several interesting policy recommendations. Under the environmental pillar, recommendations stressed the need for further research and mapping of low carbon stocks areas since it is expected that there will be future development of bioenergy plantations, and these area should be preferred over peat soils. Peat soils, in fact, are recommended to be considered as last resort for new bioenergy activities and even in this case Indonesia requires to strengthen efforts for the accurate

mapping of these areas. Lastly, the Virgin Forest and peatland conversion moratorium is recommended to continue in order to protect these fundamental high biodiversity and carbon stock areas.

Recommendation concerning the social aspects of sustainable development targeted the reduction of land conflicts, the need to map the land use rights and the need to promote stronger awareness regarding land use rights in order to enhance indigenous people's livelihood. The economic recommendations highlighted the need for extensive involvement of the private sector in order to increase representativeness of the assessment. Moreover, in order to increase competitiveness of the bioenergy sector for the domestic market, subsidies on fossil fuels are recommended to gradually be reduced to zero.

The status of the pilot testing of the GBEP Indicators in Colombia was also presented. It was reported that stakeholder's engagement on this project is very high. The private sector, and its referent ministries, are very careful with the disclosure of information related to bioenergy because of the presence of high competition within this sector in Colombia. Furthermore, a national regulation prevents private sector associations from disclosing data that could alter the competitiveness of the industry at national and/or international level. However, because at the national scale the private sector has the most comprehensive data available at the moment, the need to include their knowledge into the project became evident in order to obtain valuable data for all 24 indicators at country level. This obstacle is intended to be overcome through a confidentiality agreement.

An interesting comparison on the different approaches to measure indicators in Colombia and Indonesia was also presented. In Colombia the team of consultants began to collect in-depth information solely for those indicators not restricted by the competitiveness law. This approach highlighted, for the first time, this necessary condition when existing laws and policies that limit the collection of data for certain indicators.

In the closing remarks, the Co-chairs recognized the importance of involving the private sector for the successful measurement of the indicators and the fundamental role that these will have in shaping the bioenergy policies of those countries that have measured them.

The Co-chairs also invited GBEP Partners and Observers to make best use of the discussion forum available on the GBEP website as a powerful tool for sharing data and experiences on the implementation of the indicators.

GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB)

Activity Group 3 - Workshop Study tour for capacity building and training Rome, FAO Headquarter, 15 November 2012

Amb. Mariangela Rebuá, Director of the Ministry of External Relations of Brazil, leader of this Activity Group, welcomed the participants and highlighted the importance to initiate an exchange of information on sustainable bioenergy experiences, in preparation of the “study tour/bioenergy week” to be held in Brasilia in March 2013. To this end, experts from Brazil (leading Partner) and FAO (hosting organization of the workshop) were invited to share their experiences.

Fostering sustainable bioenergy deployment - The Environmental pillar

Mr. Manoel Teixeira Souza Jr., Director-General of Embrapa Agroenergy, gave an overview of the legal framework of Brazilian Environmental Legislation and potential improvements concerning bioenergy and agriculture in Brazil. In the Latin American country, a set of land tenure laws regulates land use change, especially in the Amazon area, establishing legal reserves and protection of water resources. The agroecological zoning of sugarcane excludes sensitive biomes for the expansion of its cultivation. In compliance with these laws, it was estimated the potential for an expansion of sugarcane plantations of a further 50 million ha from now to 2020. This land, located at least 2.000 km away from the Amazon, is mainly degraded land. Increasing productivity of already existing pastures, a reduced amount of land will generate enough feed for a growing herd. The agro-ecological zoning of palm oil, which aims at recovering vegetation in the outskirts of native vegetation, thus contributing to progressive decrease on deforestation, was also presented. Moreover, the positive life cycle analysis of biofuels in Brazil, where ethanol has an energy balance of about 9 to 1, proves it contributes to the reduction of green house gases emissions. Brazilian policies are therefore closely linked to GBEP indicators on sustainability for bioenergy.

Ms. Elizabeth Beall, FAO bioenergy expert, presented a study on evaluation and planning of bioenergy in Tanzania using the Water Evaluation And Planning (WEAP) tool. WEAP is a software for integrated water resources planning that assists the planner throughout the process of planning and policy analysis. In the case study presented, the tool individuated a high risk of water scarcity consequent to the plantation of irrigated sugarcane or sweet sorghum for bioethanol in the area of study.

Fostering sustainable bioenergy deployment - The Social pillar

The FAO Land Tenure Officer, Ms Francesca Romano, presented the Voluntary Guidelines on Land Tenure. The guidelines, approved by the FAO member Countries, call governments to respect legitimated holders of land rights and to respect their rights. They promote the enjoyment of existing tenure rights and provide access to juridical support when dealing with infringements. They stress the principles of human dignity, non-discrimination, gender equality, consultation and participation, continuous policy and regulation improvement.

Mr. Manoel Teixeira Souza Jr. gave a presentation on the changes in the Brazilian energy matrix over the last 40 years, introduced the national biodiesel program and set a correlation between high productivity and promotion of family agriculture with sustainability in the production of biofuels. These aspects were considered important for their social implications for the Brazilian population. Over the last 40 years Brazil has drastically reduced energy dependence from foreign countries. Also, the Country has increased primary energy by 400%, compared to 40 years ago, mainly due to oil explorations and hydroelectric investments. These are followed by sugar products (ethanol & bagasse for bioelectricity) as second source in the national energy mix (about 17%). Brazil has greatly invested in bioenergy and other renewables and, as a result, in 2010 more than 80% of the electricity supply was produced with non-fossil sources. Moreover, major investments went towards productivity increase. Transportation sector has also increased steadily over the last 10 years (+150%). Brazil has had several programs to stimulate domestic ethanol use. The next challenge for Brazilian bioenergy industry is the increase in the production of biodiesel (since 2005 Brazil has a 5% biodiesel mandate). Biodiesel comes almost entirely from soybean, as a by-product (81% of 4 billion liters produced yearly), but feedstock diversification is needed to reach the blend of 10% biodiesel nationally (B10). Oil palm will be the chosen feedstock to increase the national production of biodiesel. In order to achieve these ambitious goals, all agricultural stakeholders will have to play an important role. The Government of Brazil will reinforce the Family Agriculture Program through which \$7.6 billion in 2011 and \$8.6 billion in 2012 were invested to allow family owned farms to increase their production and wellbeing. The Social Seal for biodiesel promotes family farming and demonstrates the feasibility of sustainable production of bioenergy and food, in line with GBEP 24 indicators of sustainability.

Fostering sustainable bioenergy deployment - The Economic pillar

Ms. Erika Felix, FAO Natural Resources Officer, discussed the findings of a study on the economic feasibility assessment of sunflower based biofuels in Tanzania. Four scenarios were proposed. In the first scenario straight vegetable oil (SVO) would be produced sourcing 100% of the feedstock from smallholders (500.000 liters per year). In the second scenario, biodiesel would be produced rather than SVO always sourcing 100% of the feedstock from smallholder farming. Scenario 3 and 4 instead, presented a model of feedstock sourcing composed by 40% smallholders and 60% large estate companies. All scenarios also included the production of co-products to be marketed. The economic analyses applied to this case study revealed that best option from an economic perspective is represented by scenario 4 when co-products are considered.

Mr. Cesar Cunha Campos, from Fundação Getúlio Vargas, gave a presentation on the economics of the bioenergy and agriculture sector in Brazil. As a result of a national biodiesel program, Brazil has saved US\$ 3.4 billion in diesel imports. There are about 70 biodiesel refineries in the country which employ local labor force. The next step is the possibility to meet the demand for the B10 blend which would account for a saving of US\$ 6.8 billion per year. In the case of ethanol, economic advantages of the Brazilian experience are even higher. Between 2002 and 2011 was recorded a 120% increase in the number of formal workers in the ethanol production segment. Workers in the ethanol industry earn 58% more than those from sugarcane plantations and have higher education rates. It was calculated that in Brazil, every 5% increase in ethanol consumption, creates some 40.000 new jobs and distributes roughly \$38 million in salaries.

Conclusions

Participants received an overview of some policies, tools and instruments for fostering sustainable bioenergy deployment.

From 11 to 15 March 2013 the Government of Brazil will host the first “Study Tour/Bioenergy week” in Brasilia. It will consist of short training courses, open to about 100 participants, analyzing technical and public policy aspects of sustainable bioenergy development, in line with GBEP 24 indicators of sustainability. Bioenergy technology and knowhow will be shared through fieldtrips to biodiesel and bioethanol plants.

Participants were invited to contribute with comments and suggestions of case studies to be shared, towards the development of the agenda of the Brasilia event.