

**10th meeting of the GBEP Working Group on
Capacity Building for Sustainable Bioenergy**
FAO Headquarters, German Room C-229-C269
Rome, 27-28 November 2018

Co-Chairs Conclusions

The GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB) held its 10th meeting on 27-28 November 2018 at FAO Headquarters in Rome.

Argentina, Brazil, Egypt, Ethiopia, Germany, Ghana, Italy, Japan, Paraguay, Philippines, Spain, United States of America, ECREEE/ECOWAS, European Commission, EUBIA, FAO, IEA Bioenergy, IRENA, SEforAll/WBCSD and UN Environment participated in the meeting as Partners and Observers. At the beginning of the WGCB, on the first day, there were also participants from the members of the consortium of the Horizon 2020-funded project, FORBIO, including WIP, POLBIOM, SECBio, ENERO, ELO, FIB, BI UK and GEO.

The 10th meeting of the WGCB was preceded by a half day **workshop on “The contribution of GBEP's work on sustainability to the project 'Fostering Sustainable Feedstock Production for Advanced Biofuels on underutilised land in Europe - FORBIO'”**

FAO Headquarters, Germany Room C-269, Rome, 27 November 2018

Maria Michela Morese (GBEP Secretariat, FAO) and Rainer Janssen (WIP) welcomed the participants and opened the workshop, which was attended by FORBIO consortium partners and GBEP Partners and Observers, as an opportunity to know more about FORBIO and how the GBEP sustainability indicators have been used as a starting point for the sustainability assessment carried out in the context of this project.

[Cosette Khawaja](#) (WIP) gave a general overview over the FORBIO project, an EU-funded project that ran from January 2016 until December 2018, and included case studies in Germany, Italy and Ukraine. She linked the project with the EU targets for 2020 and 2030 and stressed the importance of increasing the contribution of bioenergy in order to reduce CO₂ emissions while increasing the percentage of renewable energies within the energy mix. One problem is that bioenergy may compete with food or feed production and Ms. Khawaja highlighted that underutilised and contaminated land offer a great solution to reach the above mentioned EU goals within a sustainable framework, as demonstrated by the FORBIO project.

[Guido Bonati](#) (CREA) presented the Italian case study, which was conducted in an industrial area of Portovesme (Sardinia), contaminated by heavy metals. He explained that the contamination of the site is too high and food production prohibited by law. On one hand, this makes the area a suitable study site as the renewable energies can provide e.g. new opportunities for the local job market. On the other hand, there is low awareness of the political authorities on the advantages of using underutilised lands for bioenergy feedstock production. As a result of the investigation of the feasibility of non-food crops for land restoration and alternative systems of bioenergy production, rain-fed crops were favoured over irrigated crops due to higher acceptance by local people. The test species chosen was the giant reed (*Arundo donax* L.) and an Arc GIS analysis was conducted to map suitability areas for this crop in terms of soil and water availability. Furthermore, a techno-economic feasibility study was carried out by the consortium member Biochemtex for a 70 km radius around the hypothetical site. All the results

were shared with local research institutes to strengthen the awareness of bioenergy crops on underutilized lands.

[Marco Colangeli](#) (FAO) provided experiences from the sustainability assessment of the Italian case study site. The GBEP sustainability indicators were adapted for the assessment and afterwards discussed with local stakeholders. For each indicator they compared a baseline scenario of the situation without the production of biofuels projected into the future versus a number of target scenarios in which advanced biofuel value chain exists. The two scenarios presented gave an overview of the sustainability impact by indicator of rain-fed versus irrigated giant reed to produce lignocellulosic ethanol. For the roadmap of Italy, Mr. Colangeli concluded that onsite productions of enzymes from renewable energy sources should be incentivized as otherwise the GHG footprint generated by the production of enzymes using fossil fuels would be much higher than what is achievable with the available technology. Moreover, in order to enable the market uptake of sustainable lignocellulosic ethanol in Italy, the roadmap presented suggested that the existing sanction system for companies who fail to meet the minimum blending mandate as per Ministerial Decree 10/10/2014¹ should be amended. The fines should be (at least) doubled since at present the magnitude of the sanction is considerably lower than the sole production cost of advanced bioethanol, thus giving the fuel blender an economic advantage in non-complying with the blending mandate as opposed to purchasing lignocellulosic ethanol. He also suggested that an excise break for consumers would contribute to increasing the demand for advanced bioethanol.

Along these lines, the roadmap presented by Mr. Colangeli clearly individuated also the role and responsibility of local authorities as well as private stakeholders, including both feedstock producer and biomass buyers. Finally, the roadmap detailed the necessary actions and the likely timeframe for achieving balance in the supply-demand dynamics concerning lignocellulosic ethanol value chains in Italy and consequently meeting the goals of the Renewable Energy Directive II.

[Dirk Knoche](#) (FIB) presented the results of the German case study which was performed in two different areas of the state of Brandenburg (NE-Germany), a lowland area with a negative water-balance. The first study site (Finsterwalde, a lignite reclamation site) could be used as a blueprint for mining regions in other areas for the future. He explained that due to political restrictions, 8-12% of the nitrogen-limited land can be used for the production of sustainable bioenergy production and that lucerne (alfalfa) and sorghum were chosen as test crops for biomethane production. Nevertheless, under current circumstances, the economic feasibility remains questionable, but could be improved by e.g. using externalities and financial compensation of stakeholders for providing ecosystem services. The second study site was located in the Greater Berlin municipality area where wastewater and heavy metal-contaminated disused sewage irrigation fields could be used for the production of spontaneous grasses to be used as feedstock for modern biorefineries (for the extraction of amino acids and other added value biochemicals) and biomethane plants (which would use the remaining fiber cake). Mr. Knoche pointed out that in total 11-39% of the area is available for energy cropping, or around 1,140 ha in total. They examined two different scenarios, both of which represent low-input systems which could be economically viable options provided that the right market conditions are verified.

¹ Full text available here: <http://www.gazzettaufficiale.it/eli/id/2014/10/27/14A08212/sg>

[Marco Colangeli](#) (FAO) briefly provided some information on the sustainability assessment of the German case study. The German sites showed mainly positive outcomes for the environmental and social sustainable indicators, but less so for the economic ones. In detail, the study showed positive effects on soil quality when sorghum and alfalfa were used as energy crops. The combination of the two crops also had positive outcomes in terms of employment rates.

[Oleksandra Tryboi](#) (SECBio) provided the results of the Ukrainian case study, which is located in the Ivankiv region. This area is located close to the Chernobyl disaster site in the northern part of the country, mainly characterized by coniferous and deciduous forests. The case study focused on the area outside of the nuclear exclusion zone, which is depleted due to over-intensification, resulting in low yields. In particular, two types of land were chosen for the study: abandoned agricultural land and degraded low-productivity land. She reported the use of three different varieties of the basket willow (*Salix viminalis*) as chosen crop for the production of energy chips. A techno-economic analysis that was carried out gave a positive assessment of the Ukrainian case study. Production costs per ton of dry matter in this case study were found to be as low as EUR 28/t, thus making the production of feedstock in this area of Ukraine rather interesting for biomass buyers. These results were then presented to local stakeholders and municipalities, who showed interest in using degraded and contaminated land for sustainable bioenergy production.

[Marco Colangeli](#) (FAO) briefly explained that the Ukrainian case study shows mainly positive outcomes for the sustainable indicators of all three categories (e.g. gross value added, jobs, air quality). However, the land tenure issue should be monitored in the future to ensure that investment in perennial crops is supported.

A panel discussion moderated by Francisco Jose' Domínguez Perez (Spain) focused on synergies and opportunities for collaboration between GBEP and the European Commission took place.

[Maria Georgiadou](#) (DG Research, EC) emphasized the importance of all bioenergy forms for future sustainable energy production. She highlighted furthermore the aim of the EU to provide "Clean Energy for all Europeans" as well uphold commitments under the international Paris Climate Agreement. Ms Georgiadou also briefly went through various different plans and goals for the future, such as sustainable biofuel production, solar energy, the coordination of research and innovation across Europe and the different EU funding mechanisms for projects to provide sustainable bioenergy (e.g. HORIZON 2020).

Rainer Janssen (WIP) briefly described the follow-up project to FORBIO called BIOPLAT-EU, which started at the beginning of November 2018 and will last three years, still with EU Horizon 2020 funding. It will consist of a web-based platform which will include a public user-friendly tool using global information system that will assess the environmental, social and techno-economic sustainability aspects of defined value chains for bioenergy production on marginal, underutilized and contaminated lands and through stakeholder engagement activities.

[Maria Michela Morese](#) (GBEP Secretariat, FAO) stressed the importance of modern bioenergy as the only renewable source that can provide electricity, direct heat and transport fuels. She highlighted the successful use of the GBEP indicators within the FORBIO project and applied at the national level in more than a dozen GBEP countries. Indeed, collaboration among initiatives will be the future key to developing good projects and to be able to inform policy makers. Policies are a key aspect for the success of sustainable bioenergy production; this was demonstrated within the FORBIO project in Germany and Italy, where some economic barriers

could be solved by the support of policy makers. On the other hand, political decision makers can use the developed roadmap of the FORBIO project to remove such identified barriers.

In an open discussion on synergies and opportunities for collaboration between GBEP and the EC the role of bioenergy within the field of bioeconomy was mentioned. As concluding remarks, a possible stronger cooperation between GBEP and the EC was also discussed, where on one side GBEP can contribute to inform EU bioenergy policy development by applying to H2020 calls and to other EU-funding mechanisms, with a view to give visibility and application to the GBEP tools, and on the other side GBEP could act as a catalyst platform expanding the outreach of the results and lessons learned of these EU funded projects thank to its expanded membership, well beyond the EU.

Opening of the WGCB

The Co-chairs, Mr. Miguel Almada from Argentina and Mr. Bah F. M. Saho from ECREEE/ECOWAS, welcomed participants to the 10th meeting of the WGCB and submitted the draft [agenda](#) that was officially adopted.

The meeting began with an overview of the EC research and innovation policy to support sustainable development of bioenergy, given by Maria Georgiadou, DG Research, European Commission. This built on her [presentation](#) during the FORBIO workshop (please see page 3), where she discussed the activities, funding opportunities and overall objectives of the EC with regards to bioenergy. The DG Research has a value chain approach, focusing on seven main value chains, including gasification, microbial conversion and co-generation, among others. They also focus on decentralised concepts, investigating and promoting market uptake for smaller bioenergy modules in areas of high feedstock availability.

Discussions on Activity Groups (AG) 2, 3, 4 and 7 were held, along with discussions on the new proposed AG8 (Advanced Liquid Biofuels).

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

[Horst Fehrenbach](#), AG2 Co-Leader, provided a brief overview on the implementation of GBEP indicators (GSI) worldwide. During the session, there were presentations from Paraguay, Viet Nam, Ethiopia, Kenya, Egypt and Germany on recent experiences in measuring the GBEP indicators in these countries, along with presentations on capacity building activities in Togo and Ghana, and the experiences of the FORBIO project in Germany, Italy and Ukraine.

[Guillermo Parra](#) (Paraguay) gave an overview of the FAO project “Building capacity to improve the sustainability of bioenergy through the use of GBEP Indicators” in Paraguay, funded by the International Climate Initiative (IKI) of Germany. They analysed two bioenergy pathways in the country: forest biomass for energy; and ethanol from sugar cane and maize. Mr. Parra presented the final results of the project and gave some recommendations for future monitoring, which included: institutionalising the Multi-Stakeholder Working Group (MSWG) established under the project; linking the GSI to initiatives related to the NDCs, SDGs and the GCF-funded PROEZA (Poverty, Reforestation, Energy and Climate Change) project; improving both primary and secondary data collection; and socialising and promoting the results among top authorities and executives.

[Andrea Rossi](#) (FAO) gave an overview of implementation of the same FAO project in Viet Nam. He provided results for the measurement of the indicators for the prioritized pathways in the country, namely: cassava-based ethanol; and biogas (mostly from pig manure,

as well as cassava wastewater), at both household and industrial levels. The biogas pathway at household level is well established in Viet Nam, but the report highlighted the need to improve the efficiency of the use of biogas and problems of water pollution and leakages as bottlenecks in biogas development. Currently, less than 1 percent of the cassava produced in the country is used for bioethanol, with the price of fossil fuel alternatives being a key driving factor. With the implementation of the E5 mandate at the beginning of 2018, there is the need for close monitoring of the impact of cassava cultivation/harvesting. Policy has a crucial role in sustainable bioenergy production across the entire value chain.

[Berhane Kidane](#) (Ethiopia) presented the ongoing project on the implementation of the GSI in Ethiopia, coordinated by UN Environment and funded by IKI. The project is focusing on two bioenergy pathways: biogas for households and institutions from organic waste (animal dung and human excreta); and solid biomass (charcoal and firewood) produced with advanced technologies, such as improved carbonisation, and used in improved cookstoves for cooking and heating. The Commission on Environment, Forestry and Climate Change has been selected as the focal institute for the measurement of the GSI for the selected pathways. Mr. Kidane presented some preliminary reflections on implementation, namely that there is the need to adapt the methodologies and interpretation of some indicators to fit the selected pathways and the local context, and that data challenges are envisaged. They are currently finalising the description of the bioenergy pathways in preparation for indicator measurement, in order to prepare a draft report by June 2019 and a final version by September 2019.

[Rocio A. Diaz-Chavez](#) (Stockholm Environment Institute) presented the status of the same project here above, but in Kenya. The project is being developed in collaboration with the Kenya Forest Research Institute (KEFRI), the World Agroforestry Centre (ICRAF), the University of Strathmore, and the Ministry of Environment and Ministry of Energy. Two bioenergy pathways have been identified for indicator measurement: use of agriculture residues (direct use, briquettes, excluding charcoal) by industries, including cogeneration; and sustainable charcoal production, from forestry and agriculture residues, and use by households, institutions and industries. So far, a number of challenges have been identified, such as the need to adapt the proposed methodologies to the selected pathways, the variation in data across organisations, and the lack of quantitative data. These challenges are being overcome through data sharing and database creation, and the use of qualitative or proxy measures.

[Ahmed Abdelati](#) (Egypt) presented the measurement of the GSI for the household-level biogas pathway in three regions of the country. This second assessment of the GSI in Egypt was carried out as part of a Master's thesis and used a case study approach. The measurement assessed: lifecycle GHG emissions; soil quality; change in income; jobs in the bioenergy sector; and change in consumption of fossil fuels and traditional use of bioenergy. The economic feasibility of household biodigesters was also assessed, and the biogas plant of 6m³ was found to be the most viable from profitability, productivity and ability to tolerate risks that may arise in the production process; it was also the most prevalent size (70% of all plants).

[Tiziana Pirelli](#) (FAO) presented a project currently ongoing in Togo and Ghana entitled "Capacity Building on GBEP Sustainability Indicators for Bioenergy in the ECOWAS countries", funded by GIZ. The project aims to build or enhance existing capacities of local experts to understand, assess and implement the GSI, in order to improve capacities for sound bioenergy development. A MSWG has been established in both countries in order to select the most relevant bioenergy pathways and the corresponding indicators to assess their sustainability. Project activities have mainly focused on the sustainability of wood energy, which currently constitutes one of the most relevant bioenergy pathways in both Togo and Ghana.

[Marco Colangeli \(FAO\) and Rainer Janssen](#) (WIP) presented the experience in Germany, Italy and Ukraine during the FORBIO project, funded through the EU Horizon 2020 research and innovation programme. Through the multi-stakeholder discussions, workshops and info-days of this project, the GSI have supported the development of the capacity of local stakeholders to understand and evaluate the importance of environmental, social as well as techno-economic sustainability. They found that the GSI represented an optimal starting point for the development of ex-ante sustainability analyses in the context of advanced biofuels in Europe; their intrinsic cross-cutting architecture being the principal advantage for sound and comprehensive assessments of sustainability.

[Horst Fehrenbach](#) (Germany) presented the results of the second implementation of the GSI in Germany, the aim of which was to enable the monitoring of the impacts of bioenergy production and use at the national level over time, and to identify options to connect a periodic assessment of the GSI with other reporting and data collecting schemes. The implementation used desktop research of existing databases and bilateral meetings with experts. They found that the second application of the GSI was more efficient and that there had been progress in filling data gaps and improving data quality, although some indicators are still complicated to measure. They recognise the added value of GSI implementation in relation to work on SDG reporting and for the ongoing development of a federal monitoring scheme for the bioeconomy. They hope to continue the periodic monitoring of the GSI every 4-5 years.

Experiences on the implementation of the GBEP indicators will continue to be gathered and shared with the GBEP community as projects are finalized and others proceed.

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

[Rodrigo Estrela de Carvalho](#) (Alternate Permanent Representative of Brazil to FAO, IFAD and WFP) presented an overview of the successful 6th Bioenergy Week held 16-18 October 2018 in Buenos Aires, Argentina.

Rosemarie Gumera, representative from the Philippines, announced that the Philippines will be delighted to host the 2019 Bioenergy Week at the Philippine International Convention Center in Manila in June 2019 (week of 24-28 June – exact venue and date will be confirmed in due time), focused on bioenergy themes of direct interest to Asia. The Philippines expressed their commitment to supporting the local costs of the event but ask for Partners and Observers to consider supporting some of the international costs. The GBEP Secretariat requests inputs from Partners and Observers by 18 January 2019 on potential themes and speakers to be invited to the Bioenergy Week in the Philippines, so that a draft agenda can be developed and circulated.

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

[Olivier Dubois](#) (FAO), AG4 Leader, presented a progress report for the Activity Group. During 2018, AG4 carried out two main activities: a session on “Exchange of experiences and opportunities on wood energy” at the 2018 Bioenergy Week in Argentina; and a Discussion Forum at the Global Landscape Forum held in Bonn, 1-2 December 2018, entitled “Contribution of a sustainable wood energy production approach to Forest Landscape Restoration (FLR) in Sub-Saharan Africa (SSA)”.

After discussing the future prospects for the Activity Group, it was decided that AG4 will explore interest in the new thematic area of *woody biomass for forest landscape restoration and sustainable livelihoods*. The AG4 Leader will produce a short note to facilitate initial discussions on this new focus. To be part of the discussions around this new theme, Partners and Observers are requested to express their interest to join the AG4 by 18 January 2019.

In light of this, it was proposed that the AG4 could host a dedicated session at the Bioenergy Week 2019 in the Philippines.

Partners and Observers, as well as the GBEP Secretariat, were invited to use their networks to strengthen the engagement of representatives of UNCCD, CIFOR, REDD+ and WB into the AG4 related discussions.

Activity Group 7 – “Biogas”

A presentation was given by [Constance Miller](#) (GBEP Secretariat, FAO) on the stocktaking paper for AG7. The Paper aims to give a better understanding of the perceptions of stakeholders on the factors important for success of biogas value chains in different regions of the world. The analysis is carried out using SWOT analysis; this approach seeks to identify the strengths, weaknesses, opportunities and threats of a particular business model through discussions with relevant stakeholders. In 2017, regional analysis was carried out in Africa during the 5th Bioenergy Week in Ghana, and Latin America and the Caribbean (LAC) were the focus of the research in 2018, in conjunction with the 6th Bioenergy Week in Argentina. Ms Miller presented the preliminary results of the LAC regional analysis, based on interviews with experts across the region. Research will be carried out in Asia during 2019 and a final draft of the stocktaking document will be prepared for the 11th WGCB Meeting in November 2019.

Further to this, e-learning webinars are being developed on the BiogasDoneRight® model in collaboration with *Consorzio Italiano Biogas* (CIB), the *Instituto Nacional de Tecnología Agropecuaria* (INTA) and Michigan State University. The translation of the webinar material will be finalised by February 2019, and webinars will be held during 2019 in both Spanish and English to cover different geographical regions.

Activity Group 8 – “Advanced Liquid Biofuels”

The Scope of Work of the AG8 was discussed, updated and agreed upon during the meeting. As such, the establishment of the AG8 was formally agreed under the leadership of the U.S.A. In order to begin activities, the Secretariat asked for Partners and Observers to express their interest to join the AG8 by 18 January 2019 so that virtual discussions can occur early 2019.

Conclusions and next steps

The next steps that were discussed and agreed upon are:

- 7th Bioenergy Week of the **Activity Group 3** will be held in Manila, the Philippines in June 2019 focused on themes of direct interest to Asia (to be held during the week of 24-28 June at the Philippine International Convention Center – exact venue and date to be confirmed at due time). The GBEP Secretariat requests inputs from Partners and Observers by 18 January 2019 on potential themes and speakers for the Bioenergy Week, so that a draft agenda can be developed and circulated.
- **Activity Group 4** will explore the new theme of ‘woody biomass for forest landscape restoration and sustainable livelihoods’. Partners and Observers are requested to express their interest to join the AG4 by 18 January 2019 in order to be take part in the discussions around this new theme. The option to have a dedicated session at the Bioenergy Week 2019 in Manila was proposed.
- **Activity Group 7** is developing a stocktaking paper to guide future activities of the group on biogas. A final draft of this paper will be prepared for the 11th Meeting of the WGCB in November 2019. E-learning webinars are being developed on the

BiogasDoneRight® model in collaboration with *Consorzio Italiano Biogas* (CIB), the *Instituto Nacional de Tecnología Agropecuaria* (INTA) and Michigan State University. The translation of the webinar material will be finalised by February 2019, and webinars will be held in both Spanish and English to cover different geographical regions.

- The **Activity Group 8** on advanced liquid biofuels was formally established under the leadership of U.S.A. and the Scope of Work was agreed. Expression of interest from Partners and Observers to join AG8 is requested by 18 January 2019.