European Commission

The European Commission's Knowledge Centre for Bioeconomy

Report on the Community of Practice Workshop

Joint Research Centre's contributions to
Enhancing the knowledge base on the Bioeconomy

This publication is a Conference and Workshop report by the Joint Research Centre (JRC) as part of its contribution to the European Commission's Knowledge Centre for Bioeconomy. The points presented in this report summarise the views expressed by the participants and do not imply a policy position of the European Commission, nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication.

The workshop took place on the 5-6 November 2019.
Venue: Joint Research Centre
CDMA -1/SDR1 & -1/SDR2
Rue du Champs de Mars 21
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Background & objectives of the workshop

The European Commission (EC) has developed Knowledge Centres to improve knowledge management for policymaking on specific areas. They bring together knowledge and expertise from within and outside of the Commission to inform policymakers in a transparent, tailored and concise manner about the status and findings of the latest scientific evidence. This innovative approach brings policymakers and researchers together to co-create answers to policy questions and align research action with policy needs. The European Commission's Knowledge Centre for Bioeconomy (KCB) was launched in July 2017, to pull together the knowledge and expertise needed to assess the status, progress and impact of the bioeconomy.

The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources, i.e. agriculture, forestry, fisheries and aquaculture; and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services.

The EU Bioeconomy Strategy, updated in 2018, puts forward an action plan to drive a sustainable and circular bioeconomy with 14 concrete measures based on three key priorities:

1. Strengthen and scale up the bio-based sectors, unlock investments and markets
2. Deploy local bioeconomies rapidly across Europe
3. Understand the ecological boundaries of the bioeconomy

Under the third priority, the Commission commits, in action title 3.1, to *'Enhance the knowledge base on the bioeconomy, including on biodiversity and ecosystems, to deploy it within safe ecological limits and make it accessible through the Knowledge Centre for Bioeconomy*'. Under action title 3.2 the Commission pledges *'to increase observation, measurement, monitoring and reporting capabilities and to build an EU-wide, internationally coherent monitoring system to track economic, environmental and social progress towards a sustainable bioeconomy'*. The JRC, as the Commission's science and knowledge service, plays a leading role in the implementation of these Actions. Through the enhanced knowledge base, it also contributes to other specific Actions under the first two priorities of the plan.

This workshop was one in a series of events organised in the context of the KCB's Community of Practice and brought together researchers and policymakers from within the Commission's services. It provided an opportunity to present the progress and outcomes from JRC actions that contribute to enhancing the knowledge base on the bioeconomy and related actions of the updated Bioeconomy Strategy. The presentations were followed by technical discussions and feedback, to identify possible synergies of work ongoing in different Directorates-General (DGs), and to identify future knowledge priorities.

Programme and set-up of the workshop

Following the welcome of participants by the Head of the JRC Bioeconomy Unit, Elisabetta Balzi, the workshop was opened by the Head of Bioeconomy & Food Systems Unit in DG Research and Innovation (RTD), Peter Wehrheim. The workshop was structured into four sessions. During sessions 1, 2 and 4, experts from the JRC presented recent highlights from their work relevant for the bioeconomy and the presentations were followed by discussions.

- Session 1 was dedicated to studies contributing to "Enhancing the knowledge on the Bioeconomy (Action 3.1 of the Strategy)", including: the biomass assessment, work on food waste, bioeconomy & SDG modelling scenarios, activities focusing on ecosystems and their services and the Forest Information System for Europe (FISE).
- Session 2 presented activities contributing to "Increasing observation, measurement, monitoring and reporting capabilities (Action 3.2 of the Strategy)", including the planned EU Observatory on deforestation and forest degradation, work on land-based climate change mitigation, key socio-economic indicators and the development of a comprehensive bioeconomy monitoring system.
- Session 4 continued with "Knowledge for other actions of the Bioeconomy Strategy", including a market analysis of bio-based industries, the environmental footprint methodology for products and organisations applied to the bio-based economy, recent work related to biorefineries and their feedstock availability in Europe and the mapping of bioeconomy policy developments in the EU Member States.

Figure 1: The workshop was organised at the JRC Headquarters in Brussels

- Session 3, "Making scientific evidence more accessible to policymakers", consisted of a presentation alternated with interactive sequences. Mathew Lowry (Knowledge Management Methodologies, Communities and Dissemination Unit in the JRC) presented draft webpage designs developed for the Knowledge for Policy (K4P) web platform that hosts the KCB's web presence. The designs aimed to address the needs of policymakers. A proposed wireframe for a topic page was presented to analyse which of its proposed sections attract the most of the participants' attention. Participants were also asked to write, on post-its, topics which they regarded as particularly important for the KCB platform (**Figure 2**) and cluster them on the wall (**Figure 3**). This allowed exploring relevant topics, their granularity and a website structure that is fit for purpose. Furthermore, possible features allowing practitioners to interact as part of a community were presented.

During the closing session, Elisabetta Balzi (EC JRC) summarised the conclusions from the workshop.

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Figure 2: Participants were asked to write topics relevant for the bioeconomy on post-its

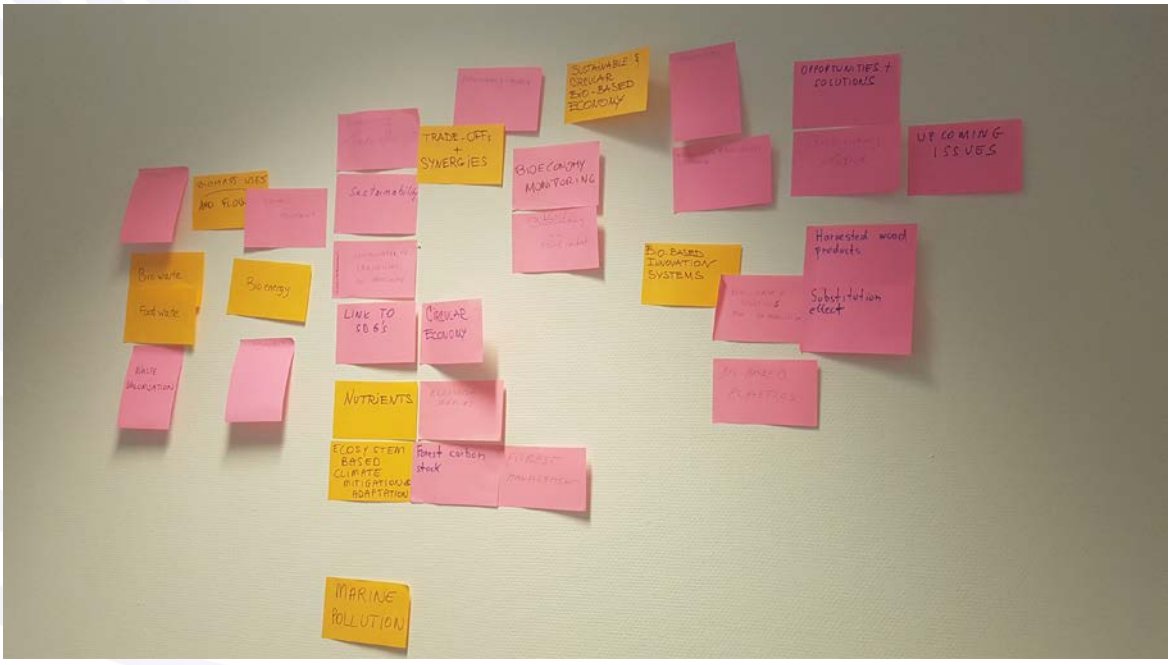

Figure 3: Clustered post-it notes with topics proposed for the KCB website.

Session 1: Enhancing the knowledge on the bioeconomy (Action 3.1)

Elisabetta Balzi (EC JRC) welcomed the participants, highlighted the objectives and outlined the programme of the workshop that was taking place in the context of the European Commission's Knowledge Centre for Bioeconomy and the implementation of the European Bioeconomy Strategy. E. Balzi also emphasised that the implementation of KCB is a shared effort amongst all Services of the European Commission.

P. Wehrheim (EC RTD) opened the workshop and introduced himself as the newly appointed Head of the Bioeconomy and Food Systems Unit in DG RTD. He highlighted that the bioeconomy had the potential to contribute to several EU policy objectives but the challenge remained to ensure that it is deployed coherently across policies and sectors in a sustainable way. He highlighted the key role of forestry and agriculture sectors in climate mitigation and to the climate-neutrality target. The KCB has the enormous task to collect the evidence on how different policy objectives can be reconciled and to communicate them at all levels. Knowledge and information will play a key role, including the design of a monitoring system to track progress towards sustainability. The network of experts on bioeconomy transitions coordinated by the KCB, that was being set up to focus on knowledge synthesis and foresight as well as on modelling needs, is expected to contribute with important insights.

The first session was chaired by Petra Goyens (EC RTD).

BIOMASS ASSESSMENT

Andrea Camia, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

A. Camia (EC JRC) presented the latest data on biomass sourced and used in the EU, compiled in the context of the JRC Biomass Study. This work was carried out in response to a 2014 mandate from twelve Commission Services, to provide data, models and analyses on EU and global biomass supply and demand and its sustainability, covering all sources and uses of biomass.

In addition to assessing quantities, understanding the spatial distribution of available biomass is also key for the future development of a sustainable bioeconomy, as well as the knowledge on temporal trends.

Since existing information of forest biomass availability in Europe is limited to summary statistics at national scale, during the last two years JRC supported two service contracts with a total of 22 European National Forest Inventories (NFIs) to assess, with a harmonized approach, the main technical, economic and social constraints limiting the availability of wood supply in Europe. This information was combined by JRC with a map of forest biomass selected from an existing set of remote sensing derived products. The selected map was then calibrated to match regional statistics and finally filtered to derive a European map of forest biomass potentially available for wood supply (FAWS) at 100 m spatial resolution.

When it comes to agricultural biomass, the spatial distribution of crop residue production is of particular importance as it allows the consideration of location-specific sustainability constraints to residues availability. Such assessments can help to optimise the deployment of future biorefineries in areas where residual biomass from agriculture represents a sustainable and stable feedstock. Residue production has been calculated for specific crops, for crop groups, and for the total agricultural production.

FOOD WASTE: QUANTIFICATION, PREVENTION, AND VALORISATION

Andrea Camia, on behalf of Serenella Sala, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Andrea Camia, this time on behalf of Serenella Sala, presented the state of play of JRC work on food waste: quantification, prevention, and valorisation that also contributes to Action 3.1 of the Bioeconomy Strategy.

According to the Food and Agriculture Organization of the United Nations (FAO), food waste globally constitutes one-third of the total food produced for human consumption, i.e. about 1.3 billion tons per year. In Europe, the largest amount of food waste is generated at consumer level. The EU is committed to meet target 12.3 of the United Nations Sustainable Development Goals (SDGs) by halving food waste at retail and consumer levels. Furthermore, the EU Bioeconomy Strategy and Circular Economy action plans promote the reduction and valorisation of food waste.

Considering the significant differences between the results of different studies that quantify food waste at EU level, the JRC undertook a comprehensive quantification exercise using mass flow analysis, combining statistics on food production and trade with coefficients on food waste at different stages of the supply chain.

With regard to food waste prevention, the JRC, in support to the EU platform of food losses and food waste, conducted a survey to collect different prevention actions from EU Member States and categorised and assessed their performance according to a specifically developed evaluation framework. Furthermore, a calculator to assess the economic and environmental performance of food waste prevention actions is under development.

When it comes to food waste valorisation, the data show that consumers are relying increasingly on pre-prepared food. More processed food means less unavoidable waste generated at household level (e.g. peels) and more generated at manufacturing stage. The latter is a more homogenous stream that can be valorised into value added products. The JRC has collated examples of value added products that can be extracted from by-products of food manufacturing.

BIOECONOMY & SDG SCENARIOS

Robert M'Barek Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Robert M'Barek (EC JRC) presented how the global economy-wide simulation model MAGNET was employed to quantify different medium- to long-term market outlooks for the European and global bioeconomy, with a focus on sustainability.

This forward-looking analysis examined three different transition pathways to 2050, two of which were based on the EU long-term climate strategy. The recently published report[1] provided an analysis of the five European Bioeconomy Strategy objectives against the ambitious emissions reductions and deep transformations within the energy markets. It showed that sustainability scenarios clearly favour two of the five objectives of the Bioeconomy Strategy: on climate change and reducing dependence on non-renewable resources.

Future work will focus on assessing scenarios on waste and diets.

[1] https://ec.europa.eu/jrc/en/publication/alternative-global-transition-pathways-2050-prospects-bioeconomy

MAPPING, ASSESSMENT AND VALUATION OF ECOSYSTEMS (URBAN, AGROECOSYTEMS, FORESTS, FRESHWATER AND MARINE) AND THEIR SERVICES

Joachim Maes, Unit D.3, Land Resources, Joint Research Centre, European Commission

The 2018 Bioeconomy Strategy calls for enhanced knowledge on biodiversity and ecosystems building upon the knowledge generated from implementing the EU Biodiversity Strategy to 2020.

The latter, under Action 5, calls Member States to map and assess the state of ecosystems and their services in their national territory with the assistance of the Commission. The EC has created a working group (MAES) to oversee the implementation of this action in which the JRC has a pivotal role.

JRC supports the mapping process at EU scale through modelling activities, while also contributing to training of Member States experts on mapping and assessment. Within this context, DG Environment (ENV) in collaboration with the JRC published five reports over the period 2013-2018. The first outcomes of the ongoing EU wide ecosystem assessment that will contribute to the final evaluation of the current strategy and post-2020 framework will be presented in Helsinki in December 2019.

Furthermore, Member States must also assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020. In this context, the JRC is contributing to a Knowledge Innovation Project, coordinated by ESTAT, on an Integrated system of Natural Capital and ecosystem services Accounting (KIP INCA). This project aims to develop a set of experimental accounts at the EU level, following the United Nations System of Environmental-Economic Accounting-Experimental Ecosystem Accounts (SEEA EEA). A report published in 2019[2] presented the second part of this JRC work that included accounts for four ecosystem services (ES): crop provision, timber provision, global climate regulation, and flood control. The first part (published in 2018[3]) had focused on two other services: outdoor recreation and crop pollination. The total value of those ecosystem services in Europe in 2012 was estimated at EUR 125,930 million, with woodland and forests assessed as the ecosystems with the highest unitary value (40,010 EUR/km^2).

THE FOREST INFORMATION SYSTEM FOR EUROPE (FISE)

Pieter Beck, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Pieter Beck (EC JRC) presented the Forest Information System for Europe (FISE). It is being developed by the JRC in collaboration with DG ENV and the European Environment Agency (EEA). The latter will host the system as of 2020 where it will be aligned with similar systems, for example on biodiversity (BISE) and water (WISE).

FISE has been announced in the EU Forest Strategy and will bring together data on Europe's forest, to improve its accessibility by a range of stakeholders, including policymakers. It relies primarily on the data collected by Member States in their National Forest Inventories and on data generated from satellite images in the Copernicus Programme.

As of July 2019, it contains nearly 3000 datasets from National Forest Inventories, and about 500 datasets from Copernicus, primarily on forest area statistics. Their metadata are documented, facilitating search and retrieval.

The launch of FISE is planned for the first months of 2020. FISE will help strengthen efforts to provide more accurate, frequent, and harmonised data and assessment tools on the status and management of forest

[2] https://ec.europa.eu/jrc/en/publication/ecosystem-services-accounting-part-ii-pilot-accounts-crop-and-timber-provision-global-climate

[3] https://ec.europa.eu/jrc/en/publication/ecosystem-services-accounting-part-i-outdoor-recreation-and-crop-pollination

ecosystems in Europe. This in turn can help Europe protect forest ecosystem services and biodiversity while supporting the domestic and sustainable production of biomass.

Session 2: Increasing observation, measurement, monitoring and reporting capabilities (Action 3.2)

The second session was chaired by Andrea Vettori (EC ENV).

EU OBSERVATORY ON DEFORESTATION AND FOREST DEGRADATION

Frédéric Achard, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

The Communication "*Stepping up EU Action to Protect and Restore the World's Forests*" adopted in July 2019 introduced a set of new EU actions to protect and restore the world's forests. Amongst them, the Commission commits to build upon already existing monitoring tools, and establish an EU Observatory on deforestation, forest degradation, changes in the world's forest cover, and associated drivers. The objective of this activity is to facilitate access to information on supply chains for public entities, consumers and businesses. The JRC is currently working with DG ENV to scope this observatory, to be developed in 2020. This observatory will build on the already existing monitoring tools developed by the JRC to monitor deforestation, forest degradation and trade flows with the long term objective to better understand the EU impact on the world's forests.

The JRC has long standing experience in monitoring forests in EU territory. While one can argue that deforestation in Europe has stopped, and indeed the forest cover is growing, there are still issues with forest degradation. Forest degradation is difficult to quantify and can come from natural causes, such as storms, pests, and wildfires, which are changing with the climate, and also from unsustainable exploitation such as for domestic energy uses. The JRC is generating up-to-date information on these drivers of degradation, building upon initiatives such as the MAES, FISE, and the Copernicus land service. Furthermore, the JRC has also experience in monitoring disturbances in tropical moist forests and is now monitoring trade flows between the EU and non-EU countries in the framework of developing a monitoring system for the bioeconomy.

LAND-BASED CLIMATE CHANGE MITIGATION

Giacomo Grassi, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Giacomo Grassi (EC JRC) presented the JRC activities to support EU policies on land-based climate change mitigation within a sustainable bioeconomy.

In 2018, Land Use, Land Use Change and Forestry (LULUCF) was included in the EU climate framework for 2030. The JRC, in collaboration with DG Climate Action (CLIMA) has developed a science-based approach for credible accounting of forest mitigation (the so-called 'Forest Reference Levels'). It is based on country-specific projected baselines against which future emissions or removals will be compared. This approach takes into account the age-structure dynamics of forests and their past management practices, to ensure that the future contribution of this sector to climate change mitigation, reflects the impact of choices in management, like in other sectors. In this way, it supports the climate credibility of the forest-based EU bioeconomy.

In addition, the JRC supports the monitoring and reporting of greenhouse gas emissions from the LULUCF sector. Within this context, the JRC is helping EU Member States to improve the quality of their national inventories, checking and compiling the EU-level inventory, and contributing with reviews, analyses and expertise to the international climate fora (IPCC and UNFCC).

G. Grassi concluded his presentation by emphasising that the scientific evidence asserts that the climate targets cannot be reached without land-based mitigation actions but forests cannot save the planet alone.

KEY SOCIO-ECONOMIC INDICATORS

Tévécia Ronzon, Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Tévécia Ronzon (EC JRC) presented the JRC work undertaken to develop indicators for the bioeconomy and its specific sectors, based on the number of persons employed, turnover and value added both at EU and Member State level. A specific challenge in developing those indicators was the hybrid bio/non-bio sectors, where official statistics from ESTAT report only aggregated data. To address this limitation, the JRC is using a methodology developed in collaboration with nova-Institute that makes use of empirical evidence for the bio-based shares in such sectors.

The latest data (2015) show that the EU bioeconomy is made up of sectors that vary greatly in terms of their capacity to employ people and generate economic growth. Each bioeconomy sector follows its own dynamics, which can also differ from one EU Member State to another.

The indicators are key in assessing the contribution of the bioeconomy to the broader economy. As such, they are considered a core part of the comprehensive EU bioeconomy monitoring system that is currently under development. In this context, they could potentially be combined with environmental indicators to provide useful insights for the evolution of the EU bioeconomy. They have already been used extensively in the preparation of the 2018 Bioeconomy Strategy and communicated in many formats for different audiences, generating a high impact also in the general media. In the next months the JRC will be publishing updated data and possibly including additional bio-based sectors (e.g. retail, ecotourism, etc.). Furthermore, work is ongoing in collaboration with nova-Institute, to improve the methodology. This work looks at disaggregating data at NUTS2 level and takes into account the Strategy's definition of the bioeconomy.

TOWARDS A COMPREHENSIVE BIOECONOMY MONITORING SYSTEM

Sarah Mubareka. Unit D.1, Bio-Economy, Joint Research Centre, European Commission

The JRC is leading the EC efforts in developing an EU-wide monitoring system to track the progress of the EU bioeconomy towards sustainability, as foreseen in the Bioeconomy Strategy.

The system's framework was developed throughout 2019 and covers various dimensions: the three pillars of sustainability and the underlying pillar of biophysical resources; bioeconomy-related sectors and all steps of the value chain, aiming to highlight the synergies and trade-offs across bioeconomy-related policies. From this theoretical framework, the JRC has derived an implementation framework that is built around the objectives of the EU Bioeconomy Strategy and is largely coherent with the Principles and Criteria of the International Sustainable Bioeconomy Working Group (ISBWG), also followed by the Food and Agricultural Organisation (FAO).

Although the focus is on Member-State, EU-level indicators, and the externalities on third countries of EU bio-based trade, the framework structure is non-prescriptive and is therefore also applicable at regional and local levels.

The EU Bioeconomy Monitoring System will be made publicly available on the web platform of the KCB in 2020. A mock-up of a dashboard is already under development within the KCB platform showing trends in bioeconomy-related indicators at Member State level. Those basic indicators will be the building blocks for a comprehensive monitoring system.

Session 3: Making scientific evidence more accessible to policymakers

The third session was facilitated by Mathew Lowry (EC JRC) and focused on the KCB's online approach to improving knowledge management, creating collective intelligence and bridging the gap between evidence and policymaking.

In the first part M. Lowry presented the Commission's Knowledge4Policy (K4P) platform - a web platform developed based on the findings of audience research, to support evidence-based policymaking, bridging the world of two groups with rather different needs: policymakers and scientists. He then focused on work currently in progress to develop new webpage designs that structure available information and data on a specific topic in a way that better meets the needs of policymakers. The proposed wireframes are taking into account feedback received from users during the Knowledge Week 2020 as well as from DG Communication (COMM) and its usability consultants.

M. Lowry used this session to collect additional feedback from the workshop's participants: He distributed a paper-version of a proposed wireframe on the topic of agricultural biomass and asked all participants to indicate where they would choose to click in a first and in a second instance. Furthermore, participants were encouraged to specify which topics they regarded as relevant for the KCB platform and to cluster them (through post-it notes) on the wall in order to explore the types of topics, granularity and structure better addressed the needs of the target audience.

Finally, he presented possible features considered for the future development of the web platform intended to allow practitioners to interact as part of a community.

Session 4: Knowledge for other actions of the Bioeconomy Strategy

The fourth session was chaired by Ioannis Diamantopoulos (EC GROW).

MARKET ANALYSIS OF BIO-BASED INDUSTRIES

Tévécia Ronzon on behalf of Claudia Parisi, Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Bio-based chemicals represent a very small sector of the EU bioeconomy, but are an emerging one with high value added despite the relatively small amounts of biomass used. A study undertaken by the JRC in cooperation with BTG described the bio-based chemical sector by integrating information from different sources. The study covered ten categories of bio-based chemicals, based on 50 representative bio-based products out of a list of 350. The related JRC report[4], published in 2019, covered various economic indicators like production, Compound Annual Growth Rate, price, turnover and trade, and a detailed description of representative value chains, with an estimation of their use of biomass feedstock. This activity contributes to Action 1.1 of the updated Bioeconomy Strategy "Mobilise stakeholders in the development and deployment of sustainable bio-based solutions".

The study found that, overall, the market of bio-based chemicals is still small in terms of volume produced annually (3% bio-based) but highly heterogeneous by product group. For particular product groups, growth is expected to be strong, while for others rather sluggish. Overall, without a strong support mechanism, an annual growth rate of 2% up to 2025 is estimated.

[4] https://ec.europa.eu/jrc/en/publication/insights-european-market-bio-based-chemicals

The EU has a higher share in bio-based production compared to the global share and for some product categories (e.g. adhesives and lubricants), the EU is more specialised in bio-based than in fossil-based production.

ENVIRONMENTAL FOOTPRINT FOR PRODUCTS AND ORGANISATIONS (PEF/OEF) FOR PRODUCT GROUPS RELEVANT TO THE BIO-BASED ECONOMY

Rana Pant, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Plastics were one of the five priority areas identified in the 2015 Circular Economy action plan. The European Plastics Strategy that followed in 2018, highlights a number of key challenges linked to today's plastic use patterns: use of fossil resources, high landfilling and incineration rates with related greenhouse gas emissions and plastics littering. In this context the Commission committed to pursue work on life-cycle impacts of alternative feedstock for plastics production. The Bioeconomy Strategy that was adopted later in that year also promotes the generation and use of Environmental Footprint compliant life cycle inventory datasets.

Under this background, the JRC is working on Life Cycle Assessment (LCA-based) methods to assess the environmental impact of bio-based products. In particular, it is collaborating with DG Internal Market, Industry, Entrepreneurship and SMEs (GROW) to elaborate a consistent method to assess the use of alternative types of feedstock (biomass, recycled plastics, CO_2) for plastic production, in comparison to using current fossil-based feedstock. It will eventually demonstrate the applicability of this method via selected case studies focusing on specific plastic goods: bottles as an example of short-lived products, insulation foams as an example of long-lived products and agricultural films, as an example of a product, purposely released into the environment. This work builds upon the Product Environmental Footprint (PEF) methods developed by the JRC in collaboration with DG ENV over the previous years. It contributes to action 1.4 “Promote and develop standards, labels and market uptake of bio-based products”.

The draft method is currently being finalised following a stakeholder consultation and will be applied to ten full LCA case studies. A second stakeholder consultation and peer review will follow.

BIOREFINERIES DISTRIBUTION AND FEEDSTOCK AVAILABILITY

Robert M'barek on behalf of Claudia Parisi, Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Biorefineries have a core role in the first priority of the Bioeconomy Strategy. Biorefining is also one of the key enabling strategies of the Circular Economy, closing loops of raw biomass materials (re-use of forestry, agro, process and postconsumer residues), minerals, water and carbon.

The definition of ‘biorefinery’ is key as several definitions have been elaborated in the last decades, some broad and some more specific.

The JRC has built a database of biorefineries in the EU. This includes facilities producing emerging bio-based products, like chemicals, composites and liquid biofuels and, more recently, other types of bio-based facilities, like pulp and paper mills, biomethane plants, starch and sugar refineries and sawmills. The JRC is developing interactive maps for visualising this data and those will be made available on the KCB web platform in the near future, contributing to action 1.5 ”Facilitate the development of new sustainable biorefineries”.

Furthermore, a prototype platform developed to determine local feedstock availability and potentially the optimal location of certain type of biorefineries is under development.

MAPPING OF BIOECONOMY POLICY DEVELOPMENTS IN THE EU MEMBER STATES.

Javier Sanchez Lopez, Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Javier Sanchez Lopez (EC JRC) highlighted that the rapid deployment of local bioeconomies across Europe is one of the three action areas in the Bioeconomy Strategy and the JRC had been mapping the evolution of policy initiatives dedicated to the bioeconomy, including the development of dedicated strategies at national and regional level.

A first collection of information on bioeconomy policy developments in the EU Member States and other countries was carried out in 2017, through a survey of experts from those countries, undertaken in collaboration with the BBI JU and the IEA Bioenergy Task 42 and with input from the SCAR and other stakeholders. The outcomes of the survey were made available, as an on-line interactive dashboard, accompanied by a report that documents the methods used.

Last July the JRC – again in collaboration with the BBI JU and the IEA T42- undertook a further survey to update the information. This exercise targeted 36 countries (EU Member States and neighbouring countries) through a total of 266 experts from 158 organisations. J. Sanchez Lopez presented some highlights from the updated data that were being validated and would be made available soon through the online interactive country dashboards.

Concluding remarks

The workshop "JRC contribution to enhancing the knowledge base on the bioeconomy" organised by the Knowledge Centre for Bioeconomy (KCB) in the framework of its Community of Practice (CoP) gathered 42 participants from nine services of the Commission (JRC, RTD, GROW, MARE, ENV, SANTE, CLIMA, ESTAT and AGRI). It took stock of the progress and recent outcomes from JRC actions that contribute to the updated Bioeconomy Strategy, allowing valuable discussions on the evidence needed to drive the deployment of a sustainable bioeconomy that can contribute to the objectives of the European Green Deal.

The first day's two sessions were dedicated to the two JRC-led actions in the Bioeconomy Strategy, namely enhancing the knowledge on and monitoring the bioeconomy. They covered the JRC's biomass assessment and work on food waste, future scenarios, ecosystems, the Forest Information System for Europe (FISE), the planned EU Observatory for Deforestation and Forest Degradation, work on land-based climate change mitigation, socio-economic indicators and the development of a comprehensive bioeconomy monitoring system. The second day started with an interactive session on KCB's online approach to improve knowledge management and create collective intelligence and continued with a further session on JRC activities with relevance for the bioeconomy that grouped together research that contributes to other actions of the Bioeconomy Strategy. Those covered market analyses of bio-based industries, methods on the Environmental footprint for Products and Organisations (PEF/OEF) for product groups relevant to the bio-based economy, biorefineries and bioeconomy policy developments in the EU Member States.

During both days, participants showed high interest and repeatedly praised the value and policy relevance of JRC's work. They emphasised the usefulness of the data, information and knowledge the JRC makes available to support EU policies. The technical exchanges and feedback provided during this workshop helped on the one hand colleagues working on policy files to better understand and interpret available evidence as well as its limitations. On the other hand, it helped JRC researchers better understand the policymakers' needs for scientific evidence as well as the form in which it can be most usefully shared.

Looking further ahead, this workshop conveyed the overall message that a sustainable and circular bioeconomy can indeed contribute to the objectives of the European Green Deal and amplify the positive impacts of specific initiatives foreseen therein. The goal of climate-neutrality and the protection of biodiversity which are key goals of the European Green Deal both rely on a sustainable Bioeconomy.

The main messages from the workshop were conveyed to the KCB Steering Group that took place on 20 November 2019.

Evaluation of the workshop

The workshop was attended by 42 experts from Commission services. The composition of the attendance to the workshop is shown in **Figure 4**.

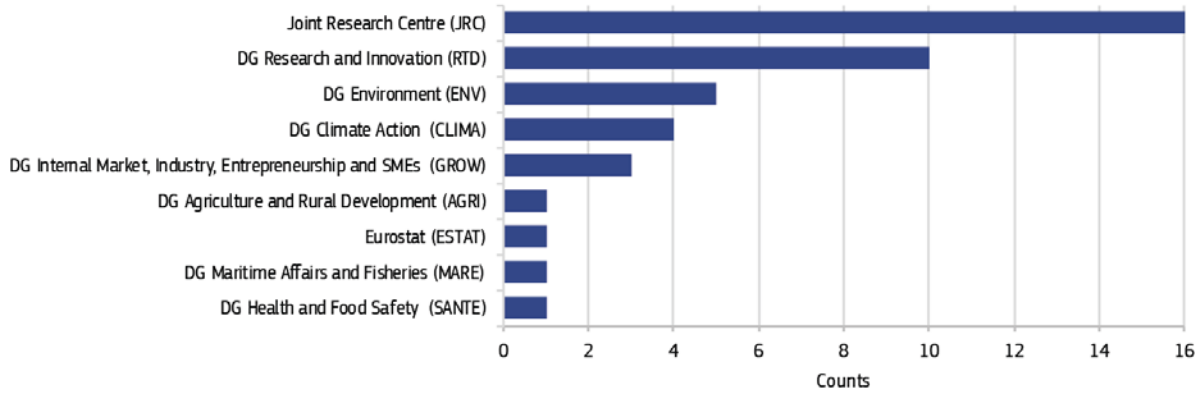

Figure 4: Attendees to the workshop by Directorate General

At the end of the event, participants were invited to give their feedback on the organisation and outcomes of the workshop through a JRC standard template. Different aspects of the workshop (e.g. agenda, speakers, documentation, facilities and services, before the event and overall outcome of the event) were assessed in a scale from 1 (completely disagree) to 5 (completely agree). The average mark obtained for each question is shown in **Figure 5**. Overall, the feedback was positive. The only item with an average score below 4, was "Time for questions and discussion was sufficient".

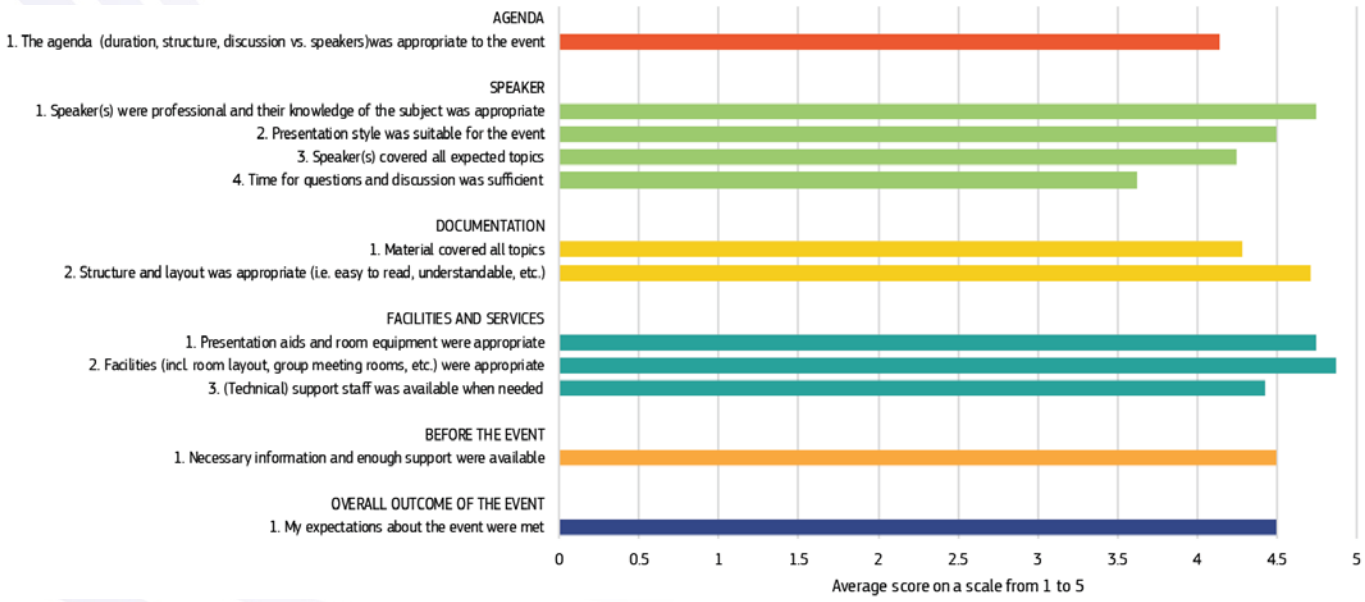

Figure 5: Assessment of different aspects of the workshop by the attendees in a scale from 1 to 5

Remarks and suggestions for improvement provided were in line with the quantitative evaluation and included:

- More time for discussion
- Lower number of presentations
- Less detailed presentations

- Simpler slides
- More focus should be given to policy conclusions compared to study results
- Provide web-streaming or video conference for colleagues who are not able to attend in person[5]

[5] The meeting room used on this occasion did not allow web-streaming or VC

Annex 1: Workshop Agenda

Tuesday 5 November 2019

14:00 – 14:15 **Welcome**

Welcome message
Elisabetta Balzi, *Head of Unit D.1, Bio-Economy, Joint Research Centre, European Commission*

Opening remarks (10 min)
John Bell, Director RTD C, Healthy Planet, European Commission

14:15 – 15:50 **Session 1: Enhancing the knowledge on the bioeconomy (Action 3.1)**

Chair: **Petra Goyens** Unit C.2, Bioeconomy & Food Systems, DG RTD, European Commission

Biomass assessment (10 min) *(contribution to Action 3.1.1)*
Andrea Camia Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Food waste: quantification, prevention, and valorisation (10 min) (contribution to Action 3.1.1)
Serenella Sala (presented by **Andrea Camia**) Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Bioeconomy & SDG scenarios (10 min) *(contribution to Action 3.1.1)*
Robert M'Barek Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Mapping, Assessment and Valuation of Ecosystems (urban, agroecosytems, forests, freshwater and marine) and their Services (10 min) *(contribution to Action 3.1.2)*
Joachim Maes Unit D.3, Land Resources, Joint Research Centre, European Commission

The Forest Information System for Europe (FISE) (10 min) (contribution to Action 3.1.3)
Pieter Beck Unit D.1, Bio-Economy, Joint Research Centre, European Commission

15:50 – 16:10 **Coffee Break**

16:10 – 17:30 **Session 2: Increasing observation, measurement, monitoring and reporting capabilities (Action 3.2)**

Chair: **Andrea Vettori** Deputy Head of Unit D.1, Land Use and Management, DG ENV, European Commission

EU Observatory on Deforestation and Forest degradation (10 min) *(contribution to Action 3.2.3)*

Frederic Achard Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Land-based climate change mitigation (10 min) *(contribution to Action 3.2.3)*
Giacomo Grassi Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Key socio-economic indicators (10 min) *(contribution to Action 3.2.2)*
Tevecia Ronzon Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Towards a comprehensive BE monitoring system (10 min) *(contribution to Action 3.2.2)*
Sarah Mubareka Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Wednesday 6 November 2019

09:00 – 11:00 Session 3: Making scientific evidence more accessible to policymakers

Chair: **Mathew Lowry**, Unit H.2, Knowledge management Methodologies, Communities and Dissemination, Joint Research Centre, European Commission

Interactive session to define the Bioeconomy KC's online approach to improving knowledge management, creating collective intelligence and bridging the gap separating evidence and policymaking, organised in collaboration with Unit JRC.H.2.

11:00 – 11:20 Coffee Break

11:20 – 12:40 Session 4: Knowledge for other actions of the Bioeconomy Strategy

Chair: **Ioannis Diamantopoulos** Unit D.2, Chemicals, DG GROW, European Commission

Market analysis of Bio-based industries (10 min) *[contribution to Action 1.1]*
Claudia Parisi (presented by **Tevecia Ronzon**) Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Environmental footprint for Products and Organisations (PEF/OEF) for product groups relevant to the bio-based economy (10 min) [contribution to Action 1.4]
Rana Pant Unit D.1, Bio-Economy, Joint Research Centre, European Commission

Biorefineries distribution and feedstock availability (10 min) [contribution to Action 1.5]
Robert M'Barek Unit D.4, Economics of Agriculture, Joint Research Centre, European Commission

Mapping of bioeconomy policy developments in the EU Member States (10 min) [contribution to action 2.3]

Javier Sanchez Lopez Unit D.1, Bio-Economy, Joint Research Centre, European Commission

12:40 – 13:00 **Conclusions and closure of the meeting**

Chair: **Elisabetta Balzi,** Head of Unit D.1, Bio-Economy, Joint Research Centre, European Commission

13:00 – 14:00 **Lunch buffet**

Annex 2: List of participants

	First Name	Last Name	Organisation
1	Andrea	ACCORIGI	EC DG Research and Innovation - C1 Circular Economy and Biobased Systems
2	Frederic	ACHARD	EC Joint Research Centre – D1 Bioeconomy
3	Caroline	ATTARD	EC DG Environment - B3 Waste Management & Secondary Materials
4	Marios	AVRAAMIDES	EC Joint Research Centre – D1 Bioeconomy
5	Elisabetta	BALZI	EC Joint Research Centre – D1 Bioeconomy
6	Pieter	BECK	EC Joint Research Centre – D1 Bioeconomy
7	Carla	BENAUGES	EC DG Climate Action C – Adviser for Emission Reduction Strategies, Research & Innovation
8	Wendy	BONNE	EC DG Research and Innovation - C4 Healthy Oceans & Seas
9	Maria Teresa	BORZACCHIELLO	EC Joint Research Centre – D1 Bioeconomy
10	Christina	BRAILESCU	EC DG Environment – D1 Land Use & Management
11	Dermot	BUTTLE	EC DG Research and Innovation – 04 R&I Investment Agendas
12	Tomasz	CALIKOWSKI	EC DG Research and Innovation – Circular Economy & Biobased Systems
13	Andrea	CAMIA	EC Joint Research Centre – D1 Bioeconomy
14	Ioannis	DIAMANTOPOULOS	EC DG Internal Market, Industry, Entrepreneurship and SMEs - D2 Chemicals
15	Galin	GENTCHEV	EC DG Agriculture and Rural Development – D4 Environment, Climate Change, Forestry and Bio-economy
16	Petra	GOYENS	EC DG Research and Innovation – C2 Bioeconomy & Food Systems
17	Giacomo	GRASSI	EC Joint Research Centre – D1 Bioeconomy
18	Christian	HACH	EC DG Environment – D1 Land Use & Management
19	Simon	KAY	EC DG Climate Action – C3 Land Use and Finance for Innovation
20	Ruska	KELEVSKA	EC DG Research and Innovation - C1 Circular Economy and Biobased Systems
21	Joachim	KREYSA	EC Joint Research Centre – Dir A Strategy, Work Programme and Resources
22	Mathew	LOWRY	EC Joint Research Centre – H2 Knowledge management Methodologies, Communities and Dissemination
23	Maria	LUSSER	EC Joint Research Centre – D1 Bioeconomy
24	Joachim	MAES	EC Joint Research Centre – D3 Land Resources
25	Michel	MASSART	EC DG Internal Market, Industry, Entrepreneurship and SMEs - I2 Copernicus
26	Robert	M'BAREK	EC Joint Research Centre – D4 Economics of Agriculture
27	Sarah	MUBAREKA	EC Joint Research Centre – D1 Bioeconomy
28	Orlaith	NI CHONCUBHAIR	EC DG Research and Innovation – C2 Bioeconomy & Food Systems
29	Daniel	NUIJTEN	EC DG Environment – D1 Land Use & Management
30	Rana	PANT	EC Joint Research Centre – D1 Bioeconomy
31	Maila	PUOLAMAA	EC DG Internal Market, Industry, Entrepreneurship and SMEs - C2 Resource Efficiency and Raw Materials
32	Tevecia	RONZON	EC Joint Research Centre – D4 Economics of Agriculture
33	Javier	SANCHEZ LOPEZ	EC Joint Research Centre – D1 Bioeconomy
34	Thomas	SCHLEKER	EC DG Research and Innovation – D1 Clean Energy Transition

	First Name	Last Name	Organisation
35	Tatiana	TALLARICO	EC DG Research and Innovation – C2 Bioeconomy & Food Systems
36	Adrian	TISTAN	EC DG Climate Action – C3 Land Use and Finance for Innovation
37	Wolfgang	TRUNK	EC DG Health and Food Safety – E5 Animal Nutrition, Veterinary Medicines
38	Alexandra	VARTAN	EC DG Climate Action – C1 Strategy and Economic Assessment
39	Andrea	VETTORI	EC DG Environment – D1 Land Use & Management
40	Veronika	VYSNA	EC Eurostat – E.2 Environmental Statistics and Accounts; Sustainable Development
41	Andrea	WEBER	EC DG Maritime Affairs and Fisheries – A2 Blue Economy sectors, Aquaculture and Maritime Spatial Planning
42	Peter	WEHRHEIM	EC DG Research and Innovation – C2 Bioeconomy & Food Systems