Commission Expert Group on Bio-based Products

Final Report

Adopted on 16 November 2017

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1 Introduction

Increased use of bio-based products can help accelerate the shift towards a more sustainable EU economy, creating both jobs and growth, where both dependence on fossil based carbon and CO_2 emissions, are reduced. In making this transition, for example, through policies dedicated to boosting the competitiveness of EU bio-based products and EU biomass production, bio-based goods will increasingly offer consumer products with enhanced sustainability profiles and new functionalities.

The Expert Group on Bio-Based Products (BBP EG) advises the European Commission on the development of this sector. Representing EU countries and state agencies, public procurement experts, standardisation and certification organisations, industry, NGOs and academia, the Expert Group on Bio-based Products has, throughout its mandate, inter alia, provided recommendations on communications and awareness, public procurement and sustainability of bio-based products, which are all relevant to developing new markets through these ongoing processes[1]. In light of the end of the mandate of the group, the aim of this document is to highlight the long-term significance of the sector in meeting some of the EU's grand challenges, whilst giving an overview of some of the main hurdles which continue to hinder the full exploitation of its potential. Concrete recommendations of policy measures needed to overcome these barriers are also provided.

1.1 Milestones

At EU, national, regional and local level, the bioeconomy sector has witnessed several important milestones in recent years. The most significant of these, was the publication of the 2012 EU Bioeconomy Strategy, including various recommendations from the Lead Market Initiative (LMI), aiming to unlock the potential of bio-based product markets. Following its publication, there have been important developments and successes in many areas. These include the design and implementation of many national and regional bioeconomy strategies, the launch of the € 3.7 billion Bio-based Industries Joint Undertaking, initiated largely by proactive members of the Industrial Biotech community, the pulp and paper sector, primary producers, technology platforms and the European Commission, and the setting up of the European Bioeconomy Alliance, a unique cross sectoral coalition dedicated to mainstreaming and realising the potential of the bioeconomy in Europe.

1.2 Jobs and growth

Awareness is also growing of the role that bio-based sectors can play in creating a smarter, more sustainable society. This, in turn, has helped attract new investments to the EU, in line with Commission President Jean-Claude Juncker's priorities, whilst creating additional new jobs and growth. Indeed, rather than being a niche economic area, the bioeconomy is a key contributor to the jobs and growth agenda in Europe. Today, it is already worth over €2.2 trillion whilst providing over 18 million jobs in Europe[2] with great potential to add value and increase competitiveness in many of

[1] See Terms of Reference in the annex to this report and also http://ec.europa.eu/DocsRoom/documents/7742/attachments/1/translations

[2] Bioeconomy Report 2016, JRC http://publications.jrc.ec.europa.eu/repository/bitstream/JRC103138/kjna28468enn.pdf "The bioeconomy in the EU-28 employed around 18.6 million people in 2014, constituting about 8.5 % of the jobs in all economic sectors. The agricultural sector (9.6 million jobs) and the manufacture of food, beverages and tobacco (4.5 million jobs) together provide three quarters of the total employment in the European bioeconomy. The other sectors of the bioeconomy [forest and forest-based, blue bioeconomy, bioenergy, bio-based industry] contribute less than 9 % each to the total number of people employed in the bioeconomy."

its sectors. The bioeconomy also provides a solid foundation on which other infrastructures, industries and systems are being built and made more resource efficient.

1.3 Public Procurement

Public procurement can potentially work as a market pull mechanism to stimulate the growth of bio-based product markets. On a global level, many states[3] have designed national procurement policies to support specific sectors which, in turn, support their social, environmental and/or economic policies. Considering that bio-based products offer solutions in almost all product areas, the potential for increased public spending on bio-based products is huge. EU governments are significant purchasers of supplies, works and services, and public spending adds up to 19% of their GDP. Initiatives promoting the procurement of sustainable bio-based products, increasingly accompanied by attractive new functionalities, could complement existing green public procurement as well as public procurement of innovative products and services.

The EU's Member States however, for a variety of reasons, have rarely integrated considerations of industrial policy in their procurement policies. In some cases this is because public procurement staff is confronted with complex legal requirements when preparing tender specifications whilst in others cases, concerns over possible market distortion present a barrier. Procurers therefore tend to strive for procedures which minimise the likelihood of potential legal dispute or market disruption. This obstacle prevents public procurement programs from significantly boosting the bio-based industry and the development of new and innovative bio-based products.

Furthermore, there is a lack of capacity to spend time on market exploration activities including market dialogues or trade fares. Often, procurement staff are averse to taking risks in terms of applying innovative procedures or new tender specifications. (e.g. the lowest offer often remains the most frequently used procurement criterion, whilst Total Cost of Ownership (TCO) is less frequently the determining factor). In addition, there is often a high incentive to revert to whichever products were appreciated in the past, which leads to a general lack of innovation in procurement.

Green Public Procurement and a general policy to procure sustainable and environmentally friendly products are supported by many public administrations. However bio-based products do not necessarily fit into these schemes. Often, substantial Life Cycle Assessment (LCA) evidence or other proof of sustainability is required. For bio-based products, with complex value chains and methodological data gaps related to LCA, this evidence can be difficult to provide, and presents an additional financial hurdle which is particularly challenging for SMEs to overcome. Explicit guidance on the procurement of bio-based products, as a dedicated policy target, is rare in public administrations.

The Expert Group was mandated to identify and discuss public procurement – as a demand-side industrial policy instrument for market uptake of bio-based products - as well as to map related activities and examples of good practices at regional, national, international and EU level. The report ***Recommendations on Public Procurement of Bio-based Products***[4] describes the Group's activities and presents its results and recommendations.

[3] https://www.biopreferred.gov/BioPreferred/

[4] http://ec.europa.eu/growth/content/15-recommendations-increased-uptake-bio-based-products-public-procurement-0_nn

1.4 Transition to Circular Economy

Bio-based products will play an increasingly important role in the transition from a linear towards a circular economy. Biorefineries, themselves, are at the heart of the circular economy, playing a vital role in developing and adding value to the principles of a 'zero-waste' society. The concept of biorefineries is analogous to that of petrochemical refinery processes, except that biorefineries use renewable instead of fossil carbon based feedstocks. Such feedstocks can include municipal solid waste (where separate collection of organic material is possible and therefore contamination levels with non-organic material are low), and which would otherwise be landfilled or burned, waste from food industry which would otherwise not be reused as well as designated crops and agricultural and forestry waste, which might otherwise be burned or ploughed back into the land. Even taking into consideration the need to ensure the ongoing role of these residues in maintaining soil quality and biodiversity, primary production can play an important role in adding value to these materials which might previously have been considered as 'wastes'.

The Bio-based Products Expert Group firmly believes that special emphasis should be placed on the contribution of renewable, sustainably sourced and environmentally sound, bio-based products to the development of a resource efficient circular economy. Accordingly, supportive policy signals, measures and incentives are needed in order to stimulate innovation and bio-based product commercialisation in this promising sector, particularly, in an ongoing era of heavily subsidised markets for fossil carbon product development. Coherent, holistic, supportive frameworks, emphasising the link between the circular economy, the Bioeconomy and the role of bio-based products, need to be developed across all relevant areas including agriculture, industry, regions, environment, climate, trade, energy and innovation policies. Therefore, a series of recommendations, to help capture the potential for resource efficiency through bio-based products and processes, are made throughout this final report and, in particular, are the focus of sections 2.7 and 2.9.

1.5 Bioeconomy Strategy review

A position paper on the Commission's Bioeconomy Strategy and Action Plan Review and Revision was published in August 2017.[5] This position paper has been integrated in this final report. In order to build a world leading, smart, sustainable and competitive EU bioeconomy, a coordinated and coherent approach is needed across all relevant EU policy areas, and the bio-based product sector requires clear, long-term political support and the implementation of enabling, market stimulating policy measures. To provide a framework for this, and to take into account recent related developments arising from the Circular Economy Package, the members of the EC BBP EG call for a full revision of the existing Bioeconomy strategy.

2 Potential for bio-based products to provide solutions to grand challenges through a revised EU Bioeconomy Strategy

Five years on, the promise and potential of creating new markets through stimulation measures for renewable, EU sourced, bio-based products, have still not been realised. After almost a decade of work examining mechanisms to help 'level the playing field' with a highly subsidised and well established fossil carbon industry base, little in the way of concrete support has actually materialised. The work of the Lead Market Initiative (LMI) Advisory Group for Bio-based Products, fostered by the European Commission's Directorate General for Industry as a way to unlock the market potential for

[5] http://ec.europa.eu/docsroom/documents/25042

innovative goods and services, remains, to a significant extent, unimplemented[6]. Also, the ongoing discussions on a Circular Economy Strategy for Europe have so far only partially acknowledged and made provisions for the role of the bioeconomy sectors in accelerating the move towards a circular economy. Industrial biotechnology helps create smarter, more sustainable products and processes based on renewable raw materials and renewable sourcing, enabling carbon to be recycled at the end of the process, providing an excellent example of the circular economy in action. At carbon level, the bioeconomy is circular by nature when it comes to using CO_2 as a feedstock through photosynthesis, capturing this in biomass and eventually returning carbon to the soil and atmosphere.

It will be important to further emphasise synergies and links between the circular economy and the bioeconomy in the implementation of the EU Action Plan for the Circular Economy, as well as in the ongoing review and possible revision of the EU Bioeconomy Strategy. There is also clear potential to help stimulate market uptake of bio-based products in this context, for example by incentivising the use of bio-based materials in packaging in the context of the revision of the EU waste directives. Synergies with other initiatives of relevance should be further considered and leveraged, such as the ongoing analysis and upcoming Commission communication on the interface between chemicals, products and waste legislation.

Furthermore, a defining characteristic of the bioeconomy is that its resources are harvested from ecosystems that have multiple functions which are essential for humans and nature. The need for sustainable management of the cradles of these resources, be they forests, agricultural lands or oceans, is critical to ensuring that the term 'bio-based' is associated with a product's sustainability footprint. Therefore, sustainable sourcing of the raw materials used in the bioeconomy should be a precondition for any promotional measures.

Increased productivity in current agriculture and forestry is key to tackling the increased scarcity of land per capita and to respond to the growing need for biomass, whether this is for food, feed, material, energy or carbon sequestration.

Below the Commission Expert Group for Bio-based Products sets out some guiding principles for enabling the development of new markets, jobs and economic growth through the development and uptake of bio-based products.

2.1 Bioeconomy providing jobs at all levels across Europe and in all sectors, ranging from agriculture and forestry, to logistics, processing, technology and manufacturing

- Ensuring a clear focus on developing skills and competences: The bioeconomy will provide and/or secure jobs throughout the value chain, from primary production e.g. in agriculture when working on the land, collecting biomass or in process operations in biorefineries, through to high-tech academic jobs in e.g. biotechnology - when designing fermentation processes or process technology and when designing biorefineries. Hence, bioeconomy jobs will be able to replace jobs currently found in fossil-based operations.
- Designing policies that will improve the competitiveness and productivity of the EU sourced biomass from agriculture and forestry, and help secure EU jobs at the biomass production level.

[6] http://ec.europa.eu/DocsRoom/documents/13269/attachments/1/translations

- Helping the workforce adapt: Jobs will be created and maintained in all parts of Europe - from rural, costal and urban regions and de-industrialised zones, counterbalancing the impact of globalisation and/or digitalisation.
- Adding value and attracting investment throughout the value chain: The bioeconomy will be able to connect circular with bio-based jobs, and primary production can be a catalyst for also creating higher value jobs and boosting regional investments. A strong European bioeconomy and stable policies to promote it could also help attract inward investment.

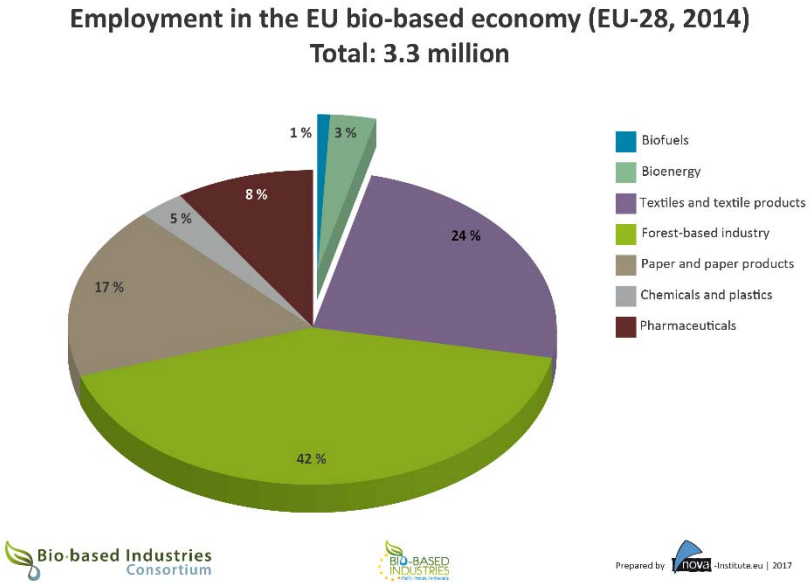

Figure 1- The employment in the European bio-based economy is 3.3 million employees.[7]

[7] Please note that this figure indicates only the number of employees in the sectors mentioned excluding primary biomass production and extraction i.e. agriculture, forestry, fishery, food, beverages and tobacco. The employment figure includes other sectors than the definition used by JRC, see footnote 2.

2.2 The bioeconomy is able to boost European competitiveness in a growing number of sectors

- Providing a broad spectrum of essential everyday products: The bioeconomy can be applied in any sector that the fossil industry is currently predominant in, including chemicals, materials and energy and more, since the bioeconomy also provides food and feed.
- Creating dynamic and competitive regional economies: The Bioeconomy, when it operates locally, is a powerful tool to add value to regional economies and attract investment, create jobs and enable growth at all European regional levels.
- Attracting investment: development of the bioeconomy will help attract investment in innovation across a broad range of sectors in the EU which, in turn, will boost competitiveness.

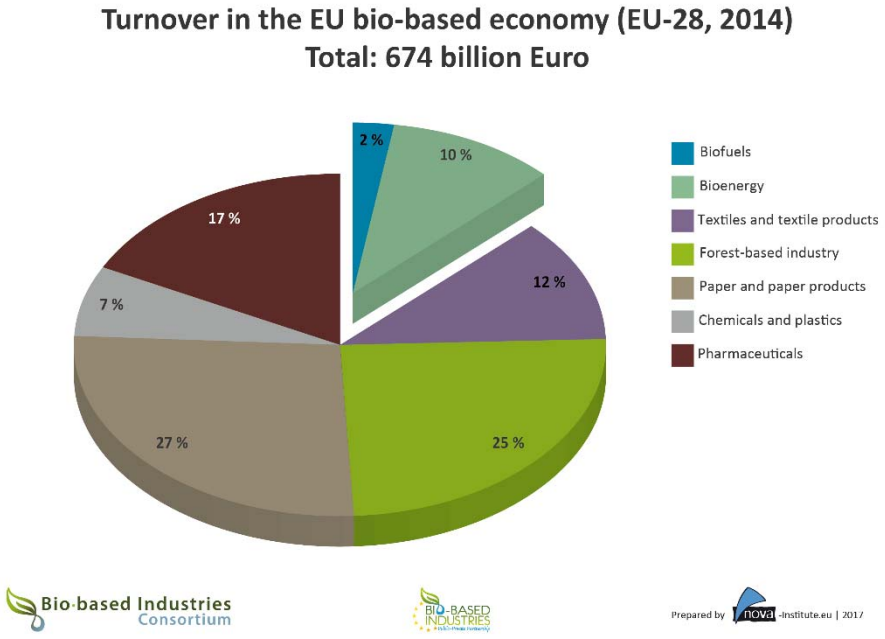

Figure 2- The turnover of the European bio-based economy is 674 billion EUR.

2.3 Resource efficiency is a key principle in the bioeconomy: all parts of the biomass will be used.

- Producers aim to use all parts/components of the biomass raw material as efficiently as possible by producing new and innovative materials from side streams from the current industries, thereby valorising by-products that are today, sometimes needlessly, ending up in landfills, hence maximising the economic added value, while minimising the environmental footprint.
- Bio-refineries are the 'processing units' that efficiently convert biomass or bio-waste into intermediate and final products. They are increasingly designed to process a wide variety of raw materials into a broad spectrum of end products through a range of different technologies.

2.4 The potential of the bioeconomy lies in the fact that it not only provides food, feed and materials, but also can replace fossil carbon based chemicals, materials, fuels and energy.

- New and novel properties from nature: Biomass has a very versatile chemical composition from which the chemical industry can benefit. Bio-based products can, in some cases, offer new functionalities such as compostability, compatibility with the body, low or no toxicity, or improved physical and chemical properties.
- Extracting more from less: Bio-based resources contain complex polymers and are a source of bio-actives and health promoting molecules e.g. cellulose, hemicellulose, starch, natural antioxidants, proteins, peptides, sugars, triglycerides that, typically, cannot be derive from fossil carbon feedstock.
- Regenerating materials from atmospheric carbon: Renewables ensure an infinite supply of raw materials for materials use, since they are made of biomass. In contrast to fossil carbon sources, biomass, through its unique ability to capture the CO_2 from the atmosphere via photosynthesis, ensures that feedstock can be regenerated.

2.5 The bioeconomy contributes to provision of goods and services for a growing population with increasing demands for food, feed, materials and fuels – feeding into circular economy through resource efficiency

- Ensuring that bio-based products fulfil their potential to help address grand challenges: A successful and dynamic bioeconomy for Europe is built on sustainable practices across the value chain. Biodiversity protection and maintaining and improving soil fertility, which is indispensable for the bioeconomy, are issues which must be carefully addressed and taken into consideration.
- The bioeconomy sectors are creating jobs, providing energy and food security, helping mitigating the impacts of climate change, and enabling smarter and more sustainable products and materials, aiming to make the most efficient use of our renewable natural resources. As such, bio-based materials and products contribute to climate goals and many of the UN Sustainability Development Goals.

2.6 The European bioeconomy will make Europe's economy more stable and less dependent on finite fossil resources. When growing biomass, CO2 is removed from the atmosphere, whereas when using additional fossil carbon resources additional stored CO2 is released which would otherwise remain locked underground.

- Bio-based products are made of biomass coming from agriculture, forestry and the ocean which can be locally sourced from various regions in the EU. In this way, the raw materials base for industry is diversified and can be locally produced and sourced. The dependency on fossil resources and the correspondingly small number of fossil carbon suppliers, often in less stable global regions will therefore also be reduced where biomass can be used instead. In addition, bio-based alternatives often require less energy to produce.
- The carbon in bio-based products was first extracted from the atmosphere through photosynthetic processes, hence bio-based products are not only an active measure to keep fossil carbon in the ground but also to reduce emissions or even to lower CO_2 in the atmosphere, creating a climate resilient economy.

- To meet climate targets, the chemical sector has the option to switch from fossil carbon to renewable carbon. The only sources of renewable carbon are biomass and the direct use of CO_2.
- When biomass is used for producing products with a long life-span, the CO_2 absorbed from the atmosphere is therefore also stored in those products for the longterm, thus providing an even more positive effect on the climate.
- It is also relevant to further consider the climate benefit of bio-based products in the EU Green House Gas (GHG) accounting framework of Land Use, Land Use- Change and Forestry (LULUCF), as these products help store carbon during their life span and during recycling.

2.7 Bio-based products can have interesting new characteristics, which support the transition from a linear to a circular economy in Europe.

- Some bio-based products, for example plastics, detergents, solvents and lubricants can also be biodegradable.
- Biodegradable means the material can be broken down by the metabolism of micro-organisms into CO_2, water and biomass. Ultimately, the matter returns to the biological carbon cycle.
- Biodegradability of products needs to be communicated with a link to the environment in which biodegradation takes place and the timeframe in which this process will be complete. For example, the circular context for biodegradable plastics is organic recycling (industrial composting and anaerobic digestion) – most current biodegradable plastics are designed for this purpose and fulfil the standard EN 13432 for industrial composting.
- Certified industrially compostable plastic applications can help in the collection of bio-waste directing this valuable resource to organic recycling, thereby providing secondary raw material and products (biomass / organic fertilizers), for future use in a circular bioeconomy.

2.8 The bioeconomy increasingly incorporates the use of side or waste streams, thereby avoiding landfill and reducing emissions of CH4 methane, a much more powerful greenhouse gas than CO2.

- Reducing waste and extracting more from less: The potential of the bioeconomy is increasingly incorporating the use of residues, side streams and by-products from existing industry and biological waste, and this is adding value to 'unavoidable' food waste, e.g. whey from milk processing, fruit peelings, etc.

2.9 The use of bio-based, renewable materials is a vital part of the circular economy – and will help lead to a more sustainable circular bioeconomy.

- The main driver of innovation in the bio-based sector is to gradually ensure that all potential feedstock sources are processed in a manner that uses all components in the smartest, most efficient way, whilst adding the greatest possible value. In addition, over time, new and innovative intermediate and final products and applications will be developed.
- Considering and implementing the bioeconomy and the circular economy together will potentially lead to stronger synergies. Policies and supportive measures should aim to ensure the creation of a bioeconomy which uses bio-based resources in a circular way ('circular bioeconomy'). It will become increasingly necessary to develop synergies between the two systems in order to ensure that resources are used more productively and efficiently in both economies.

- The circular economy promotes the reduction of use and the re-use of biomass, as well as other resources, to minimise waste and losses through improved sorting, collection and recycling.

3 Policy recommendations for bio-based sector development

The BBP EG was mandated to propose demand-side industrial policy actions conducive to the market uptake of bio-based products and processes. These recommendations are based on work done by the group, the results of which have been published in the intermediate deliverables gathered in part II of this final report.

3.1 Better coordination of the future "updated" bioeconomy strategy and overall EU policy framework affecting the bioeconomy

- A new ambitious Bioeconomy Strategy is needed, that not only fosters greater synergies between the bioeconomy and the circular economy, but which also embraces other relevant policies and strategies – such as climate change, CAP, sustainable development strategy, renewable energy, water and Food2030 etc..
- This needs to be accompanied by targeted actions, ensuring optimised collaboration, harvesting of synergies and an overall increased political momentum focused on unlocking the full potential of the Bioeconomy for Europe.
- Involving more European Commission services will facilitate such policy development and strategy implementation, including Directorate Generals for Research, Agriculture, Internal Market and Industry, Environment, Regional and Urban Policy, Energy, and Climate Action.

3.2 Improve access to financing for small, medium and large-scale bio-refinery projects.

- Public funding plays an important role in 'de-risking' investment in high CAPEX bio-refinery projects with long payback times. However, public funding only covers part of the costs associated with project development, with other funding sources needed to finance the rest. Different funding schemes need to be better understood and integrated.
- There is a need to harmonise funding mechanisms for bio-based product development and commercialisation. The funds available for developing an innovative bioeconomy are numerous including: Horizon 2020 (including InnovFin), European Regional Development Fund (ERDF), European Social Fund (ESF), European Agricultural Fund for Rural Development (EAFRD), Cohesion Fund and European Fund for Strategic Investments (EFSI). However, this funding picture is fragmented with different procedures spread across different institutions, regions and organisations. This makes accessing finance lengthy and complex and particularly difficult for SMEs. In order to make the synergy simpler, the European Commission could set up an intra-DG task force involving the different DGs, linked to management of the bioeconomy and the above listed funds, to work with greater coherence on possible tools that directly link the funds. An overall European "bioeconomy investment programme" should make first time exploitation in Europe a key selection criteria and be sufficiently financed to achieve the goals of the international treaties.
- A distinct European Bioeconomy Strategic Investment Fund (EBESIF) could help pool resources from different financing mechanisms such as those available through the European Investment Bank and private funds, and help leverage Commission contributions.

3.3 Expansion of opportunities for using biomass for high value products, without compromising EU and global food needs.

- Understanding biomass flows and likely future trends in consumer consumption is essential for the development of a smart and sustainable bioeconomy: continuous and reliable access to sustainably produced, renewable carbon resources for making bio-based products, will be essential for the development of the EU bioeconomy. However, as yet, there is a lack of understanding of flows of biomass and of the likely changes in their patterns of use in the future. For example, as solar and wind power increasingly supply Europe's energy needs, there will be a decreased need for fossil carbon for this end use, and consumer trends in consumption (eg, meat consumption) will also influence the availability of resources for the production of food, feed, fuels and materials. To develop a clearer and more comprehensive outlook, the Commission and national authorities should therefore conduct a thorough analysis of biomass availability and flows on a regional basis - and put in place instruments to ensure there sustainable use, thereby promoting smart choices from amongst competing uses from various sectors. The upcoming JRC biomass study is also much needed and eagerly anticipated.
- A comprehensive view of biomass availability is necessary. Nova Institute[8] shows that 12 billion tons of dry matter global biomass supply is available. This represents 15% of the total, but the share could be increased to 25-30% since we are currently not using all side streams. Particular attention to accounting for current and future streams of wastes and residues will be important in order to have a comprehensive view of biomass availability.

3.4 Develop and implement robust methodologies, criteria, standards and certification schemes for assessing sustainability impact of bio-based products.

- There is an urgent need to use consistent measurement tools, that are workable, reliable and trusted, to measure bio-based products together with their fossil alternatives for their environmental and social impact.
- The value of performing an LCA (improved innovation steering, sustainable product portfolio management, supporting sustainability based value propositions etc.) needs to compensate for the costs, including a competitive analysis between products with different LCAs. Hence, the benefits should outweigh the costs for the companies that market these products. EU support measures for funding LCAs could be further developed at an early stage to facilitate market development.
- LCA methodologies will need to take into account specific features of bio-based products, and their impact on various parameters beyond carbon footprint[9]. Also, they will need to account for variations in indirect effects (for example raw material management, innovation efficiency, etc.) as the development of these products matures[10].

[8] Nova-Institut, nova-Paper #7 on bio-based economy: "Global bioeconomy in the conflict between biomass supply and demand" http://bio-based.eu/publication-search/?wpv_post_search=Global+bioeconomy+in+the+conflict+between+biomass+supply+and+demand&wpv_filter_submit=, 2015 and nova-Institut, "Nachhaltig nutzbare Potenziale für Biokraftstoffe in Nutzungskonkurrenz zur Lebens- und Futtermittelproduktion, Bioenergie sowie zur stofflichen Nutzung in Deutschland, Europa und der Welt" http://bio-based.eu/publication-search/?wpv_post_search=Nachhaltig+nutzbare+Potenziale&wpv_filter_submit=, 2015.

[9] WBCSD Life Cycle Metrics for Chemicals; ReCiPe

[10] For instance, when comparing the DSM/Reverdia process or Biosuccinium™ with petro-based succinic acid.

- It is important that the European standards which are developed by CEN/TC 411 *Bio-based products*[11] are promoted as they facilitate the communication about important properties of bio-based products including LCA (EN16760) and sustainability (EN 16751).

3.5 Increase investments in research for new, resource-efficient renewable alternatives to everyday fossil-carbon based products.

- The BBI JU represents a key milestone in the development of an innovative EU Bioeconomy. However, it is now essential to ensure that the JU is continued for a second term beyond 2021 in order to ensure continuous growth towards 2030. The BBP EG therefore calls upon the European Institutions and Member States to ensure the continuation of this beneficial, transformative initiative.
- In addition, the EU should also focus on developing centres of excellence in bioeconomy to enable scale-up and to provide acceleration in bio-based innovation. This also implies ensuring that a better distinction is made between "knowledge creation", addressing the grand societal challenges (e.g. through FP9), and addressing the value chain approach and deployment through a BBI JU 2.0, although both of them are equally important for the development of a world leading EU bioeconomy.

3.6 Implement market stimulation measures to enable a more competitive sustainable bioeconomy.

- New markets need clear and unwavering political support and enabling policy measures in order to help establish trust and confidence amongst industry, investors and ultimately consumer brands and consumers themselves. Inconsistent support and changes in policy, coupled with a lack of application of EU wide standards and certification, can be immensely damaging to emerging industries with potential sustainability benefits and a lack of predictability can result in a loss of market, industry and investor confidence.
- Conversely, smart market pull measures can help immensely in the creation of new products and processes. These can range from activities to support communication and awareness among consumers, producers and brands (incorporating the use of standards; labelling, network development and training), to public procurement and even smart regulation providing incentives for more sustainable, renewable products. (see 3.7)
- Financial support and political commitment from European, national, regional and local level is needed to make the opportunity of sustainable bio-based products in procurement a common practice.
- Support for market dialogues between procurement and product suppliers (e.g. to develop product criteria and tender specifications) would help stimulate development of new markets for bio-based products

3.7 Invest in the development of tools (standards and labels) enabling bio-based products to be better evaluated by purchasers.

- There is a lack of awareness and confusion about the properties of bio-based products, which in turn limits them from growing into full-scale commercial applications. European standards and labelling systems help to specify and communicate the properties of bio-based products

[11] https://standards.cen.eu/dyn/www/f?p=204:7:0::::FSP_ORG_ID:874780&cs=112703B035FC937E906D8EFA5DA87FAB8

in a clear and unambiguous way, thereby contributing to a level of certainty in the market. There will continue to be an ongoing need for new standardisation and labelling (single, unifying and identifiable) to create market certainty for the bio-based sector.

- It is also important that certification schemes and labels, such as the recently developed NEN bio-based content certificate and label for products that are in compliance with EN16785-1[12],are promoted as they can help communicate the bio-based content of bio-based products in a clear and unambiguous way and thus help build consumer awareness and confidence in bio-based products. In this context, also a better harmonisation between existing biomass certification schemes is needed.

3.8 Use mandates and bans to create environmentally friendly innovation.

- Mandates and bans should be used as important policy instruments, based on sound environmental and health reasons, in order to tap into the full positive potential of bio-based products. The rationale for mandates and bans is not that the products are bio-based per se, but rather that the products have superior functionalities and properties concerning environment and health.
- These market pull measures should be implemented in close coordination with a technological push in the form of support for R&D, pilot and demonstration plants and flagship investments, in order to provide a Launchpad for sustainable and innovative bio-based products, until sufficient market pull and demand is created.
- Examples of beneficial bio-based products, which could provide valuable substitutes for conventional fossil-based products, are plasticisers for plastics without impacts on the hormone system, detergents with rapid biodegradation in waste water streams, or biodegradation for specific plastic applications which cannot be collected and recycled[13].
- Therefore, the increasing need to meet environmental and health requirements will also support the market penetration of bio-based products in a long lasting way, independently of bio-based specific incentives. In addition, where appropriate, enhanced product responsibility could help to stimulate markets for biodegradable products: Where products are placed in the environment that cannot be collected, separated and recycled, they should be sustainably biodegradable in the same environment.

Conclusion

The BBP EG believes that a concerted effort is needed to ensure that the foundations that have been laid, as a result of the first EU Bioeconomy Strategy, are built upon. This means that a full revision, rather than simply a review, of the current strategy is essential and that a cross-policy approach is needed, involving all stakeholders in the EU.

The bioeconomy and bio-based products continue to face challenges in terms of awareness and understanding, meaning that there is a constant need for new information and examples to demonstrate progress and benefits to Europe and Europeans. This is improving, but in order for bio-based products to fulfil their potential to bring societal, environment and economic sustainability benefits for future generations, a greater dedication of resources and commitment will be needed.

[12] http://www.biobasedcontent.eu/

[13] A full three page list with concrete proposals for mandates available: nova paper #6 on bio-based economy 2015-06: Options for Designing the Political Framework of the European Bio-based Economywww.bio-based.eu/policy

In the dialogue around the development of bio-based products, there will not always be full stakeholder agreement on the best way forward in terms of the policies and support needed. However, there should be consensus on the need to enable renewable solutions to provide sufficient food, feed, fuel and materials for the future needs of a growing global population without compromising the climate, the environment or its ecosystems.

The opportunity provided by Europe's value-adding bio-based products industries is considerable, across many sectors. Clear leadership and coordination is now needed to ensure that this potential is recognised, harnessed and exploited.

The EU needs to leverage its strengths and identify what its level of ambition is, especially in the view of the increasing global competition in this sector. Inevitably, new technologies take time to develop. A long-term sustained commitment is necessary to give confidence that the EU is seriously intending to leverage on its industrial strengths in bio-based industries. From this, a virtuous circle of investments, growth and innovation will then develop, generating additional direct and indirect jobs. Without such a commitment, it is likely that the EU will see a continuation of the trend of innovative bio-based industries to be attracted overseas by investment opportunities and by more secure and supportive policy environments.

Europe needs to engage its decision makers and stakeholders from the fields of regional policy, environment, agriculture, industry, climate, trade, energy, research and innovation, amongst others, to tackle barriers to the sustainable growth of the bioeconomy and to create more opportunities within Europe. Only by tackling policy fragmentation, engaging with civil society and putting in place policies to boost the uptake of bio-based products throughout the Member States and regions, can the EU deliver on the ambitious but achievable goals set out by its own bioeconomy strategy.

The BBP EG now recommends that as a first step for this onward journey, the EU bioeconomy strategy is fully revised and the BBI JU is continued for a second term.

Annex – published papers and recommendations

1. Evaluation of the Implementation of the Lead Market Initiative for Bio-based Products' Priority Recommendations
   Awareness raising on bio-based products
2. Recommendations on Public Procurement of Bio-based Products
3. Terms of reference
4. List of Members & Observers

COMMISSION EXPERT GROUP FOR BIO-BASED PRODUCTS

Working Group on Evaluation of the Implementation of the Lead Market Initiative for Bio-based Products' Priority Recommendations[1]

Definition of bio-based products:

Bio-based products are products that are wholly or partly derived from materials of biological origin, excluding materials embedded in geological formations and/or fossilised.

(CEN - Report on Mandate M/429". See also COM(2012) 60 final, p.3: SWD(2012) 11 final, p.5)

In the context of the Commission Expert Group for Bio-based Products, while taking into account the broader context of the bioeconomy, the Expert Group will not make recommendations specific to other sectors such as food, feed and energy."

CONCLUSIONS

Based on the evaluation of the state of play of the implementation of the Lead Market Initiative (LMI) priority recommendations, it can be concluded that:

- **Serious action has been taken and results are visible regarding recommendations focused on Research, Development & Innovation; Public Procurement and Communication**

- **Limited action has been taken and few results are visible regarding recommendations focused on Access to Feedstock and Access to Markets for bio-based products.**

At least two of the five focus areas show a considerable lack of progress in implementing the recommendations. Thus the change of the development of a broad bio-based economy within the EU is hampered and the transformation of the EU's fossil-based economy towards a bio-based one is at risk of being much slower than in other regions of the world.

[1] The priority recommendations were prepared by the Ad-hoc Advisory Group for Bio-based Products during the Lead Market Initiative for Bio-based Products between 2008 and 2011, see https://biobs.jrc.ec.europa.eu/sites/default/files/generated/files/policy/2011%20Lead%20Market%20Initiative%20LMI%20Biobased%20Products%20Priority%20Recommendations.pdf

Context of work and objective of the Working Group

Based on the final outcomes of the completed Lead Market Initiative (LMI) for Bio-based Products[2] and in the context of the Commissions' bioeconomy strategy[3] and industrial policy[4], the Commission Expert Group for Bio-based Products[5] (Expert Group) was established in July 2013.
The objective of the Expert group is to advise the Commission with regard to the development of the bio-based products sector by:

1. monitoring and supporting the development of the policy framework / implementation of the priority recommendations proposed by the Lead Market Initiative Ad-hoc Advisory Group for Bio-based Products.

2. proposing demand-side industrial policy actions conducive to the market uptake of bio-based products and processes (standardisation, public procurement, awareness raising, labelling, etc.).

3. mapping of bio-based products and relevant bioeconomy related activities and exchanging of good practices at regional, national, international and EU-level aimed at increasing the competitiveness of the European industry.

In order to carry out the mandate with respect to the first objective, the Expert Group decided to set up the Working Group "LMI Evaluation". Its mandates are the following:

- to gather information on implementation activities related to the priority recommendations at European Member States and regional/local level from the experts and observers of the Commission Expert Group and from the Commission services.

- to assess the current state of play of the implementation of the 15 priority recommendations based on the available information and draw concrete recommendations for the identified implementation gaps.

[2] http://ec.europa.eu/growth/sectors/biotechnology/bio-based-products/index_en.htm

[3] http://ec.europa.eu/research/bioeconomy/pdf/official-strategy_en.pdf

[4] http://ec.europa.eu/growth/industry/policy/renaissance/index_en.htm

[5] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2886

Methodology

The 15 priority recommendations have been evaluated and assessed by the Working Group based on information contributed by members and observers of the Commission Expert Group for Bio-based Products, various Commission services and on individual expertise. Due to obvious limitations regarding its resources, the Working Group has not had the ambition to deliver a comprehensive in-depth study on the state of the play of the implementation of the priority recommendations. It rather intended to assess the obvious achievements and gaps which could be tackled by specific policy actions at European or Member States level.

Firstly the Working Group agreed on a set of criteria (level of implementation; uptake by EU/Member States/regions; tangible impact), which was arranged into a table of scores (Table 1 in annex).

Based on the consensus regarding the respective scores, an evaluation has been carried out for each of the priority recommendations with respect to achievements at EU / Member States / regional level and gaps identified.

Evaluation of the implementation of the 15 priority recommendations of the LMI Ad-hoc Advisory Group for Bio-based Products (2011)

Access to feedstocks

1. LMI priority recommendation #1:

Legislation and policies (agriculture, rural development, research, industrial and environmental policy, etc.) should be balanced between bio-energy and bio-based products to allow access to sustainable renewable raw materials/feedstock for industrial uses. Legislation and policies should promote the availability of renewable raw materials/feedstock in sufficient quantities at a suitable and guaranteed quality and at competitive prices.

1.1 Achievements at EU, national or regional level

The idea of a balance between bio-energy and bio-based products, referred to as a level playing field, is discussed extensively throughout Europe and multiple acknowledgments of its importance are made in strategies published at EU level, by some Member States and regions.

1.2. Gaps

For bio-energy/biofuel there are strong policies in effect, such as the Renewable Energy Directive (RED) or Member State incentives. Currently the use of biomass for material purposes is only encouraged by small and isolated incentives, resulting in a situation where the use of biomass for bio-based products is disadvantaged compared to its use for energy production.

2. LMI priority recommendation #2:

All programmes in Structural Funds and Rural Development, which are used to support and implement bio-energy and biofuels, should be opened to bio-based products, and all criteria for funding should be handled equally.

2.1. Achievements at EU, national or regional level

At EU level, the structural and investment funds (including European Agricultural Fund for Rural Development and European Regional Development Fund regulations for 2014-2020 as well as the CAP in general) have been opened up for projects focusing on bio-based products.

2.2. Gaps

The EU level initiative to open up structural funds etc. to date has not been followed up by Member State initiatives.

Research, development and innovation

3. LMI Priority recommendation #3

To continue to stimulate and enhance technological innovation and the development of technology, to increase public funding for demonstration projects and stimulate the construction of demonstrators via Public Private Partnerships, and to set up a specific "EU Innovation Fund" which could also serve to aid the transition of the results to full scale implementation and to the marketplace.

3.1. Achievements at EU, national or regional level

At European level, a new Public Private Partnership (PPP) between the European Commission and the bio-based industry, the Bio-based Industries Joint Undertaking[6] (BBI JU), was launched in July 2014 with a total budget of EUR 3.7 billion for the period 2014-2020. Almost EUR 1 billion will be invested by EC. The BBI-JU will cover research-, development-, demonstration- as well as flagship-projects. The first call was launched in 2014.

In addition the bioeconomy pillar within Horizon 2020 has been reinforced with a total budget of more than EUR 4 billion. Industrial biotechnology became part of the Industrial Leadership (Key Enabling Technologies[7]) pillar of Horizon 2020 carrying a focus on deployment.

At national level, several Member States have introduced specific funding programmes (sometimes via local Public Private Partnerships), e.g. Germany, Italy and The Netherlands. Similar initiatives are being launched in many regions (e.g. Baden-Württemberg and North Rhine-Westphalia in Germany, Bio-based Delta in The Netherlands, Flanders in Belgium and some regions in Italy).

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[6] http://bbi-europe.eu/

[7] https://ec.europa.eu/programmes/horizon2020/en/area/key-enabling-technologies. See also http://ec.europa.eu/growth/industry/key-enabling-technologies/index_en.htm

3.2. Gaps

The BBI JU has just started and its effectiveness has to be proven in the long term. Initiatives related to possible synergies between the Bio-based Industry Joint Undertaking and the European Innovation Partnership on Agricultural Productivity and Sustainability[8] have not been perceived so far.

4. LMI Priority recommendation #4

To develop incentives for the conversion of production plants and industrial processes into bio-based, provided that they have proven to be sustainable, and that applicable EU State Aid rules are respected.

4.1. Achievements at EU, national or regional level

Although no specific programmes or incentives exist to convert abandoned production plants or conventional production processes into bio-based ones, regions are allowed to use the Structural Funds to support conversion of such (old or abandoned) plants.

For example France has launched an industrial plan for biofuels and green chemistry and specific measures/ industrial projects are under discussion. Furthermore several regions in Italy have developed specific actions promoting the conversion of specific former/abandoned industrial sites into biorefineries exploiting local biomass.

4.2. Gaps

Compared to other parts of the world the potential of measures in Europe to support the conversion of abandoned plants or the investment in new production infrastructure still seems underutilized.

5. Recommendation #5

To develop incentives (taxation or state aid measures, grants) to support the development of new, sustainable bio-based products' production processes, in other words financial support for those companies that want to invest in new sustainable productions infrastructure.

5.1. Achievements at EU, national or regional level

Available funding has increased for innovation and even for demonstration projects and flagships (first-of-a-kind innovative production plants) in Europe (Horizon 2020 and BBI JU). The European Investment Bank (InnovFin and EC Investment Package) offers additional opportunities. Finally, new instruments were established to enable Member States and regions to co-invest in projects (e.g. via ESIF).

[8] https://ec.europa.eu/eip/agriculture/en/content/EIPAGRIabout

5.2. Gaps

Access to finance, however, is more difficult in Europe than in other large economies (e.g. the funding landscape is too fragmented, administrative procedures are too complicated and decision-making processes are too long). Moreover, SMEs are not always aware of existing funding possibilities.

In November 2014 the Bio-based Industries Consortium has published "Guiding principles to combine BBI (H2020) and European Structural and Investment Funds (ESIF) to deploy the European Bioeconomy[9]". Despite the fact that several Member States/regions have taken up bioeconomy in their smart specialisation strategies, regional funding procedures still seem very diverse and complex.

Access to markets

6. LMI Priority recommendation #6:

Continue to develop and apply clear and unambiguous European and international standards. The standards help to verify claims about bio-based products in the future (e.g. bio-degradability, bio-based content, recyclability, and sustainability).

6.1. Achievements at EU, national or regional level

The definition of 'bio-based products' was published in summer 2014 by CEN. CEN TC411, TC276 and TC249 are on track in developing standards for bio-based products (definition, sustainability, life cycle analysis, biodegradation, labelling etc.) and envisage bringing several standards into force in 2016.

In addition, two FP7 projects (Knowledge Based Bio-based Products' Pre-Standardization10 and its follow-up project OPEN-BIO11) are inputting research findings into CEN TC411.

In addition to FSC[12] (Forest Stewardship Council) and PEFC[13] (Programme for the Endorsement of Forest Certification) for wood, ISSC Plus[14] (International Sustainability & Carbon Certification) and RSB[15] (Roundtable on Sustainable Biomaterials) are organisations for the certification of sustainability of all kinds of biomass, independent of their final use.

[9] http://biconsortium.eu/sites/biconsortium.eu/files/downloads/Guidelines_BBI-ESIF-Final.pdf

[10] http://www.biobasedeconomy.eu/research/kbbpps/

[11] http://www.biobasedeconomy.eu/research/open-bio/

[12] https://us.fsc.org/

[13] http://www.pefc.org/

[14] http://www.iscc-system.org/

[15] http://rsb.org/

In Germany the Initiative for Sustainable Supply of Raw Materials for the Industrial Use of Biomass[16] (INRO) and in The Netherlands Green Deal[17] suggest suitable certification systems for the chemical and bio-based products industry. These initiatives aim to reach an agreement with industry on the voluntary certification of biomass.

6.2. Gaps

The standards are not yet fully implemented and/or used by governments in the Member States for incentives or market pull instruments.

7. LMI Priority recommendation #7:

Consider setting indicative or binding targets for certain bio-based product categories where they contribute towards achieving the objectives of existing and future sustainability policies (such as climate change, resource efficiency, energy security, etc.). Study their market perspective, possible mechanism for implementation and their contribution to these sustainability goals.

7.1. Achievements at EU, national or regional level

Although certain discussions at a European level and in some member states are taking place no real achievements have been observed.

7.2. Gaps

A political consensus cannot currently be perceived. Any implementation still seems remote.

8. LMI Priority recommendation #8:

Allow Member States to grant tax incentives for sustainable bio-based product categories.

8.1. Achievements at EU-, national or regional level

Tax incentives are being seriously discussed at EU level. Some member state already use tax incentives to support bio-based and/or environmental products such as France, Italy, UK, The Netherlands and Belgium.

8.2. Gaps

For tax issues duties and responsibilities lie first and foremost with the Member States so the scope of action at an EU level is naturally limited. Prospects of implementing this recommendation by all Member States still seems to be remote.

[16] http://www.inro-biomasse.de/en.htm

[17] http://www.rijksoverheid.nl/onderwerpen/duurzame-economie/green-deal

9. LMI Priority recommendation #9:

Allow bio-based plastics to enter all waste collection and recovery systems, including composting, recycling and energetic recovery (depending on the type of plastic and compliance with applicable standards). Bio-based plastics certified compostable according to EN 13432 should gain unhindered access to bio-waste collection.

9.1. Achievements at EU-, national or regional level

Many countries have allowed certified biodegradable materials/products in waste collection systems; at EU level and in the Member States discussions are on-going about how to integrate bio-based products into the next revision of waste, composting and recycling regulations.

9.2. Gaps

Know-how on a technical level is still not sufficient. E.g. gaps are seen in (material) recycling of bio-based plastics because of low volume and potential problems for the recycling of other plastics. Also more know-how and information is needed about anaerobic digestion into biogas (methane) of biodegradable plastics.

Furthermore reluctance from stakeholders in the recycling sector can be observed based on fear of higher costs.

10. LMI Priority recommendation #10:

Bio-based construction materials (foams for insulation, composite material, mortar, and concrete made of vegetative aggregate particles) have now become sufficiently advanced to offer a real alternative. The Construction Products Directive should promote the specificities of bio-based products. In addition, new and transparent standards showing the product capabilities are needed to help demonstrate that bio-based materials comply with construction legislation.

10.1. Achievements at EU-, national or regional level

In several countries information about bio-based building and construction products is being provided via brochures, internet, campaigns with road shows and exhibitions.

10.2. Gaps

However the uptake of new bio-based products in market share is still not very large in comparison to fossil- and mineral-based products.

Specific technical hurdles for some bio-based products in the construction sector were identified by the KBBPPS-project (Knowledge Based Bio-based Products' Pre-Standardization), e.g. for natural fibre insulation materials; in the pilot phase of PEF (Product Environmental Footprint) the notion of "bio-based products" is only considered marginally.

11. LMI Priority recommendation #11:

Study the possibility of mandating the use of bio-lubricants and hydraulic fluids in environmentally sensitive areas. This could be implemented e.g. via soil protection and water protection legislation.

11.1. Achievements at EU-, national or regional level

In several EU member states the use of biodegradable lubricants is compulsory in sensitive natural areas. Likewise for FSC and PEFC managed forests, the use of biodegradable lubricants is mandatory.

11.2. Gaps

Due to the specificity of the problem biodegradability as a property outweighs "bio-based" in significance. A political consensus has not been achieved to date. Implementation at EU level, binding for all member states still seems far away.

Public procurement

12. LMI Priority recommendation #12:

Encourage contracting authorities in all EU Member States to give preference to bio-based products in tender specifications. A requirement or a recommendation to give preference can be laid down in a national action plan adopted by the government. Preference should be given to bio-based products unless the products are not readily available on the market, the products are available only at excessive cost, or the products do not have an acceptable performance.

12.1. Achievements at EU, national or regional level

In some countries, concrete pilot projects have been initiated to give preference to bio-based products in tender specifications. As a side effect bio-based products possess advantages in those procurement systems which include sustainability and/or innovation.

12.2. Gaps

Public procurement takes place in a fragmented landscape. Although the effectiveness of this recommendation is thought to be rather high a national and/or EU bio-based procurement system has not been reached yet.

13. LMI Priority recommendation #13:

Develop a list of product groups and designated bio-based products. The product groups and subgroups reflect the areas of application (e.g. building materials, furniture, cleaning products, lubricants, packaging, etc.). The designated bio-based products reflect the individual products from each manufacturer respectively.

13.1. Achievements at EU, national or regional level

Products list have been drawn up in several countries and put in booklets and on websites. This action also has been taken at a European level.

13.2. Gaps

Presently there is no official EU product list available. The publication (and maintenance) of such a list by the EU itself is deemed to be very useful. Such a list might be truly effective if used in combination with other actions such as legislation or procurement systems.

Communications

14. LMI Priority recommendation #14:

Promote and use harmonised certification and labelling schemes for bio-based products.

14.1. Achievements at EU, national or regional level

To date the EN 13432 for industrial compostability is well known and widely applied throughout Europe. Other EN standards like for bio-based content, industrial digestion and biodegradation in other environments (e.g. soil, water) are still in development by CEN.

14.2. Gaps

Not many governments actively promote the use of the compostability norm and/or prevent the misuse by producers not complying with the norm. As different norms for measurement of bio-based content currently are in development by different stakeholder groups, the harmonisation of a standard measurement for bio-based content presently is at risk.

15. LMI Priority recommendation #15:

Design and implement a communication strategy involving all partners in the value chain and all other stakeholders to achieve coherent messages on bio-based products.

15.1. Achievements at EU, national or regional level

The European Commission has conducted a public consultation on the bio-based economy in 2011. Some other communication activities on a smaller scale have been observed.

15.2. Gaps

Despite policy support for this measure through the EU wide communication on Bio-based economy a really visible and coherent communication strategy on the bio-based economy has not been observed to date.

Summary

	Recommendations	Consensus Rating
Access to feedstock	*1. Legislation and policies should be balanced between bio-energy and bio-based products to allow access to sustainable renewable raw materials / feedstock for industrial use. Legislation and policies should promote the availability of renewable raw materials / feedstock in sufficient quantities at a suitable and guaranteed quality and at competitive prices*	3
	2. All programmes in Structural Funds and Rural Development, which are used to support and implement bio-energy and biofuels, should be opened to bio-based products, and all criteria for funding should be handled equally	3
Research, Development &	*3. Continue to stimulate and enhance technological innovation and the development of technology. Increase public funding for demonstration projects and stimulate the construction of demonstrators via Public Private Partnerships. Set up a specific "EU Innovation Fund" which could also serve to aid the transition of the results to full scale implementation and to the marketplace.*	7.5
	4. Develop incentives for the conversion of production plants and industrial processes into bio-based, provided that they have proven to be sustainable, and that applicable EU State Aid rules are respected.	5
	5. Develop incentives (taxation or state aid measures, grants) to support the development of new, sustainable bio-based products' production processes.	6
Access to markets	*6. Continue to develop and apply clear and unambiguous European and international standards. The standards help to verify claims about bio-based products in the future (e.g. bio-degradability, bio-based content, recyclability, and sustainability).*	8
	7. Consider setting indicative or binding targets for certain bio-based product categories where they contribute towards achieving the objectives of existing and future sustainability policies (such as climate change, resource efficiency, energy security, etc.). Study their market perspective, possible mechanism for implementation and their contribution to these sustainability goals.	2.5
	8. Allow Member States to grant tax incentives for sustainable bio-based product categories.	5.5
	9. Allow bio-based plastics to enter all waste collection and recovery systems, including composting, recycling and energetic recovery (depending on the type of plastic and compliance with applicable standards). Bio-based plastics certified compostable according to EN 13432 should gain unhindered access to bio-waste collection	6
	10. Bio-based construction materials (foams for insulation, composite material, mortar, and concrete made of vegetative aggregate particles) have now become sufficiently advanced to offer a real alternative. The Construction Products Directive should promote the specificities of bio-based products. In addition, new and transparent standards showing the product capabilities are needed to help demonstrate that bio-based materials comply with construction legislation.	5
	11. Study the possibility of mandating the use of bio-lubricants and hydraulic fluids in environmentally sensitive areas. This could be implemented e.g. via soil protection and water protection legislation.	6
Public procurements	*12. Encourage contracting authorities in all EU Member States to give preference to bio-based products in tender specifications. A requirement or a recommendation to give preference can be laid down in a national action plan adopted by the government. Preference should be given to bio-based products unless the products are not readily available on the market, the products are available only at excessive cost, or the products do not have an acceptable performance.*	6
	13. Develop a list of product groups and designated bio-based products. The product groups and subgroups reflect the areas of application (e.g. building materials, furniture, cleaning products, lubricants, packaging, etc.). The designated bio-based products reflect the individual products from each manufacturer respectively.	6
Communication	*14. Promote and use harmonized certification and labeling schemes for bio-based products.*	6
	15. Design and implement a communication strategy involving all partners in the value chain and all other stakeholders to achieve coherent messages on bio-based products.	4

ANNEX

Table I

Table of scores

Score	Level of implementation	Uptake by	Tangible impact
0	no action	no country	
1	in serious discussion	at least one country	Low
1.5	in serious discussion	at least one country	Good
2	in serious discussion	several countries	Low
2.5	in serious discussion	several countries	Good
3	in serious discussion	all of EU	Low
3.5	in serious discussion	all of EU	Good
4	concrete concepts or project developed	at least one country	Low
4.5	concrete concepts or project developed	at least one country	Good
5	concrete concepts or project developed	several countries	Low
5.5	concrete concepts or project developed	several countries	Good
6	concrete concepts or project developed	all of EU	Low
6.5	concrete concepts or project developed	all of EU	Good
7	implementation	at least one country	Low
7.5	implementation	at least one country	Good
8	implementation	several countries	Low
8.5	implementation	several countries	Good
9	implementation	all of EU	Low
10	implementation	all of EU	Maximum

COMMISSION EXPERT GROUP FOR BIO-BASED PRODUCTS

Working Group Awareness Raising

General Document on Awareness Raising on Bio-based Products

Introduction

With its first paper, the Working Group on Awareness Raising refers to the policy paper on Communication (2011)[1] of the Lead Market Initiative on Bio-based Products which requires "balanced information on the benefits and limitations of the development and commercialisation of new concepts, systems and technologies. Information and awareness raising campaigns could include explanations of what bio-based products are, and how they can contribute to renewability and sustainability. All players including industry/brands, farmers/growers, policy-makers, retailers and consumer/civil society representatives, should be involved in communication and must develop aligned messaging on bio-based products."

In addition, the Working Group follows the expectation of the European Commission on the group to tackle the following questions:

a) Which awareness raising tools would be conducive to the market uptake of bio-based products and most suitable to tackle the identified shortcomings?
b) Which resources would be required in order to design an awareness raising campaign on bio-based products?
c) Which are the main target groups in B2B and/or B2C?
d) What are the specific information needs of these target groups?
e) How to best reach out to these target groups?
f) How to measure outreach success?
g) Are there information tools already available which could be built on?
h) Which success stories could be used as a basis for a communication strategy and information campaign or further communication activities?
i) Assessment of opportunities for awareness raising event / publication / campaign, etc.

The Working Group's role is not to outline the details of possible information campaigns, which should be decided and implemented by the Commission.

Instead the paper is meant as a starting point for the exchange of lessons learned with awareness raising measures tackling firstly the above questions. In a second step operational measures will have to be prioritized based on required resources and budgets.

1. Who are the main target groups and what are their specific information needs?

Awareness raising is key to facilitate the market uptake of bio-based products and calls for differentiated actions towards different target groups.

It is important to communicate the benefits of bio-based products to all stakeholders along the value chain, including producers, distributors, users and consumers, public authorities, NGOs, universities and schools.

[1] http://ec.europa.eu/DocsRoom/documents/8879

1.1 General public

Providing information to the general public has at least four aspects:

a. dealing with *controversial issues* related to the development of bio-based products (e.g. answering questions such as "*Are GMOs essential for the development of a bioeconomy?*", "*Are bio-based products going to take resources out of the food chain?*", "*Are bio-based products automatically 'good' and 'sustainable'?*"). Experience with other (potentially) breakthrough technologies (biotech, nanotech) has proved in the past that these issues, when not properly communicated, can backfire creating substantial problems for market uptake;

b. raising the *consumers' awareness* of the positive characteristics of these products: making clear differences in terminology (bio-based, biodegradable, compostable, sustainable, etc.), products' advantages (e.g. on climate change, resource efficiency, economic growth and jobs), their sustainability, their life cycle (e.g. origin, end-of-life and necessary consumer behaviour);

c. providing *transparent and reliable information*: the term "bio-based products" comprises a great variety of innovative products in ubiquitous applications. There is the need to properly define product characteristics (on-going standardization work) and effectively pass this information on to consumers (labelling). Failing in these areas could represent a major obstacle for increasing market uptake of bio-based products.

d. Informing and training young people, from elementary level up through secondary school in the frame of science, engineering, social sciences, and chemistry programmes, as well as specific teaching/training at University in MS and PhD programmes in engineering, science, agriculture (agronomy) and social sciences.

1.2 Companies

Growing markets are the key element for the development of bio-based products, therefore downstream users are a key communication target. Compared to fossil carbon-based products, innovative bio-based products are still a 'niche' sector, making up a relatively small share of the market: they need to be given greater visibility, their potential benefits explained, their characteristics presented, relevant regulations illustrated (e.g. labelling, certifications, standards). Brand owners should be stimulated to develop markets (e.g. for bio-based plastics and packaging, but also for other perhaps more difficult/complex products).

Even bio-based industries themselves could benefit from more easily accessible information, related programmes and policies, experiences and success stories in their own sector.

Business to business (B2B) information can be based on (existing) standards and certification schemes, as well as on dissemination strategies which may include stakeholder workshops, targeted information campaigns and other means.

As the development of bio-based products relies on the creation of new, longer value chains, industry awareness on the need to cooperate and the opportunities that may arise from this cooperation should not be overlooked.

1.3 Public authorities

Information delivery to public authorities is at least three-fold:

a. *as buyers*: public markets may be a potential driver for the development of bio-based product markets – taking into account the specific constraints of EU legislation[2]. They can also play a role with more innovative instruments, such as PCP (Pre-Commercial Procurement), PPI (Public Procurement of Innovative Solutions) or GPP (Green Public Procurement).

b. *as regulators*: the development of a market for bio-based products significantly depends on regulations. This therefore calls for coordinated actions by public authorities (with different roles at different levels) with different remits: innovation, industrial policy, environment, health, agriculture, trade. Raising their awareness on the most relevant issues, communicating and circulating success stories on particularly effective initiatives, fostering cooperation and knowledge sharing are key issues for the market up-take of bio-based products;

c. *as officials responsible for economic development:* bio-based products and the bioeconomy at large represent a substantial opportunity to be seized in order to foster economic growth and job creation. Therefore public authorities have a crucial role to play in the creation of the most favourable framework conditions for its development (demand and supply policies).

2. How to best reach out to different target audiences

(1) General public	• Identify practical examples, products, tangible effects of bio-based products • Provide the media with qualified information for further distribution • Make sure information initiatives are adequately funded
(2) Companies	• Continue with the technical work for the actual development of bio-based products markets (standards, legislation, etc.) • Customize information (sector-oriented) on specific bio-based products categories to inform potential customers about BBP and their specific advantages • Circulate business oriented information (market data, news, new products, projects, investment, research studies, business surveys, standards, financing opportunities, business events)
(3) Public authorities	• Inform about bio-based products and their specific advantages • Share best practices on policies (PCP, PPI, GPP, grants & loans, legisla-

[2] It should also be taken into account that new EU-rules on public procurement will introduce award criteria which will put more emphasis on quality, environmental considerations, social aspects and innovation. The adoption of the new Directives on public procurement and concessions constitutes a major evolution, as the new rules provide for many novelties, opening up new opportunities in the single market for bio-based products.

	tion, etc.)

3. How to measure outreach success

The evaluation of success is extremely difficult. It largely depends on the initiative: in a seminar or conference, it can be the number of attendees; for a press release, the media impact (number of media that picked up on the news and total coverage) may be used; for initiatives targeted to the general public, it is very difficult to assess their impact. It also depends on the amount of resources that can be allocated to calculate it (it can range from almost zero cost, e.g. a feedback collected via questionnaire after a conference, to expensive initiatives, such as individual interviews to gather feedback and perspectives).

It is very difficult to define general criteria, although it should be underlined that whenever possible, in terms of resources, any possible measure should be undertaken in order to collect feedback on each specific initiative.

4. Are there information tools already available which could be built on?

The WG considers of the utmost importance the avoidance of overlap with existing activities[3]. In particular because in recent years a substantial number of initiatives on bio-based products – and the bioeconomy in general – have been promoted at regional, national and European level. Taking advantage of existing networks, projects, communities, platforms and initiatives (seminars, trade fairs, workshops) is a key element for keeping every initiative economical and for increasing potential impact. Such measures include the need to:

- Learn from existing experiences, ensure coherence between different initiatives launched by the Commission (e.g. Bioeconomy Panel, Bioeconomy Observatory, Renewable Raw Materials Working Group in DG GROW) but also create synergies and complementarities with them; good coordination is crucial;
- Promote education/awareness raising initiatives within DGs, MS, industry groups;
- Map and monitor what is going on in different projects with related tasks (e.g. www.commnet.eu; www.berst.eu; www.biobasedeconomy.eu);
- Monitor, discuss and give feedback to CEN/TC 411 standardisation committee (and vice versa);
- Use the best implementation experiences put in place by the most active EU Member States and case studies/successful actions for priority revision/amendments and the identification of new instruments/action needs;
- Monitor new bio-based related initiatives, such as the H2020 support actions (e.g. ISIB7, 8A and 8B) to exploit synergies.

[3] For example, the EU co-financed in the past specific information initiatives, such as CommNet – Communicating the bio-economy (http://commnet.eu/). More additional initiatives on awareness raising and supporting bio-based innovation research to reach the market have just been launched under H2020; DG Research is studying general public targeted communication activities and more call on this topic have been planned for future H2020 calls.

5. **Which success stories could be used as a basis for a communication strategy and information campaign or further communication activities?**

The Awareness Raising Group could first **identify a set of important messages** that are felt as particularly critical to communicate (e.g. the potential impact of bio-based products on employment and re-industrialisation; opportunities for local bio-based resource exploitation, rural development; the setting up of new, win-win, cooperation agreements between economic players; the environmental benefits of specific products; special, easy to understand, positive characteristics of bio-based products).

For each of these messages, the group can identify **one or more "success stories"** using its network of contacts and knowledge of the sector. The identified success stories could then be proposed as tools for an awareness raising campaign to the European Commission for further evaluation.

The benefits of the bio-based products should be focused on all three aspects of sustainability - social, economic and environmental. Showcases and case studies should be focused on whole value chains; it is necessary to bring examples that cover a broad range of sectors to increase inclusion and engagement.

Another way to proceed is to make first a list of the success stories – which should be relatively easy to collect - and then distil common messages from them.

6. **Assessment of opportunities for awareness raising events / publications / campaigns, etc.**

Strictly connected to question no. 4, the group could work on a list of events, media, groups, where certain awareness raising initiatives could take place or be promoted.

Annex 1 - Potential media per target audience

Note: This section tries to provide more detailed suggestions/assessments concerning the specific tools for each target audience, but without ranking the measures according to required resources and budgets. It also tries to split target audiences into more specific categories.

It needs to be complemented with a list of "success stories" referring to two categories:

1. **Awareness raising initiatives**: existing/past activities to e.g. increase awareness on the bioeconomy, involve stakeholders, promote an open debate, provide information and/or information material, support existing and cross value chain co-operation, etc.

2. **Business bioeconomy success cases**: this should provide examples of successful "bioeconomy in practice": new products with substantial advantages, better performance, activation of new investments (the Bioeconomy PPP is one of these cases), recovery of deindustrializing areas, rural redevelopment, increased employment opportunities, more efficient use of resources as required by both the Bioeconomy and Circular Economy (e.g. a reduction of waste/emission or the transformation of waste into raw materials). The goal is to provide cases where the bioeconomy is not just a "great opportunity" but a hard fact.

(4) Main target	(5) **Sub target**	(6) **Media (i.e. use of general purpose communication tools)**	(7) **Direct contact (personal interaction)**
(8) General public	(9) Consumers	**(10)** TV, radio advertising campaigns on bio-based products' advantages **(11)** (12)**Pros:** reach potentially every household, help creating favourable environment for bio-based innovation, increase awareness, potentially promote markets for bio-based products, already experienced in the past **(13)** (14)**Cons:** Extremely expensive, difficult to assess the impact	(15)Not applicable
(16)General public	(17)adolescent generation in particular	(18)Social networks, internet; school targeted initiatives (promoting scientific studies, raising environmental awareness on consumers behaviour, promote the bioeconomy as professional opportunity) **(19)** (20)**Pros**: relatively low cost per contact, only tools available to directly reach the target, inexpen-	**(23)** Production of information material for national, regional and local events; universities, schools as intermediaries of the information (science like biology and chemistry, involvement of already existing sites that are e.g. science oriented and that have millions of likes (e.g. in Italy scienze fanpage). etc.) **(24)** (25)**Pros**: uses existing, well estab-

		sive compared to other media, popular **(21)** (22)**Cons**: expensive for the inherent dynamism of the media (need heavy management, can't be static)	lished channels, adds on to related messages **(26)** (27)**Cons**: Very expensive, long transmission chain, mega challenge, impossible to assess results, school not necessarily the best media to reach young generations
(28)General public	(29)NGOs	(30)Data and evidence on bio-based products advantages through various media (paper, internet, press office) (31)**Pros**: provides strong evidence and brings discussion to factual level, strengthens the feeling of active involvement and participation (no black box effect) **(32)** (33)**Cons**: not necessarily effective, difficult to identify appropriate media	(34)Direct involvement in initiatives, working groups, stakeholder consultations, meetings with other stakeholders and public authorities (35)**Pros**: strengthens the feeling of active involvement, inclusion and participation (no black box effect) **(36)** (37)**Cons**: labour intensive, not easy to identify qualified counterparts. Can make decision processes longer (38)
(39)Companies	(40)SMEs	**(41)** Drafting of business cases, best practices, success stories; easily understandable information on market trends and on-going policies (fool proof writing). Circulation through various media (specialised press and internet sites; production of materials for further circulation) **(42)** (43)**Pros**: concrete, easily understandable messages, down to earth statements **(44)** (45)**Cons**: difficult to identify effective messages, difficult balance between specific real cases and general messages; opportunity to associate resources to support investment (R&D&I programmes, ERDF, etc.)	(46)Use existing business networks such as EEN (Enterprise Europe Network); participation to fairs and exhibitions; support to bottom up initiatives
(47)Companies	(48)Large companies	(49)Communication in specialised media (sectorial and business); economic, statistical and business data; policy outlooks **(50)** (51)**Pros**: well identified media, well targeted **(52)** (53)**Cons**: costly (54)	(55)High level meetings, involvement in high level working groups, selected high level presentations and targeted initiatives **(56)** (57)**Pros**: direct contact with key figures can make a difference **(58)** (59)**Cons**: requires high level senior commitment on both sides, robust

			preparation, concrete proposals; practically very heavy to implement
(60)Public authorities	(61)Local	(62)Case histories, best practices, networking opportunities promoted via different media (press, news services, intermediary organisations, internet web sites) **(63)** (64)**Pros**: relatively low cost/contact **(65)** (66)**Cons**: difficult to identify appropriate media and assess impact	(67)Not-feasible, unless piggy backing existing targeted initiatives and networks
(68)Public authorities	(69)National	(70)Official communications, reports, economic data and statistics (e.g. via the Bioeconomy Observatory) **(71)** (72)**Pros**: well identified media, well targeted **(73)** (74)**Cons**: costly, difficult to assess impact and actual distribution (75)	(76)High level meetings, involvement in high level working groups, selected high level presentations and targeted initiatives **(77)** (78)**Pros**: direct contact with key figures can make a difference **(79)** (80)**Cons**: requires high level senior commitment on both sides, robust preparation, concrete proposals; practically very demanding to implement

Annex 2 – Glossary of terms and definitions

Bio-based

Derived from biomass (CEN/TC 411 2014). Note 1 to entry: Biomass can have undergone physical, chemical or biological treatment(s). Note 2 to entry: The correct spelling of "bio-based" is with a hyphen (-). It is however in common usage sometimes spelt without a hyphen. Note 3 to entry: The methods to determine and communicate "bio-based" as a characteristic are detailed in specific standards of CEN/TC 411.

Bio-based carbon / biogenic carbon

Carbon derived from biomass (CEN/TC 411 2014) Note to entry: Biogenic carbon is defined in ISO/TS 14067:2013 by the same definition.

Bio-based content / Biomass content

Fraction of a product derived from biomass (CEN/TC 411 2014). Note 1 to entry: Normally expressed as a percentage of the total mass of the product. Note 2 to entry: For the methodology to determine the bio-based content, see FprCEN/TR 16721.

Bio-based product

Product wholly or partly derived from biomass (CEN/TC 411 2014) Note 1 to entry: The bio-based product is normally characterised by the bio-based carbon content or the bio-based content. For the determination and declaration of the bio-based content and the bio-based carbon content, see the relevant standards of CEN/TC 411. Note 2 to entry: Product can be an intermediate, material, semifinished or final product. Note 3 to entry: "bio-based product" is often used to refer to a product which is partly bio-based. In those cases the claim should be accompanied by a quantification of the bio-based content.

Bioeconomy

The European Commission has defined bioeconomy as the production of biomass and the conversion of biomass into value added products, such as food, feed, bio-based products and bioenergy. It includes the sectors of agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries. Reference: EU Bioeconomy Communication COM(2012)60

Bioenergy

Energy from biomass. (CEN/TC 411 2012)

Biofuel

Liquid or gaseous fuel for transport produced from biomass. (EU Renewable Energy Directive)

Biomass

Material of biological origin excluding material embedded in geological formations and/or fossilized. (CEN/TC 411 2014). Examples: (whole or parts of) plants, trees, algae, marine organisms, micro-organisms, animals, etc.

Biorefining

Biorefining is the sustainable processing of biomass into a spectrum of marketable products and energy. (International Energy Agency Bioenergy Task 42)

Biotechnology

The application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services. (OECD 2012; Eurostat Glossary)

Source: Bioeconomy Observatory (https://biobs.jrc.ec.europa.eu/glossary/B)

Commission Expert Group for Bio-based Products

Working Group Public Procurement of Bio-based Products

Recommendations 2016

Adopted on 11 April 2016

Introduction

The Commission's Lead Market Initiative (LMI) between 2008 and 2011 fostered the development of the bio-based products sector by exploring demand-side innovation policy tools such as standardisation, labelling, and public procurement. This sector was selected as a lead market because it is seen to have the potential to offer significant benefits to European society, in terms of innovative job creation, using renewable and alternative resources to fossil carbon, as well as stimulating rural development. The main outcomes of this initiative were an interim report "Taking Bio-based from Promise to Market", policy papers on financing and communications, and a list of priority recommendations for enabling the market uptake of bio-based products.

Subsequently a Commission Expert Group[1] for Bio-based Products was set up in mid-2013 for a period of four years. The Expert Group's objective is to advise the Commission on the development of the bio-based products sector by, amongst other things, proposing demand-side industrial policy actions conducive to the market uptake of bio-based products and processes (standardisation, public procurement, awareness raising, labelling, etc.).

The Expert Group set up three Working Groups of which one is the Working Group on Public Procurement of Bio-based products. This Working Group had the goal of developing effective and implementable recommendations for actions at regional, national and European level in relation to public procurement as a market creating vehicle for bio-based products. The work was conducted over four phases: intelligence gathering; analysis; recommendations; consultation and dissemination. The working group conducted upwards of 200 days of consultation and analysis involving approximately 50 subject matter experts and culminating in a one day final review workshop[2] for 30 professionals on 27 October 2015 in Brussels.[3]

The resulting recommendations are listed in the current paper. Each individual recommendation is driven by the overarching principle of **transitioning to an ever more sustainable economy**. Implementation and investment decisions for the recommendations should be tested against this sustainability principle. Complementary interests such as regional economic strategies, industrial investment, rural livelihoods, innovation ecosystems, political strategies, citizen well-being, et cetera are essential additional drivers. One defining characteristic of the bioeconomy is that its resources are harvested from ecosystems that have multiple functions which are essential for humans and nature. The need for sustainable management of the cradle of these resources, be they forests, agricultural lands or oceans, is a key condition if we are to ensure that the term 'bio-based' is associated with a product's sustainability footprint.

Driving uptake of bio-based products in public and innovation procurement programs will above all require smart integrated and agile management approaches over a prolonged period of time. Short term organisational approaches such as joint task forces or multi-stakeholder associations should be considered in the interim period while longer term permanent coordination solutions

[1] http://ec.europa.eu/growth/sectors/biotechnology/bio-based-products/index_en.htm

[2] http://www.biobasedeconomy.eu/procurement-workshop/

[3] The activities were supported by bioeconomy innovation consultants PNO Innovation NV under the coordination of the Working Group and its co-ordinators, NEN Netherlands (Harmen Willemse) and EuropaBio (Ana Maria Bravo).

are established. In this context, recommendation number 15 is the most strategic and important long term objective that the group proposes. Because of its complexity, the groups advises to continue to implement the other recommendations (1-14) that are achievable in the short term, while leveraging the existing initiatives to prepare for the long term incorporation of Bio-based products into the European economy.

The intended audience for these recommendations are public procurers, economic development agencies, environmental organisations, circular bioeconomy stakeholders and policy makers at regional, national and European level.

The current document addresses recommendations for actions to be taken (the “what”). A follow-on phase of work will be carried out, starting mid 2016, to identify and initiate specific measures, instruments and resources for implementation of the actions (the “how”).

A more detailed annex to this document can be found at: http://ec.europa.eu/DocsRoom/documents/21464

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1. Product and Materials Campaigns

Campaigns to encourage adoption of 'bio-based' in procurement criteria for public procurers should be developed around specific product and materials classes which demonstrate the clear sustainability, economic, social and performance benefits and characteristics of using bio-based.

This will allow all actors involved in the purchasing chain to focus on concrete scenarios. For instance:

- Lubricants for mobile applications such as forestry and marine equipment and vehicles. Such lubricants, for example chain saw oil, due to the nature of their use, may be accidentally dispersed in the environment. Substituting biodegradable or bio-based alternatives can reduce harmful impacts in case of such incidents.
- Mono-use impregnated non-woven cleaning fabrics ("wet wipes"). Both the substrate fabric and the impregnating liquids can end life in the environment as a result of the distributed usage pattern. Biodegradable substrates and liquids can reduce harmful impacts.

Similar cases can be made for a wide variety of product types such as boat and aircraft cleaning products, paint and graffiti removers, agricultural spray adjuvants, floor cleaning products, dust suppressors, carpets, insulation and many more. A campaign could be dedicated to intermediates (binders, solvents, resins, etc) in order to develop the support materials and processes necessary to encourage public procurement to target materials which are bundled inside complex service contracts. Industry stakeholders can greatly support this effort. The case for each product or product category will be founded on the precondition of sustainable sourcing of the biomass and LCA improvement over alternatives as well as on price, performance and other criteria.

2. Regional/National Campaigns

Campaigns to encourage adoption of bio-based in procurement criteria and sharing of knowledge for public and innovative procurers should be targeted at regions which share certain interests in bio-based value chains and benefits.

This will allow all promoters of the bio-based sector to focus local and/or regional resources on concrete public procurement scenarios with known dynamics and outcomes – which is in line with the Circular Economy Action Plan, published in 2015. For instance:

- Regions with an already declared ambition in this space can be 'champion' bio-based regions. A 2015 Commission study[4] reports 45 regions that declare special bioeconomy interests, including Wallonie (Belgium), Castilla y León (Spain), Haute-Normandie (France), Puglia (Italy) and Mazowieckie (Poland) and many more.
- Regions with evolving bioeconomy value chains centred on, for example, forestry, sugar beet, corn or hemp. Leading sugar beet regions which also combine strong industrial

[4] Analysis of Smart Specialisation Strategies in Nanotechnologies, Advanced Manufacturing and Process Technologies http://ec.europa.eu/research/industrial_technologies/pdf/analysis_of_RIS3_in_NMP.pdf

biotechnology footprints are Wallonie (Belgium), Nordrhein-Westfalen (Germany), Rheinland-Pfalz (Germany), Groningen (Netherlands), Noord-Brabant (Netherlands) and Champagne-Ardenne (France).

- Regions already practising pre-commercial procurement or public procurement for innovation and environmental sustainability, and hence proactively exploring the potential of procurement platforms for innovation. Examples of such regions are Nordrhein-Westfalen (Germany), Trento (Italy), all of the Netherlands, Stockholm (Sweden), Vienna (Austria), Lombardy (Italy), Vantaa and Oulu (Finland), among many more.
- Regions which have green public procurement or social return on investment criteria already strongly embedded into their practices. All of the Netherlands applies social return on investment criteria. Turin (Italy), Rotterdam (Netherlands), Bristol (United Kingdom), Barcelona (Spain), Copenhagen (Denmark) and a few of the cities which have active sustainable public procurement policies.

Other interesting categories could be selected with varying degrees of complexity, for instance small rural regions, marine regions or regions containing capital cities (or Covenant of Mayors cities) or containing strong bio-based champion organisations.

3. Sector Campaigns

Campaigns to encourage adoption of bio-based in procurement criteria for public and innovative procurers should be targeted at a selection of specific service sectors which can benefit from the addition of bio-based as criteria in their sustainability practices.

This will allow all actors involved in the uptake of bio-based - including manufacturers, distributors, specifiers, buyers, users and standards bodies - to engage on real cases. For instance hospitals, defence forces, construction, roads, ministries, public transport and education.

Such campaigns will result in the development of deep knowledge and support materials for the sectors, and the potential for sector specific transfer of knowledge and best practices. The campaigns can be combined with product and regional campaign criteria. For example bio-based cleaning products can be used to target government ministries or bio-based construction materials in the United Kingdom and Ireland. All campaigns will include information and support to assure procurers develop expertise on the sustainability and life cycle profiles of the bio-based products in question.

4. Roll-out of Standards

Accelerate convergence on commonly accepted bio-based and sustainability standards, their uptake and the practical application of such standards. This will require the setting of threshold or default values by standards organisations and political bodies.

A number of important standards, and standards application frameworks have recently become available or are under development. Since 2011 the CEN Technical Committee CEN/TC 411 "*Bio-based products"* has been developing European standards with uniform requirements and test methods regarding the characteristics of bio-based products. These cover horizontal issues including the essential elements of LCA, sustainability, end-of-life options and bio-based (carbon) content which are at the heart of bio-based value chains. These standards enable promotion of the benefits of bio-based products. They are fundamental for a sound understanding of the sustainability and life cycle benefits of bio-materials. Some key standards are very recent and not widely known. Some are in the final stages of development. Once complete, these standards will require considerable effort to assure their widespread acceptance and application.

Currently these standards have no defined thresholds for the minimum amount of bio-based content, nor regarding sustainability criteria for bio-based products in general. Developing and agreeing upon these standards, thresholds, criteria and appropriate certification is viewed as the collaborative responsibility of those involved in bio-based value chains, from primary producers through to consumer product manufacturers and end of life managers.

5. Labels

Promote development of and convergence on commonly accepted sustainability labels, their uptake and the widespread application of such labels by manufacturers. Establishing threshold or default values for labelling schemes based on relevant standards will be part of the effort.

There are close to 500 "ecolabel systems" worldwide of which two of the more prominent are Europe's Ecolabel and Germany's Blauer Engel. Several voluntary schemes from the biofuels sector have created add-ons or extended their scope to bio-based products. These include RSB, ISCC+ and Better Biomass.

The USDA BioPreferred programme launched a dedicated bio-based label in 2011 and this is judged to have provided a significant boost to the bio-based procurement program. Indeed US stakeholders lament not having launched it several years earlier. Though this programme could not be implemented in the same form at EU-level, it clearly demonstrates the impact of a label. There are prospects for development of a new European bio-based label based on certification against EN standard 16785-1 and this represents a strong opportunity for convergence. Currently there are no widely used bio-based labelling practices, though there are several exploratory efforts underway such as the incorporation of bio-based criteria into the EU Ecolabel scheme.

Label schemes, while not mandatory, greatly facilitate public procurement selection processes. Efforts should be made to converge on a commonly accepted labelling approach inside an ambitious timeframe, say by 2020, and for this approach to be promoted to bring about widespread application. Label schemes should ideally help to ensure sustainable sourcing of the biomass and include LCA profiles. A database of products applying such labels, and meeting recognised standards, should be created.

Working Group 5 of CEN Technical Committee CEN/TC 411 "*Bio-based products"* is developing standards for reporting and communication of characteristics of biobased products in Business to Business and Business to Consumer interaction.

6. Sector Analysis

Carry out comprehensive information gathering exercise on the number, nature, distribution and practices of Europe's public procurement bodies so that future efforts to promote uptake of bio-based procurement criteria are founded on comprehensive sector intelligence.

Public procurement is carried out by tens of thousands of agencies across the Union's 276 regions and 28 Member States. Little is known about them. Current information is anecdotal and patchy, making any awareness campaign on bio-based a challenge. Any initiative on including 'bio-based' into existing procurement programmes should be supported by a comprehensive knowledge of the sector's agencies and purchasing practices, volumes and characteristics. This will allow for a systematic planning of campaigns and support measures which can also be tailored to regions' particular interests in purchasing "bio-based".

The information gathering effort could be shared with other emerging and promising sectors requiring the same intelligence. The resulting 'Knowledge Centre' should be maintained over a period of years in order to reap the benefits of such a strategic and coordinated investment effort as this. The preliminary assessment of the current landscape conducted by the Expert Group is a valuable starting point.

7. Bio-based Uptake Indicators

Define metrics and measuring techniques for determining the level of incorporation of 'bio-based' as criteria in public and innovative procurement practices. Define a baseline for future reference. Market pull instruments (i.e. indicative targets, tax credits) for growth may also be considered.

"You can't manage what you can't measure". Investments to promote adoption of bio-based by public procurers should be linked to some hierarchy of indicators related to procurement agency types, distribution, procurement contract types, form of adoption and bio-based materials and applications. Baseline indicator values should be established. Indicators may be based on data collection and dedicated reporting, though indicators based on low cost and smart intelligence gathering mechanisms, such as surveys or "baskets of goods" sampling, should be given priority.

The indicator set could be extended to include measures of bio-based uptake generally. Such indicators will be valuable to all bioeconomy stakeholders. They should be linked to underlying sustainability and LCA profiles.

This effort will provide stakeholders and leaders with a common language for direction setting and progress monitoring.

8. Manifesto, Value Proposition and Mission

Develop and articulate a clear manifesto for advocates and stakeholders of bio-based public procurement. The heart of this concerns the sustainability and LCA benefits to society and the environment. The signatories should be individuals relevant to the target public procurement community.

Many opinion-leading and policy-making stakeholders in Europe's public procurement community - including procurement agency executives, suppliers, politicians and end-users of the procured goods and services - are unaware of the fundamental notions concerning bio-based products and the associated benefits, characteristics and vision for growth. Considerable effort should be given to articulating a unifying manifesto for bio-based which should include compelling value propositions and a vision for levels of take-up in a defined timeframe. The value proposition should include the bio-based contribution to fossil displacement and climate change mitigation as well as its contribution to rural economy revitalisation, materials security and potential for locally generated innovation. In order to ensure the credibility of the message, sustainable sourcing methods should be incorporated into the manifesto. The manifesto should ideally include some form of inspirational pact between leading European institutions and individuals relevant to the targeted public procurement community..

Signatories should be comprised of authoritative political figures and opinion leaders, ideally including some from regions which are already champions in the sector.

The importance of such an authoritative manifesto is that it will provide a solid basis and mandate for professionals working in the field, helping overcome barriers to recognition and acceptance. It will also give it visibility and authority among political figures.

9. Procurement Specifiers Information

Develop comprehensive product and materials information kits to support procurers and their associated service providers in the specifications and tender design processes.

Procurers can be encouraged to consider application of bio-based procurement criteria. But their efforts will be greatly accelerated if they have easy access to information kits which explain the applications, suppliers, benefits, lifecycles, sustainability profiles and cost profiles of bio-based products and materials on the market.

A comprehensive foundation kit should be created to enable procurement executives and specifiers to quickly acquire a deep appreciation of the state of the art of the bio-based sector

and its possibilities for them. This foundation should include materials and value chain information, fossil comparisons, standards, criteria and labels, and the fundamentals of life cycle analysis and social return on investment evaluations. Central to this foundation kit shall be detailed information on bio-based products and materials benefits. Also included should be references to practices in other regions and countries.

The action should be one-size-fits-all, since it is expected that national and regional organisations will take up initiatives and will adapt them if necessary to the needs of their respective regions and procurer organisations.

10. Targeted Outreach

Integrate bio-based public procurement into the frameworks of the Commission's most important platforms and instruments, such as the LIFE Programme, Green Public Procurement, the Key Enabling Technology (industrial biotechnology) strategy, Horizon 2020 (Societal Challenges 2), the Bio-based Industries Joint Undertaking's calls and the actions of the Circular Economy Package.

There are numerous strategic organisations, projects, platforms and instruments in Europe which could and should adapt their missions and activities to include some form of support for bio-based public procurement. These include environmental programmes and organisations, standards and labelling schemes, public procurement platforms, pieces of legislation and innovation grant programmes. Opportunities for targeted outreach should be systematically identified and representations should be made to the relevant governing bodies to have recognition and support for bio-based incorporated.

Even soft references to bio-based public procurement have a positive reinforcement effect. This outreach will be founded on principles of value chain sustainability and progress in respect to fossil based and other unsustainable value chains.

This action could be extended to target member state implementation measures for the 2014 Public Procurement Directive.

11. EU Legislation Review

Review legislation and regulatory files of the European Commission to identify upcoming items of legislation with the potential to influence and foster uptake of bio-based public procurement. Identify opportunities for favourable adaptation of such files.

There is a constant stream of legislation under development in Europe, for the most part directives and regulations. In 2014 for example, the Public Procurement Directive was passed, though without reference to bio-based. This was a lost opportunity. Legislation under development should be scanned to identify opportunities for support of bio-based, whether with soft references or more incisive provisions.

The action should also include a review of current legislation to identify barriers and opportunities for take-up of bio-based public procurement.

In addition, action should be taken to stimulate and support similar initiatives for legislation at national and regional levels.

12. Bio-based Materials Directive

Consider a directive to mandate public procurement action for bio-based materials. The directive scope may be enlarged to address other bio-based sector growth mechanisms and aims, allowing member states to determine the instruments most relevant to them.[5]

Ultimately a package of soft advocacy measures may not bring about a sufficiently quick transition to sustainable bio-based value chains and a sufficiently quick rate of displacement of carbon intensive fossil based materials in the economy. A Bio-based Materials Directive should be comprehensively explored in order to identify and articulate viable legislative measures. For instance a hierarchy of targets for different materials and applications categories could be considered, based on volumes, impact, availability and timing.

We should draw from the experience with the implementation of the renewable fuels legislation (FQD, RED) and its associated debates. Also, inspiration should also be drawn from the USDA BioPreferred legislation which mandates 'affirmative public procurement practices', as opposed to 'mandated targets'. The European Energy Taxation Directive should be considered as a model. Carbon or emissions trading schemes may be considered. Fiscal incentives such as refundable tax credits should be considered, as they are in the USA. Measures should be designed to provide 10-20 years of stability in order that long term regional, educational, financial, agricultural and industrial investments can be made in confidence and such stability should be enshrined in the legislation itself.

Even if the prospects of success for such a Directive may be limited in the current period, externalities may trigger change. For instance the climate change emergency could become so pronounced that stakeholders may seek ambitious additional new measures for fossil displacement. Efforts to draft a Directive may be exploited in the short term via a Commission Recommendation or Communication.

[5] To be implemented within the constraints of the legal framework.

13. International Cooperation

Identify and collaborate with standards, labels and public and innovative procurement schemes outside the European Union. Establish shared approaches. Transfer home and localise successful approaches.

Values chains and markets are global. All of the world's major economies are developing some form of bio-based vision and programme. The example of the USDA BioPreferred programme, with associated standards, labels, legislation and procedures, illustrates that there are synergies and opportunities for common approaches. For example firms in 43 countries outside the USA now use the BioPreferred labelling system, making it easier for these manufacturers to market their products to US federal buyers or indeed to any consumers who value bio-based characteristics.

Action should be taken to examine the international opportunities of bio-based public procurement, to transfer best practices and to promote joint development of supporting measures with countries outside the European Union.

14. General Outreach

Conduct sustained campaigns of high quality communication, outreach and promotion of sustainable bio-based products and of public procurement opportunities.

Recognition of the terms 'bio-based' and 'public procurement' are generally low, outside of a small and close community of professionals. The basic notions and benefits are not immediately obvious to non-experts.

The stakeholders of public procurement systems include everyone from the end users of public services to the service providers, to manufacturers and to regional and national governments. The numbers of people involved can easily reach tens of millions of people. Investment should be made in large scale efforts to build awareness among stakeholders of the values and opportunities of bio-based. Such efforts should be based on a mix of continuous and campaign driven initiatives. This recommendation should link to the current work being done at the bio-based Working Group on Awareness.

Outreach should include advocacy for education and professional development both at third level education institutions and directly within procurement bodies. Public procurement professionals are a highly skilled and dedicated body of people, and as the principle agents of change there can be only limited progress without their full buy-in and ownership.

It should include information campaigns by way of quality journalism in relevant media channels. There should be determined efforts to build bio-based public procurement through professional networks, conference events and through publicity for success stories, testimonies and inspiring leader figures. Industry and research stakeholders can be engaged to support outreach efforts by joint actions and synergies.

15. Permanent Coordination Initiative

Establish a full-time office dedicated to planning and implementation of a diverse package of measures for reaching ambitious targets for uptake of bio-based public procurement practices.

Driving uptake of bio-based public procurement through multiple measures – as outlined in the current document - will require smartly integrated and agile management approaches over a prolonged period of time. Public procurement, accounting for 20% of consumption, is a powerful market making opportunity. However the public procurement sector is complex and diverse and requires highly skilled and dedicated treatment. Disjointed actions or actions involving long lead times, limited agility and arm's length governance models (i.e. grant programme coordination actions or short term public tenders) may struggle to achieve the desired impact and continuity.

The USDA has a permanent coordination office focused on uptake of the BioPreferred programme and which also serves as a strong and effective advocate for the bioeconomy generally.

Interim organisational approaches such as joint task forces or multi-stakeholder associations should be considered in the short run, while longer term solutions are established. Existing grant-funded or tendered projects (for example InnProBio, Open Bio, COSME) already serve the purpose of coordination, but this is still temporary and fragmented. A more stable and holistic effort seems to be necessary to realise this recommendation. A key task for such a body will be to support the coordination and exploit synergies among the current Commission-initiated grants and tendered projects mentioned above. This should be done by a central body or team, comprising of, amongst others, professionals with track records in applied public procurement. As mentioned in the introduction, this is the most strategic and important long term objective that the group recommends. Because of its complexity, the groups recommends to continue to implement the other recommendations that are achievable in the short term, while leveraging the existing initiatives to set this up for the long term.

TERMS OF REFERENCE[1]

COMMISSION EXPERT GROUP FOR BIO-BASED PRODUCTS

1. Context

Based on the final outcomes of the completed Lead Market Initiative (LMI) for Bio-based Products the Commission Expert Group for Bio-based Products (Expert Group) was established in the context of two important policy initiatives: (1) the Commission Communication "Innovating for Sustainable Growth: A Bioeconomy for Europe"[2], adopted in February 2012 and co-signed by VP Tajani, focusing on shifting the European economy towards greater and more sustainable use of renewable resources; (2) the Industrial Policy Communication Update[3] which selected the bio-based products sector as one of the six priority areas.

2. Mandate for the Expert Group for Bio-based Products

The Expert Group's scope of work covers bio-based products and processes as defined in the EC Communication "Innovating for Sustainable Growth": A Bioeconomy for Europe"[4].

Generally, Commission Expert Groups are consultative bodies that provide expertise and advise the Commission on the preparation of legislative proposals and policy initiatives, the implementation of legislation, programs and existing Union policies, etc. Expert Groups do not take binding decisions, although they may formulate opinions and recommendations or submit reports. The Commission and its services remain fully independent with regard to taking into account the views expressed by expert groups.

For the purpose of this Expert Group, the objective is to advise the Commission with regard to the development of the bio-based products sector by

(1) Monitoring and supporting the development of the policy framework / implementation of the priority recommendations proposed by the Lead Market Initiative Ad-hoc Advisory Group for Bio-based Products.

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[1] This Terms of Reference and the Rules of Procedures are based on the rules laid out in Communication from the President to the Commission: Framework for Commission Expert Groups: Horizontal rules and public register [SEC(2010)1360] and the template included in Annex II of the Commission Staff Working Document: Accompanying document to the Communication from the President to the Commission: Framework for Commission expert groups: Horizontal rules and public register [SEC(2010)7649 final].

[2] COM(2012) 60 final "Innovating for Sustainable Growth: A Bioeconomy for Europe" published in February 2012

[3] COM(2012) 582 final "A Stronger European Industry for Growth and Economic Recovery" published in October 2012

[4] COM(2012) 60 final, p.3: "Bio-based products are products that are wholly or partly derived from materials of biological origin, excluding materials embedded in geological formations and/or fossilised, CEN - Report on Mandate M/429". See also SWD(2012) 11 final, p.5

(2) Proposing demand-side industrial policy actions conducive to the market uptake of bio-based products and processes (standardisation, public procurement, awareness raising, labelling, etc.).

(3) Mapping of bio-based products and relevant bioeconomy related activities and exchanging of good practices at regional, national, international and EU-level aimed at increasing the competitiveness of the European industry.

While taking into account the broader context of the bioeconomy, the Group will not make recommendations specific to other sectors such as food, feed and energy.

When advising the Commission with regard to the implementation of the bio-based products related actions of the Commission's bioeconomy strategy, the Expert Group shall take into consideration the whole value chain from biomass resource management to bio-based products markets and the environmental, social and economic sustainability.

The Group shall issue an interim report after two years on the state of play concerning the implementation of the LMI priority recommendations and the objectives of the Commission's bioeconomy strategy and industrial policy with regard to the bio-based products sector, with particular attention to biomass supply, standardisation activities, public procurement, and awareness raising. The Group may prepare interim proposals, recommendations, papers, etc. as adequate.

The final outcome shall be a report with further priority recommendations for the sustainable development of a competitive bio-based products industry in Europe.

3. Composition

The Group has 34 appointed members representing Member States and state agencies, public procurers, NGOs, academia and business interests. Also five observers will follow the Group’s work.

4.Duration and location

The Group has been established for an initial periode of four years.

The meetings will take place twice a year in Brussels on Commission premises.

5. Operation

The Group shall be co-chaired by a Chair appointed by the Group and the European Commission.

The Commission Service in charge shall organise the meetings of the Group and provide all the necessary secretarial support, including the preparation of meeting documents and the drafting of operational conclusions.

In agreement with the Commission, sub-groups may be set up to examine specific questions under these terms of reference; they shall be disbanded as soon as these have been fulfilled. Sub-groups will appoint a 'co-ordinator' that will, in collaboration with the Commission representative(s), facilitate the sub-group's work.

The Commission may ask additional experts or observers with specific competence on a subject on the agenda to participate in the Group's or sub-group's deliberations if this is useful and / or necessary. Representatives of other Commission Services will be involved as adequate and may attand the meetings.

The Commission may take the decision to replace members who are or are deemed to be no longer able to contribute effectively to the Group's deliberations.

Information obtained by participating in the Group's or sub-group's delibetrations may not be divulged where the Commission lays down that this relates to confidential matters.

The Commission may publish on the DG Enterprise and Industry website, after consultation with the Group, in the original language of the document concerned, any minutes, resume, conclusions (also partial) or working documents of the Group.

The Group shall adopt its rules of procedure (in annex) on the basis of the standard rules of procedure adopted by the Commission.

6. Expenses of the Group members

The Commission shall reimburse travel expenses for members in connection with the Group activities in accordance with the provisions in force at the Commission. The members and observers shall not be remunerated for their services.

Annex: Rules of Procedure Commission Expert Group for Bio-based Products

RULES OF PROCEDURE

COMMISSION EXPERT GROUP FOR BIO-BASED PRODUCTS

Article 1
Convening a meeting

1. Meetings of the Group are convened by the Commission which co-chairs the meetings.

2. Joint meetings of the Group with other groups may be convened to discuss matters falling within their respective areas of responsibility.

Article 2
Agenda

1. The secretariat (The Commission Service in charge) shall draw up the agenda and send it to the members of the group.

2. The agenda shall be adopted by the Group at the start of the meeting.

Article 3
Forwarding of documents to group members

1. The secretariat shall send the invitation to the meeting and the draft agenda to the Group members no later than two calendar weeks before the date of the meeting.

2. The secretariat shall send drafts on which the Group is consulted and all other working documents to the Group members no later than seven calendar days before the date of the meeting.

3. In urgent or exceptional cases, the time limits for sending the documentation mentioned in 1 and 2 may be reduced to five calendar days before the date of the meeting.

Article 4
Opinions of the group

1. As far as possible, the Group shall adopt its opinions or reports by a consensus.

2. In the event of a vote, the consensus is obtained by a simple majority of the members.

Article 5
Sub-groups

1. With the consent of the Commission, the Group may set up sub-groups to examine specific questions on the basis of terms of reference defined by the Group; they shall be disbanded as soon as they have fulfilled the tasks assigned to them.

2. The sub-groups shall report to the group.

Article 6
Admission of third parties

1. The Commission may invite experts or observers with special expertise on a matter on the draft agenda to participate in the Group's or sub-groups' work where appropriate and/or necessary.

Article 7
Written procedure

If necessary, the Group's opinion on a specific question may be delivered via a written procedure. To this end, the secretariat sends the Group members the drafts on which the Group is being consulted and any other working documents.

Article 8
Secretariat

The Commission shall provide secretarial support for the Group. With regard to the sub-groups, a 'sub-group co-ordinator' should carry out an organisational and co-coordinative role.

Article 9
Summary minutes of the meetings

1. Operational minutes on the meetings shall be drafted by the secretariat. The minutes do not mention the individual position of the members during the Group's deliberations.

2. Previous meeting's minutes shall be adopted by the Group at the start of each meeting.

Article 10
Attendance list

At each meeting, the secretariat shall draw up an attendance list specifying, where appropriate, the authorities, organisations or bodies to which the participants belong.

Article 11
Prevention of conflicts of interest

1. At the start of each meeting, any member whose participation in the Group's deliberations would raise a conflict of interest on a specific item on the agenda shall inform the Chairs.

2. Members shall sign a declaration certifying that their participation will not result in conflicts of interest.

3. In the event of such a conflict of interest, the member shall abstain from discussing the items on the agenda concerned and from any vote on these items.

Article 12
Correspondence

1. Correspondence relating to the Group shall be addressed to the Commission, for the attention of the Commission Chair, and sent to the functional mailbox entr-expert-biobased@ec.europa.eu.

2. Correspondence for Group members shall be sent to the e-mail address which they provide for that purpose.

Article 13
Transparency

1. The principles and conditions concerning public access to the Group's documents are the same as laid down in Regulation (EC) No 1049/2001[5]. It is for the Commission to take a decision on requests for access to those documents.

2. Information obtained by participating in the Group's or sub-group's deliberations may not be divulged where the Commission lays down that this relates to confidential matters.

3. If the Group decides so, the Commission may publish on its website, in the original language of the document concerned, any resume, conclusion, or partial conclusion or working document of the Group.

[5] Regulation (EC) No 1049/2001 of the European Parliament and of the Council of 30 May 2001 on public access to European Parliament, Council and Commission documents (OJ L 145, 31.5.2001, p.43.

Article 14
Protection of personal data

All processing of personal data for the purposes of these rules of procedure shall be in accordance with Regulation (EC) No 45/2001[6].

[6] Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regards to the processing of personal data by the Community institutions and bodies and the free movement of such data 8OJ L 8 of 12.1.2001, p. 1.

List of Members & Observers

Members

Austria (Federal Ministry of Science, Research and Economy)
Belgium (OVAM - Public Waste Agency of Flanders)
Belgium (Flemish Government)
Bulgaria (Ministry of Economy, Energy and Tourism)
Croatia (Ministry of Agriculture)
Denmark (Ministry of Business and Growth)
Finland (Ministry of Employment and the Economy)
France (ADEME)
France (Ministry of Industrial Renewal)
Germany (Federal Ministry of Economics and Energy)
Germany (Fachagentur Nachwachsende Rohstoffe e. V.)
Ireland (Environmental Protection Agency)
United Kingdom (The National Non-Food Crop Centre)
Forest Stewardship Council A.C.
SIS (Swedish Standards Institute)
European Compost Network (ECN)
European Committee for Standardization (CEN)
G2C2 CIC
RESAH-IDF
Réseau des acheteurs Hospitaliers d'Ile de France
Stichting Wageningen Research
Alma Mater Studiorum - University of Bologna
Aarhus Universitet
Martin-Luther-Universitaet Halle-Wittenberg (MLU)
Anteja ECG
Eurochambres Association of European Chambers of Commerce and Industry
European Industrial Hemp Association (EIHA)
Swedish Forest Industries Federation/Arbio
Cefic/HARRPA (Hydrocarbon Resins, Rosin Resins and Pine Chemicals Producers Association)
Copa-Cogeca
Cefic/ESIG (European Solvents Industry Group)
Starch Europe
European Bioplastics e.V.
European Tyre & Rubber Manufacturer's Association
Cefic (European Chemical Industry Council)
EuropaBio

Observers

Atlantic Consulting
Fuchs Europe Schmierstoffe GmbH
Narocon Innovation Consulting
Energy Institute at the Johannes Kepler University Linz
Portugal Foods Associação Integralar
Confederation of European Paper Industries
SPRING (Cluster Tecnologico Nazionale della Chimica Verde)