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FACTSHEET #4

Standardisation, LCA, Labelling and Regulatory Hurdles

01 THE CHALLENGE

Standards

Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions, to ensure that materials, products, processes and services are fit for their purpose. Standards provide a basis for mutual understanding among individuals, businesses, public authorities and other kind of organisations, facilitating communication, commerce, measurement/testing and manufacturing. Most of the standards are voluntary market agreements.

Following a market needs' investigation mandated by the European Commission in May 2011 the European Standardisation Committee (CEN) initiated Technical Committee CEN/TC 411 on bio-based products whose main objective is to develop standards for bio-based products covering horizontal aspects.

This includes a consistent terminology for bio-based products, sampling, bio-based content, application of and correlation towards life cycle assessment (LCA) and sustainability of biomass used, and guidance on the use of existing standards for the end-of-life options.

In the past years, the role of standardisation as a bridge between research activities and the market has been increasingly recognised by EU institutions and stakeholders. Horizon 2020 identified standardisation as one of the measures that will support the market take-up of research results and innovation. Beyond coverage in specific CSAs, as discussed in this factsheet, standardisation work has therefore become an integral component of many innovation projects.

Life Cycle Assessment (LCA)

Life Cycle Assessment (LCA) is an internationally standardised method, under ISO 14040 and ISO 14004, used to assess the potential environmental impact of a product, process or service throughout its entire life cycle: from the supply of raw materials and production, the use and disposal or end-of life waste management (cradle-to-grave). LCA makes use of a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts associated with e.g. bio-based products.

(Eco-) Labelling

(Eco-)Labelling is a voluntary method of environmental performance certification. An ecolabel facilitates the consumers' identification of products or services proven to be environmentally preferable overall, within a specific product or service category. (Eco-)Labels can also help public procurers to define their requirements regarding bio-based products in their public tenders. However, few recognised labels exist showing consumers or public procurers clearly that a product is based on renewable raw materials.

02

HOW COORDINATION AND SUPPORT ACTIONS (CSAs) ADDRESS THE CHALLENGE

Standardisation

KBBPPS initiated the development of standardised methods to test bio-based products for various properties. This pre-normative project covered research on bio-based carbon content determination, biomass content methods, and test schemes for biodegradability and eco-toxicity, with the intention that project results could be copied one-to-one into European standards.

Open-Bio was partially a follow-up of KBBPPS, taking forward proposed standards and elaborating a number of new ones, their "final report" presents the standardised methods developed to test bio-based products considering aspects as diverse as the determination of the total bio-based content of a product, its likely biodegradation in sea water, its compostability and the extent to which it can be recycled, as well as, bio-based product labelling and certification.

STAR4BBI supported the establishment of a coherent, well-coordinated and favourable regulatory and standards framework for the European bio-based economy. It analysed what policies and standardisation hurdles industry experiences.

Several CSAs and CSA-like projects build on the results of KBBPPS, Open-Bio and STAR4BBI, such as:

InnProBio worked on intensifying the link between public procurers and standardisation bodies sharing information and facilitating collaboration, through workshops, "**factsheets**" about LCA and life cycle costing (LCC), and published "**recommendations for decision-makers and standardisation bodies**" on bio-based products and public procurement.

Star-ProBio develops sustainability schemes for bio-based products building on (1) existing schemes for biomass and bioenergy, (2) the standardisation work of CEN/TC 411, and (3) previous work on LCA methods for bio-based products. It is tasked to ensure a market pull for bio-based products through (i) wider use of bio-based standards and certification schemes and (ii) the expansion of bio-based products accessing sustainability schemes.

BioMonitor aims to establish a sustainable and robust framework that stakeholders can use to monitor and measure the bioeconomy and its various impacts in relation to the EU and its Member States. It is tasked inter alia to link with CEN standardisation work on bio-based products, and to define minimum bio-based (carbon) content for selected bio-based product groups.

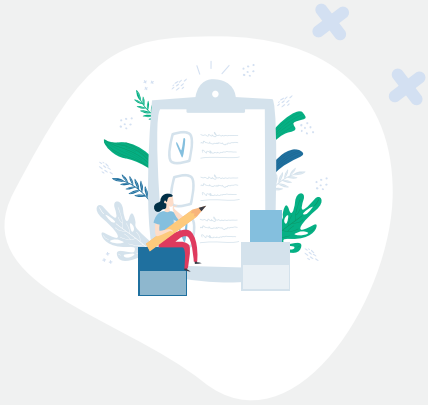
Environmental Impact Assessment, in particular Life Cycle Assessment (LCA)

In EC-funded research it is a standard requirement to take into account the environmental impact of developed products and processes. Nearly all R&I projects include some kind of LCA work.

In terms of CSA projects, there seem to be few specifically targeting the development of LCAs, except for BISO and Star-ProBio.

BISO compiled 14 standardised brief environmental factsheets of different bio-based products and their supply chains, using a comprehensive environmental sustainability assessment methodology adapted from the life-cycle based Product Environmental Footprint method, jointly developed by EC's Joint Research Centre (JRC) and DG Environment.

Labelling



Open-Bio investigated how labelling can help to promote market access for bio-based products dealing with the question of whether the EU Ecolabel can be extended to explicitly cover bio-based products, and if so, how. Guidelines for ecological labelling of bio-based products were established.

STAR-ProBio produced recommendations for "**standards and criteria for eco-labels**" for bio-based products.

Assessing (regulatory) hurdles

BIO-TIC comprehensively examined the innovation hurdles in industrial biotechnology across Europe. The project developed a "**summary**" with concise overview of the hurdles, and a "**non-technological roadmap**" that provides a detailed information of regulatory and non-technological barriers faced by the industrial biotechnology sector.

BISO analysed the main drivers and barriers for the development of the bio-based industry, building on results from the BIO-TIC project.

RoadToBio developed a "**roadmap for the chemical industry towards a Bioeconomy**", with the aspiration of increasing the share of bio-based or renewable feedstock to 25% in 2030. The roadmap includes product-specific barriers for nine product groups, as well as, general barriers that may hinder the development of Europe's bioeconomy and recommended actions on how to overcome them.

S2BIOM produced a database proving country-specific information on the regulatory and financial framework impacting bioeconomy development.

STAR-ProBio promotes a more efficient and harmonised policy regulation framework, covering gaps in the existing framework for sustainability assessment of bio-based products.

STAR4BBI analysed what policies and standardisation hurdles the industry experiences, providing concrete proposals to legislators and industry to tackle these hurdles.

Beyond Coordination and Support Actions (CSAs)

Beyond CSAs and CSA-like projects, a lot of relevant work is also taking place.

BioBaseNWE (Interreg) focused on hurdles that bio-based SMEs encounter during their innovation track and translated these into policy recommendations. The project organised free LCA workshops and offered innovation vouchers to bio-based start-ups and SMEs, which could also be used to LCA work.

"Environmental impact assessments of innovative bio-based products", in this study seven cradle-to-grave Life Cycle Assessment (LCA) case studies were carried out covering three major commercialised bio-based polymers.

03 MAIN OUTCOMES FROM THE COORDINATION AND SUPPORT ACTIONS (CSAs)

- Developing of standardised methods to test bio-based products for various properties;
- Linking regulators and standardisation organisations with specific targets e.g. public procurers or custom authorities;
- Providing recommendations for standards and criteria for eco-labels for bio-based products;
- Identifying general and specific regulatory barriers and hurdles that may hinder the development of Europe's bioeconomy and suggest actions to overcome them.

04 GAPS TO BE ADDRESSED

- The bio-based economy covers a variety of domains (Agri-food, biotech, etc.). The complexity of bio-based economy makes difficult the definition of regulations and horizontal standards that can be applied to all the domains.
- The bio-based economy is often regulated by policies, legislation and standards derived from other domains, having different goals and objectives. Standards are typically made for FBP (Fossil Based Products) and the methodologies used for FBP often cannot comply with BBPs (Bio-Based Products).
- There is a need to promote and/or develop standards and incentives for bio-based products, particularly regarding: End of life management, waste, compostability, and sustainability.
- A clear, understandable and trustable labelling system for the demand chain (consumers, B2B, procurers), that is also accessible to SMEs and start-ups is missing. There is a risk of green washing and/or misleading information.
- Existing labels are not easily applicable to the complexity and different characteristics of bio-based products (e.g. materials, properties, biodegradability), and need to be improved on the basis of reliable, scientific and comparable data on environmental and climate performance.
- How to benchmark life cycle assessment (LCA) and define thresholds for sustainability assessment? How to calculate the impact of a Bio-based product compared to a Fossil-based one, including also externalities? How to simplify the process for SMEs and start-ups?
- There is a lack of consistency and harmonisation among the different policies (overarching regulations, new policies, among countries, etc.) and regulations, creating hurdles and bottlenecks for the bio-based economy. At the country level there is often a lack of synergies and common understanding between various ministries responsible for the different policies.

05 RECOMMENDATIONS

- Support the development of an integrated and harmonised regulatory system, by **promoting and facilitating the dialogue between the relevant stakeholders** (Policy, Industry, Civil Society, Research and standardisation bodies) at different levels (local, national and European), to identify gaps and hurdles, providing meaningful suggestions and shared solutions for the improvements of actual standards.
- Better regulate areas like end of life management, waste, compostability, sustainability with **tailored legislation** (e.g. support pre-normative / co-normative work on bio-based product degradation in marine environments and on the effect of bio-based plastics in recycling systems, with the objective of increasing the understanding of the effect of bio-based plastics and other plastics in the mixture).
- Improve existing labels, making them more clear, understandable and trustable. Promote a **wide and consistent implementation of standardised labels,** since as they are a great tool to convey key information to consumers and the wider public, increasing acceptance of bio-based products.
- Ensure the availability of comparable data on environmental performance in order to fairly assess the different products and materials. **Support more research in LCA benchmarks and the definition of thresholds for sustainability assessment,** measuring the societal, environmental and economic impact of the entire bioeconomy value chains (including externalities). Ensure that future policies and incentives promoting large scale adoption of bio-based products are based on scientific evidences of positive impact compared to existing solutions.
- Promote the harmonisation of regulations and policies to **minimize contradictions and confusion** especially for industries and consumers:
  - → Inside overarching regulations like circular economy, sustainability, climate change, etc.;
  - → Between new regulations and existing regulations;
  - → Between countries
- Since procurement has been identified as one of the main drivers for the bio-based market uptake, **standards better defining the characteristics of sustainable solutions** are needed.

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COORDINATION AND SUPPORT ACTIONS (CSAs) IN A NUTSHELL

Acronym/logo	Programme	Duration	Website
STAR4BBI	BBI JU	Set 2016 - Aug 2019	www.star4bbi.eu
KBBPPS Pre-Standardization Research for Bio-based Products	FP7	Aug 2012 - Jul 2015	www.kbbpps.eu
OPEN BIO	FP7	Nov 2013 - Oct 2016	www. open-bio.eu
InnProBio FORUM FOR BIO-BASED INNOVATION IN PUBLIC PROCUREMENT	H2020	Mar 2015 - Fev 2018	www.innprobio.eu
STAR ProBio	H2020	May 2017 - Apr 2020	www.star-probio.eu
biomonitor Monitoring the Bioeconomy	H2020	Jun 2018 - May 2022	www.biomonitor.eu
BIO-TIC	FP7	Aug 2012 - Jul 2015	www.industrialbiotech-europe.eu
ROAD to BIO	BBI JU	May 2017 - Apr 2019	www.roadtobio.eu
BISO	FP7	Mar 2013 - Feb 2016	biobs.jrc.ec.europa.eu/
Bio Base NWE Innovation and training for the biobased economy	Interreg NW Europe	Jan 2013 - Dec 2015	www.biobasenwe.org/en/home/

07 RESOURCES

Opening bio-based markets via standards labelling and procurement (January 2017). ***Open-Bio project***
https://www.biobasedeconomy.eu/app/uploads/sites/2/2017/07/Final-report-Open-Bio.pdf

The EU Ecolabel and bio-based products. Learnings from the Open-Bio project. Bioplastics magazine (May 2016) Vol.11. ***Open-Bio project***
https://www.biobasedeconomy.eu/app/uploads/sites/2/2017/07/ECOLABEL.compressed.pdf

Necessary measures to achieve a level-playing field for bio-based products. Seven measures to achieve better policies and standards for bio-based industries (June 2019). ***STAR4BBI project***
http://news.bio-based.eu/necessary-measures-to-achieve-a-level-playing-field-for-bio-based-products/

Informative factsheets about the most pressing issues #1. What are bio-based products; #2. Sustainability of biobased products. #3. Biodegradability-Exposing some of the myths and facts; #4. Bio-based products and services in the circular economy; #5. Life Cycle Assessment (LCA) and Life Cycle Costing (LCC). ***InnProBio project***
http://innprobio.innovation-procurement.org/bio-based-products-services/factsheets/

Forum for Bio-Based Innovation in Public Procurement. Recommendations to decision makers and standardisation bodies. (March 2018). ***InnProBio project***
http://innprobio.innovation-procurement.org/fileadmin/user_upload/Tools_and_resources/InnProBio_D4.6_Recommendations_final.pdf

Recommendations for standards and criteria for eco-labels for bio-based products (November 2018). ***STAR-ProBio Project***
http://www.star-probio.eu/wp-content/uploads/2017/04/STAR-ProBio_D9.2_final.pdf

The bioeconomy enabled. Summary of hurdles and solutions. ***BIO-TIC project***
http://www.industrialbiotech-europe.eu/wp-content/uploads/2015/10/Summary-of-Hurdles-and-Solutions-BIO-TIC.pdf

Overcoming hurdles for innovation in industrial biotechnology. Non-technological roadmap. ***BIO-TIC project***
http://www.industrialbiotech-europe.eu/wp-content/uploads/2015/09/Non-technological-Roadmap.pdf

Roadmap for the Chemical industry in Europe towards a Bioeconomy. (2019). ***RoadToBio project***
https://www.roadtobio.eu/uploads/publications/roadmap/RoadToBio_strategy_document.pdf

Environmental impact assessment of innovative bio-based products (March 2019). ***European Commission - Knowledge for policy***
https://ec.europa.eu/knowledge4policy/publication/environmental-impact-assessments-innovative-bio-based-products_en

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