

Standards and Regulations for the Bio-based Industry STAR4BBI



Work Package 5

D5.5

Report on legislation barriers

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1 Background and objective

This report presents the barriers and proposed solutions within legislation for the development of the bio-economy. The research for this report has been conducted throughout the project and further described in the reports D3.3 and D4.4. In the report the identified barriers in legislation are presented followed by the proposed solutions. Refer to D3.3 and D4.4 for the detailed background and the explanation on the assessment and research.

2 Identified legislation barriers

At the end of the project the following barriers in terms of regulation, legislation and codes have been identified:

- Lack of fossil carbon tax for fossil-based resources and products
The lack of a level playing field of bio-based products against their fossil-based counterparts and biofuels is one of the major hurdles identified within this project
- Lack of legislation around harmonised sustainability certification for all products
The development of sustainability criteria for all products throughout the entire value chain is essential to ensure a level playing field for all products. With these criteria in place, a fair comparison and choice concerning externalities can be made between materials/products
- Lack of a supportive regulatory framework for the use of genome-editing techniques
The ECJ ruled that organisms obtained by mutagenesis¹ are genetically modified organisms (GMOs) and are, in principle, subject to the obligations laid down by the GMO Directive (Directive 2001/18/EC).
- The existing Waste Framework Directive (WFD)
Existing gaps and misalignments within the WFD and between the WFD and other EU regulations are hampering the use of waste to produce bio-based products.
- Lack of a policy specific for bio-based materials
Currently biofuels and bioenergy are strongly supported. Such government intervention has increased market shares for biofuels and similarly a policy for bio-based materials is expected to stimulate an increase in demand and subsequently production of bio-based materials. Support for bio-based materials so far has been limited to research and development.
- Lack of an effective EOL scheme (possibly within regulation)
At present, there is no general agreement on which EOL option is most preferable for bio-based plastic packaging

¹ Mutagenesis: a set of techniques that make it possible to alter the genome of a living species without the insertion of foreign DNA which have made it possible to develop seed varieties resistant to selective herbicides¹

3 Proposed solutions to the barriers

3.1 Fossil carbon tax levied on the fossil carbon of fossil resources

The integration of a fossil carbon tax will allow taxation of fossil carbon in chemicals, materials and products, which would be considerably complex when implementing a CO₂ tax. Not only the products produced in the EU will be taxed according to their fossil carbon content, but also imported products will be taxed at the EU Customs by measuring their carbon content. This will create a situation where all materials, products and fuels on the EU market are taxed according to their fossil carbon content, thus fair competition conditions will be made for local and importing companies. For the bio-based industries, this trend will create a level playing field on the economic dimension by creating similar price range for fossil-based and bio-based products. It is expected that customers will then choose the bio-based products as better alternatives when the price range is harmonised. This in turn will lead to larger profit of bio-based industry and larger investments in development of new technologies for producing new bio-based materials.

3.2 Legislation around harmonised sustainability certification for all products

In order to create a level playing field between fossil-based and bio-based products, the introduction of sustainability certification for all products is needed. Public procurement accounts for a substantial part of the global economy. Ecolabels may be used in public procurement, and promising label for sustainability certification for all products is the EU Ecolabel where different sets of criteria are established for each product group covered by the scheme. A product group to start with on the short term could be toys, which is an interesting option due to its variety of products and it is close to consumers. It would be relatively easy to start with, for example, the GHG reduction (environmental impact) and add more sophisticated sustainability levelling (social and economic) later on. An important issue with the current EU Ecolabel scheme is that it uses a rigid pass-or-fail-system. Instead of this system, a multi-level EU Ecolabel provides more transparency for relevant stakeholders in knowing how sustainable their product is. This already works very well with the EU Energy label. It can be costly to prove the sustainability criteria for the smaller companies, therefore, default values should be made available. In addition, it should be made possible to propose new EU Ecolabel product groups that are not an end-product, e.g. packaging, which is an important product group for the bio-based industry. With the current EC Regulation No 66/2010 on the EU Ecolabel it is only possible to propose new EU ecolabel product groups for end-products. The election of a new European Commission in 2019 could introduce new opportunities to propose these needed adjustments to the current EC Regulation on the EU Ecolabel.

3.3 Supportive regulatory framework for the use of genome-editing techniques

Measures are suggested in order to update the existing EU regulation (Directive 2001/18/EC), since, according to the last judgment of the ECJ, genome-editing techniques are now subject to the obligations laid down by the GMO Directive. In this sense, it is suggested to change the GMO definition (article 2.2) and align it with the definition of the Cartagena Protocol in order to capture both the end-product and the used technique. Consequentially, alterations produced by means of NBT that could also be the result of classical breeding techniques will not be considered GMO. Linked to that, the risk assessment methodology included in the directive should be aligned with the methodology included in the same protocol in order to make the process easier and less time-

consuming. To conclude, Annex 1B, where the different methods that can be excluded from the directive are listed, should be extended. Considering the definition of mutagenesis, NBTs should be included in Annex 1B in order to avoid unnecessary costs related to authorisation procedures. All these suggestions present an opportunity for policy makers to support genome-editing techniques, which represent a promising next step in research towards beneficial uses in medicine, agriculture and the bioeconomy.

3.4 Update the existing Waste Framework Directive (WFD)

Updating the existing European regulatory framework on waste is a key challenge to overcome in order to unlock the potential of waste as a feedstock, thereby contributing to the development of the European bioeconomy. Currently, existing gaps and misalignments within the WFD are hampering the use of waste to produce bio-based products. Proposed solutions are linked to the need to adhere to the definitions that have legal status in the WFD; only the terms “waste” and “by-products” provided by the directive would be used. Article 6 should also be updated in order to provide clear, harmonized criteria to distinguish between waste and waste which ceases to be waste. Additionally, Article 4 on waste hierarchy should be updated to appropriately consider various EOL options, in particular those of interest for bio-based products. Other suggestions include conducting ecotoxicity tests and conducting risk assessment analysis, where appropriate, to classify waste; harmonizing the WFD and the Circular Economy Package to facilitate optimal resource use (including waste), providing harmonized European guidance on preferred EOL options and harmonizing the waste classifications in the EU to appropriately consider the waste of bio-based products.

3.5 New policy specific for bio-based materials

In addition, it is proposed to introduce a policy framework dedicated to bio-based materials called the Renewable Materials Directive similar to what currently exists for biofuels and bioenergy (RED) with the goal of creating a level playing field for bio-based products. This is predicted to be highly influential in accelerating the transition from fossil-based materials to bio-based alternatives, which has been considerably slow without the presence of supportive legislative mechanisms. It is proposed that policy support for bio-based products be awarded based on the solutions that they provide to current environmental and societal challenges. Specific mandates and bans should be considered accordingly for specific product groups that pose significant littering problems, including those with a high risk of unintended disposal in nature or high difficulty in collecting from the environment (such as mandatory use of biodegradable materials used in horticultural applications, hygiene articles, fishing nets, body bags).

Furthermore, requiring materials used with food applications to be compostable/digestible should be considered to allow the diversion of food waste from landfills or incineration to where it can be composted or digested into biogas. If these materials are made compulsory to be compostable/digestible, consumers will not need to check for this characteristic. The main goal of the Renewable Materials Directive is to accelerate the shift from using virgin fossil resources for products to renewable carbon sources. Therefore, it is proposed to set a binding overall EU target for the share of renewable carbon in the industrial production of all products. Renewable carbon is considered to include, besides biomass, renewable carbon from recycling and from direct CO₂ utilization; all three are alternatives to using virgin fossil resources for carbon. Moreover, sector-specific targets for the specific sectors, such as chemicals and plastics sector, should be considered.

3.6 Development of an effective EOL scheme

Plastic packaging is of great value to protect (food) products, prolong shelf life and reduce product loss. The production of sustainable and circular plastic packaging requires the use of bio-based and other renewable feedstock to compensate for inevitable loss of material, and plastic production should be decoupled from finite and GHG emitting fossil resources. The selection of the most preferred end-of-life (EOL) route for bio-based plastics is a multi-component issue which needs to be addressed in coherence. Packaging product design should keep reuse and recycling possibilities in mind. But ultimately, 'design for recycling' involves the entire life-cycle of products. The impact of material production relates to the re-source use efficiency of converting feedstock into different bio-based plastics. Material selection and packaging product design affect functionality and EOL options of the plastic products. Re-use and mechanical recycling of plastics are nice EOL options, but in several cases composting or digestion of plastics may exhibit lower overall impact.

It is proposed that Directive 2018/851 and 2018/852 be modified to include the value of digestion and composting of biodegradable plastics in the recycling targets, regardless of whether these processes deliver compost or di-gestate. The benefits/costs of the different EOL options should be based on impact analysis of the entire life-cycle, including as far as possible effects of littering and taking into account consumer behaviour. If mechanical recycling is the preferred option, regranulate quality should be important next to quantitative targets and standards for regranulate quality should be designed. An independent organisation would need to be responsible for balanced life-cycle impact data on bio-based materials and products, and as far as fossil-based or other products are being used, these should be included as well.

The bioeconomy is still far away, and getting there re-quires a transition towards the use of bio-based feedstock in a circular economy and needs stimulating research. A centralized advising authority should provide uniform advises and guide-lines for EOL routes for products, bundling of knowledge and know how, learning from best practices, etc. Such an authority would need to be independent, and at the same time it would need to closely collaborate with the wide range of stakeholders, including: Governments, municipalities, industry, retail, waste processors and their customers, independent scientists, and also consumers. With all the information and insights that the authority is going to collect, it may develop a roadmap for how to completely decouple from fossil-based to bio-based and propose measures to stimulate the transition towards circular materials and products.

4 Conclusion

Over the past three years, the STAR4BBI project has studied policy and regulation hurdles that bio-based industries face. Based on the results of previous research conducted within the project, this report presents a set of different measures to support enabling environment for bio-based industries. Some current regulations are found not to be aligned with innovations in the field of bioeconomy, and this is hampering the transition towards a sustainable European bioeconomy. The STAR4BBI project have proposed specific measures for updating regulations that are most in need of revision or demonstrate feasibility of successful adaptation with the ultimate objective of accelerating the transition to a bioeconomy. With these suggested updates to the regulations the STAR4BBI project seeks to establish a supportive and coherent regulatory framework to overcome existing regulatory hurdles across sectors. As a result investments will be supported into existing and new value chains, products and applications as well as establish a level playing field for bio-based products.

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