

ROAD TO BIO



READERS' GUIDE – HOW TO USE THE ROADMAP

Roadmap for the Chemical Industry in Europe towards a Bioeconomy
Engagement Guide



The RoadToBio: Developing a roadmap for the chemical industry towards a bioeconomy

Bio-based feedstocks in the chemical industry

The European chemical industry is committed to increase the share of bio-based feedstocks in their production processes. Bio-based products offer the opportunity to contribute to a sustainable economy and to reduce the dependency on fossil resources. The aspiration of the Bio-based Industries Consortium is to achieve a bio-based feedstock share of 25% of the total volume of organic raw materials by 2030.

Roadmap

The RoadToBio project developed a roadmap for the chemical industry, recommending actions to achieve the 25% goal. Together with a broad range of stakeholders the project team:

- Assessed the current state and opportunities for growth of bio-based feedstocks for over 500 chemicals and multiple value chains
- Identified regulatory and societal barriers for increased bio-based feedstock supply and bio-based chemical & material demand
- Formulated actions to overcome the barriers and make use of the opportunities

Roadmap elements

The roadmap consists of three elements:

- *Action plan*: summarises actions for implementing the roadmap
- *Engagement guide*: provides communication tools to promote bio-based chemicals and easy-to-read information on the roadmap
- *Strategy document*: provides in-depth background information integrating all RoadToBio research activities

This factsheet is part of the engagement guide.

Readers' guide

The readers guide introduces you to the elements of the roadmap and helps you to navigate the documents. This factsheet describes the purpose of each element of the roadmap and how they can be used by the chemical industry, policy makers and other interested parties to promote bio-based resource use.

Action plan

The action plan is the first entry point to the roadmap. It provides an overview of the key points of the roadmap and shows all identified barriers and recommended actions identified in the project. This way, it helps you get a quick overview of opportunities and barriers for the use of bio-based resources in the chemical industry. For nine product groups, the action plan provides:

- description of current state and opportunities for bio-based products
- overview scheme identifying drivers and barriers
- chevron diagram showing the recommended actions for each barrier

Besides the productgroup specific barriers, some wider issues exist that concern the chemical industry in the bioeconomy. These are referred to as general barriers in RoadToBio. The action plan

gives an overview of the crucial general barriers and provide some recommended actions to overcome these. The chevron diagrams for the nine product groups and the general barriers essentially represent the roadmap: They define the actions, actors and timelines that the RoadToBio project identified. This information builds a picture of existing issues, provides ideas and incentives how to address these issues, prioritise your activities and find partners to collaborate with to promote bio-based resource use.

Strategy document

The strategy document is a comprehensive report presenting all background information on the opportunities, barriers and recommended actions that are part of the roadmap. It is the document to consult when you want to understand a particular topic in more detail. We recommend that you identify information that is relevant

to you in the action plan and then dive into the corresponding chapter in the strategy document to get the full scoop. For example, if you are interested in the opportunities for bio-based adhesives, you will find a table in the strategy document describing the sustainability drivers, bio-based content and TRL level for bio-based adhesives identified during the RoadToBio project.

Engagement guide

This factsheet is part of a series of three, which together form the engagement guide:

- Readers' guide
- Communication guide
- Key messages

The engagement guide factsheets are designed to complement the roadmap

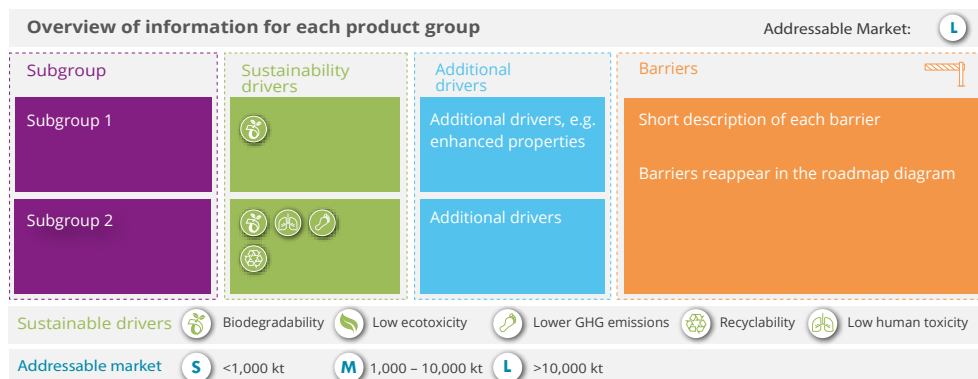
by providing guidance on selected topics that ease the implementation of recommendations. The engagement guide factsheets will help producers to streamline their communication efforts, correctly address collaboration partners and customers, and properly promote their bio-based products. The communication guide provides recommendations on how to communicate to different target groups about bio-based products. The key messages can be customised to support communication.

Other RoadToBio reports

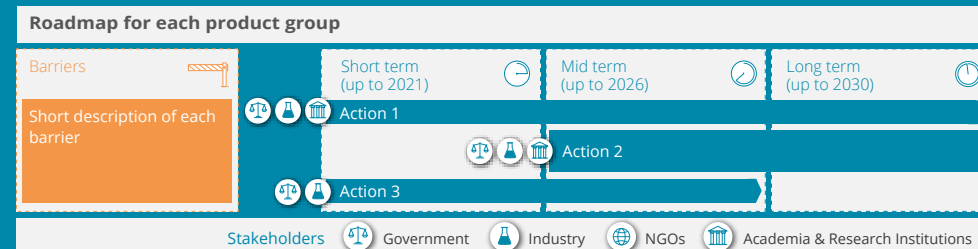
In preparation of the roadmap development, the RoadToBio project produced a range of reports that have been published on the project website¹. The project analysed opportunities for the chemical industry, showing more than 1,000 entry points for bio-based chemicals (D1.1) and describing nine "sweet spots" for the European bio-based industry (D1.2). Furthermore, regulatory barriers (D2.1) and acceptance barriers (D2.2 and D2.3) were identified, along with recommendations to overcome them (D2.4). Finally, links between the bioeconomy and circular economy were described (D2.5).

Product groups

The nine product groups are: adhesives, agrochemicals, cosmetics, lubricants, man-made fibres, paints and coatings, plastics and/or polymers, solvents, and surfactants.



Overview scheme



Chevron diagram including barriers and recommended actions to overcome these

¹ <https://www.roadtobio.eu/index.php?page=publications>

Collaboration & Stakeholders

Changing the system

The bioeconomy and circular economy are alternatives for our current system of “take, make, dispose”. These concepts require changing entire value chains; a great transition that brings with it many difficulties. For example, there is immense competition with established industries and a lot of system innovations are necessary. The bioeconomy furthermore involves a large variety of stakeholders and sectors, where interests are not always aligned or rather, opposed. Such great transitions involving multiple sectors are best approached through collaborations between industry, academia, government and civil society organisations such as NGOs^{2,3}.

Breaking the barriers

In the current system we identified a multitude of barriers for a transition to a bio-based circular economy. Collaboration of industry with policy makers and other stakeholders, such as NGOs, is crucial to remove these barriers, because changes along the whole value chain are required. Policy makers are uniquely positioned to enable the implementation of conditions and frameworks that allow the whole value chain to transition towards a bio-based circular economy⁴. Additionally, collaboration between stakeholders can help avoid the establishment of regulations, roadmaps, etc. that contradict the goals of other policies. It is important to draw on the expertise of

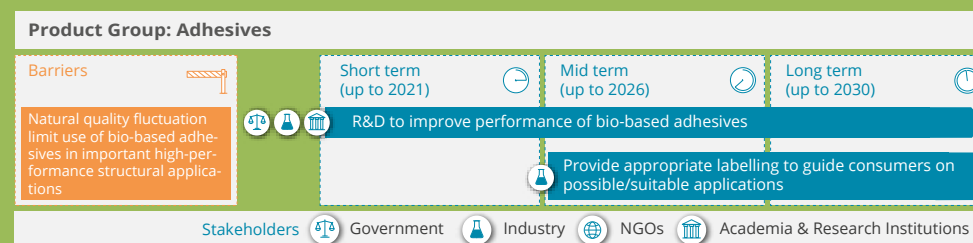
Examples practical collaboration

- Collaboration between chemical industry and scientists to deploy the latest technologies in manufacturing their products
- Collaboration between policy makers, scientists and industry can define overall policy goals and develop targets and indicators to validate progress towards the goals
- Collaboration between chemical industry and policy makers to achieve existing policy goals by creating corresponding “pull” factors that align with the product designers need and provide confidence
- Collaboration of chemical industry with farmers and the forestry sector could increase the efficiency and availability of raw material supply and support rural and local development
- Public engagement can improve understanding, support overall acceptance and increase demand of new products. Collaboration with NGOs can identify potential social or environmental barriers and establish pathways how to overcome these barriers



Examples: collaborating to achieve goals

Some of the recommended actions in the roadmap can be implemented by a single stakeholder group, but others rely on collaboration between different types of stakeholders. For example, to achieve performance improvements of bio-based adhesives, which will enable further applications of these compounds, a collaboration between governmental agencies are a promising route to success. This would provide a strategic agenda, funding and joint research efforts of academia and industry. Appropriate marketing and labelling to inform consumers and increase market uptake can be developed by industry alone.



numerous government ministries, including those responsible for agriculture, education, environment, health, industry, natural resources, and research .

Building awareness and defining responsibilities

Collaboration and well-aligned communication efforts can increase awareness and understanding of the benefits of the bio-based circular economy, also

in contrast to the risk of a fossil and linear economy model. It can also lead to increased knowledge and shared information about opportunities for sustainable change. In addition to the positive impacts on knowledge creation, setting up collaborative partnerships and networks projects can align business interests and improve the definition of roles and responsibilities between the various partners involved.

² BioStep 2017, Policy Paper, http://www.bio-step.eu/fileadmin/BioSTEP/Bio_documents/Bio_STEP_Policy_Paper_final.pdf

³ EC 2018, Updated Bioeconomy Strategy https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_strategy_2018.pdf#view=fit&pagemode=none

⁴ Climate-KIC 2019, Policy: The circular designer's secret weapon, <https://www.climate-kic.org/opinion/policy-circular-designers-secret-weapon/>

⁵ Pugatch Consilium 2017, Building a Bioeconomy, <http://www.pugatch-consilium.com/?p=2456>



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Consortium:



This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 745623.

