GO!PHA
Global Organization for PHA

THE ROAD TO A CIRCULAR EUROPE:
EMBRACING BIOBASED AND BIODEGRADABLE MATERIALS

About Us

Foundation **GO!**PHA is a member-driven, non-profit initiative promoting the use of renewable carbon-based and sustainable materials to help transition to a circular economy

Renewable, biodegradable, and compostable materials, like PHA, provide a unique opportunity to reduce greenhouse gases and environmental plastic pollution while establishing circularity in materials used by offering sustainable, functional, and natural materials that are renewable and offer diverse end-of-life options.

GO!PHA provides a platform for creating and sharing experiences and knowledge and facilitates joint development initiatives using these natural, unique, and innovative materials.

Key messages

1. Phase-out use of fossil carbon for chemicals and materials to reduce fossil dependency in the EU
2. Expand the definition of recycling
3. Broaden the definition of Natural Polymers that is evidence-based and promotes innovation
4. Address microplastics in the environment
5. Support the production of biobased and renewable content parallel to recycled content
6. Encourage and promote biobased products and industries
7. Foster research, development, and financing of studies, and projects for such materials

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The Road to a Circular Europe: Embracing Biobased and Biodegradable Materials

In an era defined by environmental urgency and threats posed by problematic fossil-based materials to natural ecosystems, human health, and wildlife (micro and nanoplastics, toxic additives; 8% of all oil goes into plastics production), the EU Commission must embark on a transformative journey moving from a fossil-based economy to a biobased one. The EU Bioeconomy Strategy offers numerous opportunities to enhance systems for utilizing biological resources in the production of biobased products, energy, and services. The Commission must prioritize bridging the gaps in innovation and encouraging frontrunners of the industry. By embracing biobased and natural substitutes, the EU can pave the way for a circular economy that safeguards our future on this planet. It is crucial to understand that realistic implementation of policies and realization of goals will require a wide variety of large-scale solutions and holistic initiatives that emphasize innovation in enabling truly circular alternatives to problematic materials. To achieve the target of a carbon-neutral, environmentally sustainable, toxic-free, and fully circular economy by 2050, the EU must seize the opportunity to revolutionize industries, close the tap on fossil fuels-based materials, and usher in an era of sustainability by embracing biobased, and biodegradable materials. This manifesto outlines comprehensive suggestions for the Commission to lead the way in advancing biobased materials and building a more prosperous Europe.

Objective: To support the development, adoption, and utilization of renewable and circular materials and practices capable of replacing conventional plastics.

What are the alternatives?

Researchers and innovators globally have discovered, and successfully reproduced, the natural processes and features, such as biodegradability, compostability, and renewability for commercial application. These materials include wood, cellulose, proteins, starch, and PHA. A combination of these characteristics in materials can act as a substitute for conventional fossil-based materials. Today, many producers and start-ups are using wastewater streams, plant-based ingredients, plastic waste, renewable methane, and carbon dioxide as feedstock to produce materials that support the successful enhancement of the bioeconomy in the EU.

In line with the Commission's 2024 priorities for enabling advanced materials for industrial leadership, and the EU Green Deal we suggest the Commission:

- **Phase-out use of fossil carbon for chemicals and materials to reduce fossil dependency in the EU:** We can significantly lessen our reliance on fossil fuels as a source of energy by adopting biodegradable, compostable, and circular alternatives to traditional plastics. Cities like Milan, for instance, have effectively decreased their carbon footprint by encouraging the use of renewable options for the disposal of organic waste. By encouraging the adoption of compostable bags, the city has harnessed waste to produce biogas, leading to an impressive 8,800-ton reduction in CO_2 emissions and a reduced dependency on fossil fuels. Providing regulatory support to promote the use of alternatives via policies like the Waste Framework Directive (revision) would encourage member states to utilize biobased and renewable content effectively and reach collection and recycling targets.
- **Expand the definition of recycling:** To attain circularity, the definition of recycling should be expanded to encompass different end-of-life scenarios of bio-based and compostable materials in addition to mechanical recycling. Additionally, composting is a type of "recycling" of carbon; this must be recognized across policies and regulations to address end-of-life and waste management.
- **Broaden the definition of Natural Polymers that is evidence-based and promotes innovation:** Existing policies like PPWR, SUPD, and REACH regulation, etc. currently use definitions and references that need to adequately encompass the diversity of natural polymer sources, applications, and their unique properties. Given the growing importance of sustainable and bio-based materials, it is imperative that the EU's regulatory framework accurately reflects the nature and characteristics of natural polymers.
- **Address microplastics in the environment:** As pointed out by several member states and NGOs, it is imperative that the Commission addresses the issue of microplastics in a comprehensive manner. It should be noted that any plastic article during its use, sees abrasion or fraction with its environment generates mircoplastics. In fact, it has been estimated that 78% of mircoplastics in the ocean come from synthetic tyre rubber. We would like to emphasize that ecodesign requirements, facilitating recycling, remanufacturing, and use of green(er) infrastructure measures would not be complete without addressing the root cause of microplastic creation, their persistence in nature, and the resulting pollution - the use of problematic materials. The new standards and regulations must foster sustainable solutions that capture microplastics being released into the environment at the source. Having said that, the best way to address this issue would be to design using materials that do not produce microplastics, whether intentionally or unintentionally, such as biobased and biodegradable materials that are also compatible with the existing waste management practices.
- **Support the production of biobased and renewable content parallel to recycled content:** Although recycling plays a vital role in waste management, alone, it fails to address the immense volume and severe consequences of fossil carbon on the environment, and human health. Increased use of biobased content can support recycling enhancement methods and practices across the EU significantly.
- **Encourage and promote biobased products and industries:** Numerous companies and research organizations have over the last 5 decades developed and scaled biobased, compostable, and biodegradable materials and chemicals. Many have started operations on a commercial scale. However, their comprehensive adoption is lacking due to several factors including investments and access to capital.
- **Foster Research and Development:** In the last 20-30 years, several initiatives from all over the world have started to make natural polymers like PHA useful for durable and structural applications as an alternative to fossil-fuels-based plastics by mimicking nature in a consistent way. We strongly recommend the Commission to support the research, development, and financing of studies, and projects for such materials.

Adopting biobased materials not only helps tackle the environmental challenges that come with the use of fossil-based materials but also paves the way toward economic growth and prosperity. As per the United Nations, plastic pollution may be reduced by 17% by carefully substituting selected problematic plastic products with short-lived goods created from sustainable resources like paper and compostable materials. In comparison to conventional plastics, alternative materials may also reduce greenhouse gas emissions, and it is predicted that by 2040, the paper and compostables industries will have added almost three million jobs worldwide. The EU Commission can set an example for industry transformation and the development of a sustainable future by taking proactive steps to promote biobased materials and the bioeconomy.