



Newsletter 08_2023

connect partners
share information
gain insights

Welcome to the eighth issue of the BIO-PLASTICS EUROPE Newsletter

This issue of the newsletter focuses on the advances BIO-PLASTICS EUROPE made in the material development. We want to show the process of the development of new materials and share the products we have been working on.

Enjoy reading about Cross-continental exchange in Vietnam, our BIO-PLASTICS EUROPE scientific colloquium, the new handbook that summarises the impact of bio-based and biodegradable plastics on existing waste management systems and more.

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The BIO-PLASTICS EUROPE scientific colloquium

By Reinhard Saborowski, Lukas Miksch and Lars Guto (Alfred-Wegener-Institute, Germany)

More than 40 scientists from ten countries met in mid-September for a colloquium at the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research in Bremerhaven, Germany, which organised the event together with the Hamburg University of Applied Sciences and the Prospex Institute. The participants presented their natural, engineering and social science research on biobased and biodegradable plastics and exchanged ideas with each other.

The Director of the Alfred Wegener Institute, Prof. Antje Boetius, was also present for a short time, at least virtually, when she sent a welcome message directly from the North Pole from an expedition on the changes in the Arctic environment. Afterwards, Dr. Jelena Barbir, Project Manager BIO-PLASTICS EUROPE, presented the project and Dr. Carly Fletcher, Circular Economy Projects Manager at the British Manchester Metropolitan University, shed light on the mismatch between science and politics.

Research content and results were then presented in several sessions. For example, presentations were given on the pollution of ecosystems

by plastics and natural polymers were discussed as a potential solution to the global plastics and CO₂ problem by using atmospheric CO₂ as a carbon source for production. Technical advances in the field of bio-based and biodegradable plastics were presented, such as the optimisation of production processes and the use of chemical additives to improve plastic properties. Furthermore, the compostability of the materials was critically examined. Subsequently, the environmental impact of biobased and biodegradable plastics was discussed based on their biodegradability and their effects on selected organisms. In addition, political and industrial aspects of biobased and biodegradable plastics were considered.

Finally, technical solutions to improve the sustainability of these novel materials, for example through recycling and upcycling of existing feedstock, were presented. The colloquium ended with a panel discussion on the future perspectives of biobased and biodegradable plastics, which was chaired by the Prospex Institute and publicly broadcast on YouTube.

Youtube-video: [Bio-based Plastics: Exploring Perspectives, Risks and Solutions - Round Table - YouTube](#)



Figure 1: (Alfred-Wegener-Institute, Germany)



Addressing the mismatch between policy and science: A white paper will tell the story of bio-based plastics and their alignment with current EU policies and strategy

By Dr Carly Fletcher (Manchester Metropolitan University, United Kingdom)

The BIO-PLASTICS EUROPE project has worked with all project partners to create a policy framework that synthesises the findings of the project into a series of policy briefs and other communication tools. Partners will also produce a white paper that is scheduled for publication at the end of the project.

The white paper will utilise findings from across the project (from technical and non-technical work packages) to tell the story of bio-based plastics and their alignment with current EU policies and strategy, identifying any potential limitations. Most importantly, it will present the various briefs, tools, and other engagement formats that the project has developed to put forward potential solutions for the barriers identified. It will combine all the findings of the project into one document to present an argument based on outputs such as public deliverables, academic papers, experimental results, etc., synthesising all of the information generated by the project and making linkages to

the many solutions that the project partners have developed.

But why have we tasked ourselves with completing such a big task at the end of the project? One word – IMPACT. And in this case, we want to make sure that all the findings generated by the project can be fed into appropriate mechanisms to impact policies of the future.

Policy can be thought of as a system of guidelines used to inform decisions that will achieve a rational outcome, or a statement of intent that is implemented through procedure and protocol. While it may seem sometimes that policy comes out of nowhere – creating confusion for those that must apply it and providing dramatic headlines for news outlets – policy actually follows a predetermined process.

Cyclical in nature, the policy process starts from a notional point (agenda setting) where policymakers begin to consider a specific problem. Following formulation and implementation, the policy process then evaluates effectiveness before arriving at the notional endpoint. At this point, policy makers must decide what happens next – will the instrument be maintained, updated, succeeded, or terminated completely – starting the cycle again.

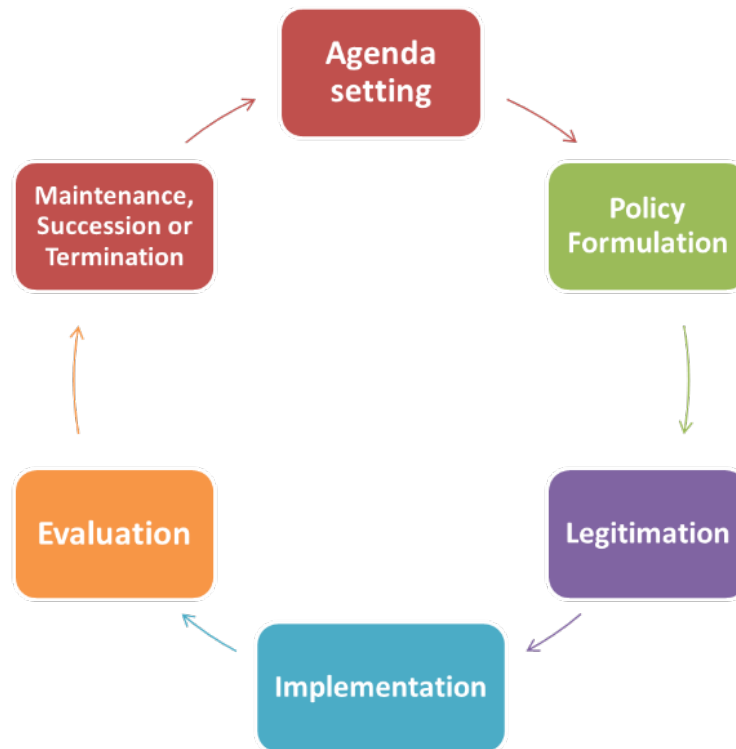


Figure 2: The policy cycle (based on Paul Cairney, 2013)

Science has a crucial role to play throughout the policy cycle, where scientist should offer a supportive role in the policy cycle, presenting current knowledge, undertaking impact assessments, and evaluating effectiveness. However, a mismatch is often observed – where scientists and policy makers seem to inhabit two different worlds and use completely different languages.

Indeed, the literature on the research-policy gap has concluded that timely access to good quality and relevant research evidence, collaborations with policymakers, and the building of relationships and skills with policymakers are the most important factors in influencing the use

of evidence. As such, poor scientific communication along with the variation regarding the content and quality of evidence available can create significant barriers to the policy making process.

By publishing our whitepaper, the BIO-PLASTICS EUROPE project acknowledges and ultimately tries to overcome this mismatch between science and policy. As shown by the graphic illustration below, the development of the whitepaper will be the accumulation of many project hours, numerous in-depth discussions and the synthesise of results from across the project.

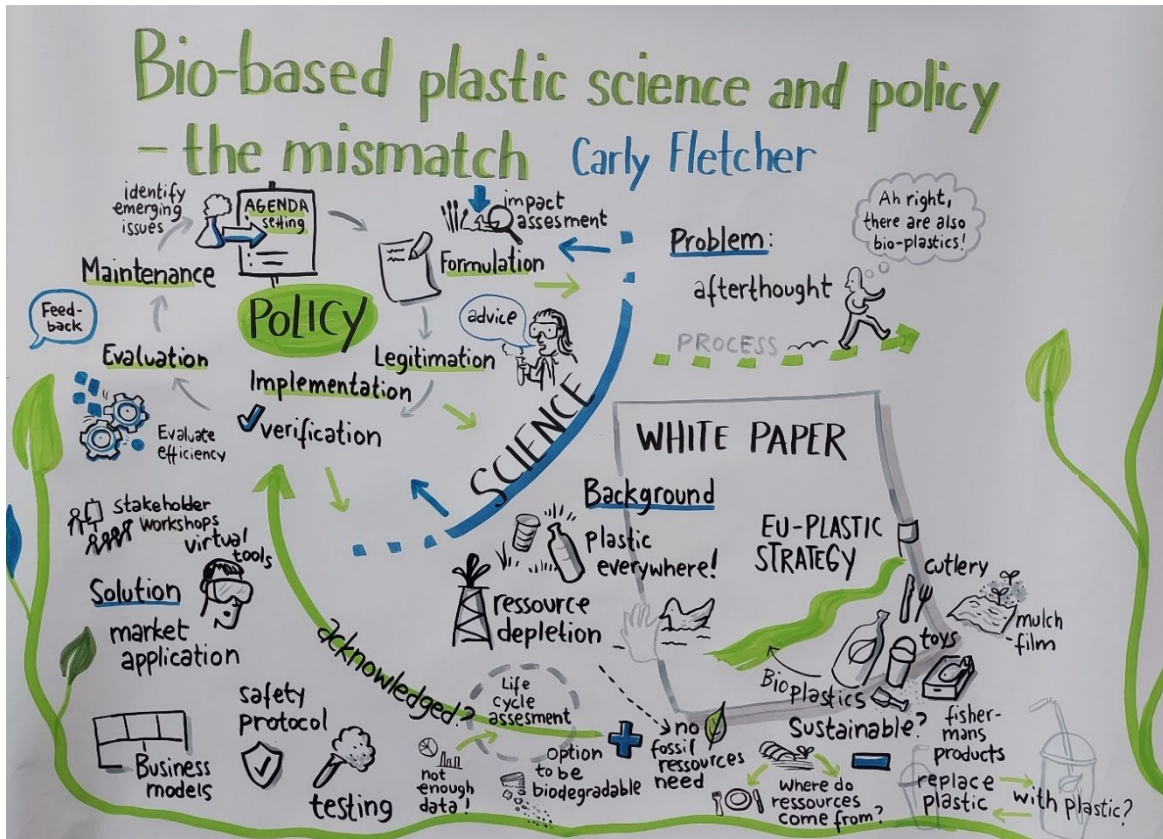


Figure 3: Poster Bio-based plastic science and policy – the mismatch

Cross-continental exchange in Vietnam: European-Asian symposium on avoiding plastic waste and promoting bio-based plastics

By Dr. Jelena Barbir (HAW Hamburg, Germany)

Within the framework of the BIO-PLASTICS EUROPE project a European-Asian Symposium took place in early June in Vietnam. The country is one of the five states worldwide responsible for 60% of plastic pollution in the oceans while recycling less than third of its disposed plastic waste. In a two-day program more than 50 European and Asian researchers, project managers and company representatives discussed approaches and methods being used in order to further understand the impacts of plastic on the environment, to manage plastic waste and foster the manufacturing of bio-based plastic products. The Symposium was hosted by the RMIT University in Ho Chi Minh City.

To get practical insights, the participants visited the largest landfill in Ho Chi Minh City which offered the participants to get familiar how the waste is managed in one of the largest cities in the world. After on, they were taken to the factory of Glassia, a Vietnamese company that reuses glass bottles in order to eliminate plastic waste.

The second day of the Symposium was dedicated to the theoretical exchange of ideas and several interesting discussions among the participants took place during plenary sessions. These sessions addressed different topics, such as sustainability-based solutions for bio-based plastic production and general solutions such as implementation of different educational approaches. Also, the topic of how plastic waste can be recycled and processed into new products was addressed, which was met with particular interest among the participants and gave rise to a lively discussion.

Later on, two sessions focused on plastic waste issues in Vietnam and three Vietnamese companies presented themselves and shared their sustainability efforts.

“Two successful and instructive days that facilitated the exchange between experts from different countries showed to be a valuable contribution to counteracting plastic pollution in the oceans and triggered some new ideas to foster future international collaboration”, says Eleonora Foschi, researcher at the University of Bologna, who joined the event.

For further information: The results of the symposium will be documented in the book “Innovation and Integrative Approaches in Handling Plastic Pollution and Fostering Bioplastic Production”, which is part of the World Sustainability Series and will be published by Springer Nature.



Figure 4: Cross-continental exchange in Vietnam: European-Asian symposium on avoiding plastic waste and promoting bio-based plastics

Information for a broad audience: New handbook summarises the impact of bio-based and biodegradable plastics on existing waste management systems

By Prof. Dr. Žaneta Stasiškienė I (Institute of Environmental Engineering Kaunas University of Technology, Lithuania)

Many countries, both in the EU and elsewhere, are facing a situation where the awareness of the plastics problem is high, but behaviour change does not automatically follow, mainly due to different barriers: Perceived practicability and convenience in the consumption context, lack of knowledge on how to implement alternatives or lack of opportunities and strong habits often related to culture and a shift of responsibility. Therefore, these issues need to be approached in an interdisciplinary manner.

The project BIO-PLASTICS EUROPE addresses the topic of “Sustainable solutions for bio-based plastics on land and sea”. In the scope of this project, the handbook “On the impacts of bio-based and biodegradable plastics (and additives) on existing waste management frameworks” was developed with the goal of ensuring capacity building for the development of sustainable strategies and solutions for bio-based plastic products, as well

as the development of approaches focused on circular innovation for the entire bio-based plastics system.

This handbook brings together several key topics related to bio-based and biodegradable plastics in one place for a broad audience of decision-makers at the national and regional levels, business representatives, scientists, and society. The topics covered include an introduction to the concepts of bio-based and biodegradable plastics, Life Cycle Assessment, and Circular Economy concepts, an analysis of the impact of bio-based, biodegradable, and compostable plastics on waste management technologies and systems, and an analysis of the legal and policy framework. Additionally, the most promising business cases from the project partner countries are provided.

In general, the handbook addresses several critical aspects of bio-based and biodegradable plastics and their effects on waste management systems:

Growing Importance of Biopolymers: The handbook recognizes the rapid growth of biopolymers in the global plastics market, driven by concerns about plastic pollution. This growth highlights the increasing importance of sustainable alternatives derived from renewable sources.

Circular Economy Integration: Properly designing waste management systems for bio-based products is emphasized as a way to integrate these materials into a circular economy. This approach promotes the reuse, recycling, and recovery of bio-based waste, reducing environmental impact and resource depletion.

Waste Management Flexibility: The handbook underscores the versatility of bio-based biodegradable plastics in waste management. They can be reused, mechanically or chemically recycled, organically recycled (composted), or used for energy recovery, allowing for flexible and sustainable end-of-life options.

Environmental Concerns: It acknowledges the concern regarding incomplete degradation of bioplastics during waste management processes and the potential leakage into the environment. This highlights the need for improved waste management practices for these materials.

Behavioural Barriers: The handbook recognizes that despite high awareness of plastic pollution issues, behaviour change can be challenging due to various barriers, including perceived

convenience, lack of knowledge, and cultural habits. It emphasizes the need for interdisciplinary approaches to address these barriers effectively.

In summary, this handbook plays a crucial role in raising awareness, providing knowledge, and promoting sustainable practices related to bio-based and biodegradable plastics. It serves as a valuable resource for stakeholders across various sectors, facilitating informed decision-making and the development of strategies to mitigate the environmental impact of plastics while advancing the circular economy.

The handbook will be introduced for a wide audience, including decision-makers at national and regional levels, business representatives, scientists, and society as a whole. We hope what it will serve as a comprehensive resource to increase awareness and understanding of bio-based and biodegradable plastics. Who wants to know more: <https://bioplasticseurope.eu/downloads/public-deliverables>



Handbook on the impacts of bio-based and biodegradable plastics on existing waste management frameworks



Horizon 2020

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 860407

Figure 5: New handbook summarises the impact of bio-based and biodegradable plastics on existing waste management systems

Enlightening dialogue with Experts: Elements of the future and requirements regarding bio-based plastics were discussed

By Carolyn Brand & Angela Hahn (Prospex Institute, Belgium)

The international colloquium hosted by the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research in Bremerhaven, Germany, and organized by BIO-PLASTICS EUROPE together with HAW and Prospex Institute (see also the article “The BIO-PLASTICS EUROPE scientific colloquium”) ended with a dynamic roundtable discussion on future perspectives of bio-based and biodegradable plastics. This enlightening dialogue, chaired by Prospex Institute, spanned over 1.5 hours, delving deep into the changes and challenges of sustainable plastic alternatives and was broadcasted on YouTube. The roundtable fostered profound insights on plastics’ future. Responsible usage, collective efforts, informed consumers, and supportive policies are key to a sustainable plastic era. Challenges abound, but opportunities for positive change are equally significant.

Here are the key takeaways:

1. Purposeful Plastic Use: Plastic isn't inherently evil; it's about purpose.

Selecting the right plastic type and responsible disposal are crucial for a sustainable cycle.

2. Prioritize Reuse and Recycling: Emphasizing reuse and recycling of biobased plastics is pivotal in reducing waste and resource consumption.

3. Synergies for a Circular Economy: Collaboration is key to fostering a circular economy for biobased plastics, enhancing sustainability.

4. Balance Feedstock and Food Security: Sustainably sourcing agricultural feedstock while ensuring food security is a delicate, necessary balance.

5. Choose Wisely: The right plastic for the right job – performance and environmental factors should guide choices.

6. Reduce Overall Plastic Use: Urgently minimize plastic production, whether traditional or biobased, for sustainability.

7. Collective Responsibility: Sustainability in plastic usage is a collective journey involving the entire value chain, from manufacturers to consumers.

8. Responsible Sourcing: Ethical sourcing and production practices in the biobased plastic industry are imperative.

9. Policy Catalyst: Effective policies can level the playing field and counter greenwashing in the plastic industry.

10. Timely Advocacy: Advocacy aligned with political moments can accelerate sustainability efforts.

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11. Empower Consumers: Educated consumers drive responsible choices and policies.

12. Stakeholder Engagement: Engage stakeholders to find collaborative solutions and enhance research impact.

13. Scale Up Production: Boost biobased plastic production to make it a viable alternative.

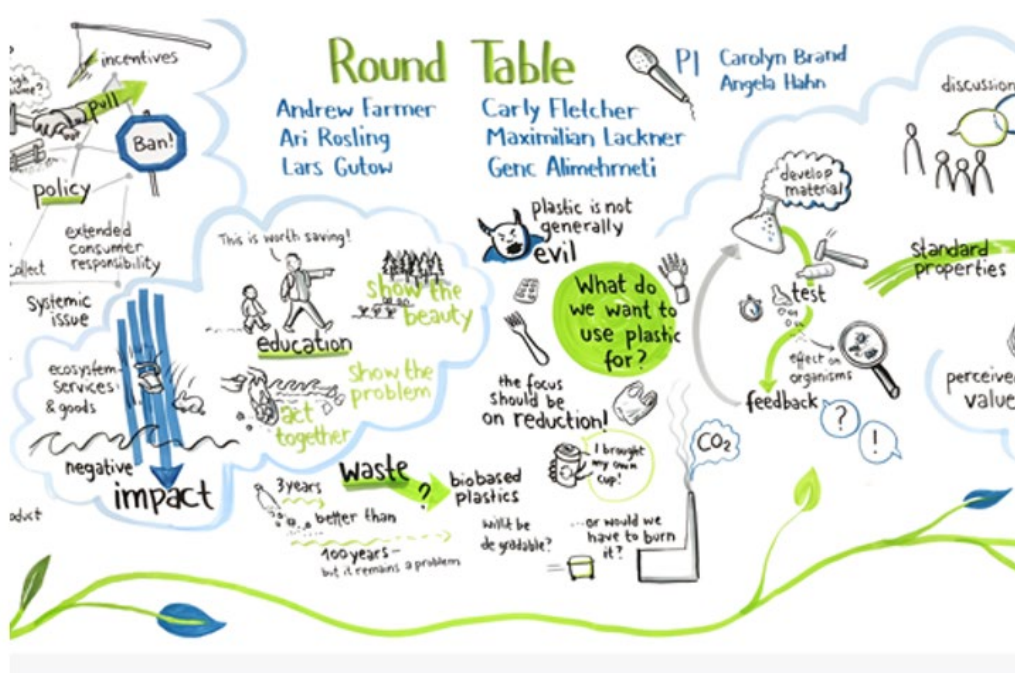


Figure 6: Enlightening, dynamic and interesting: the experts at the roundtable delved deep into the changes and challenges of sustainable plastic alternatives.

Impactful Journey: Navigating the Bio-Based Plastics Frontier

By Carolyn Brand (Prospex Institute, Belgium)

In the ever-evolving landscape of sustainability and plastic pollution, the pursuit of viable alternatives to traditional plastics stands as a critical mission. To unlocking the potential of bio-based plastics was the aim of three-year BIO-PLASTICS EUROPE project.

The kick off was in October 2019, where the strategies and concepts were agreed to underpin our goals. Almost 52 months later the BIO-PLASTICS EUROPE project consisting of 22 partners find ourselves completing the final lap of our endeavours to deliver the sustainable strategies and solutions for bio-based plastics to support the EU-Plastic Strategy and promote circularity in the economy.

Over the course of 3 years the core of the BIO-PLASTICS EUROPE project was dedicated to identifying and nurturing connections with the right stakeholders, laying the foundation for meaningful collaboration. The team, in partnership with the Prospex Institute, engaged with a diverse range of stakeholders: industry

experts, researchers, policymakers, and scientists, resulting in 200 collaborators and circa 3000 stakeholders. The multifaceted approach we adopted resulted in a remarkable array of impactful workshops, compelling speeches, global interactive meetings, global symposiums, array of scientific and non-scientific published papers, enlightening articles, and some significant books being published.

If that isn't enough, the team also created important initiatives that will help others on the continued sustainable journey such as the Biobased plastic safety protocol, project2policy concept, and a Waste Management handbook focused on sharing knowledge and best practices on waste management of plastics to aid municipalities.

As the project draws to a close, our journey is far from over. In the project's final phase, we embark on a road tour spanning four countries: Slovenia, Lithuania, Italy, and Greece. Our mission is to implement the waste management handbook by collaborating with local municipalities, translating our knowledge into actionable initiatives. We aim to address the pressing challenges of bio-based plastic waste management on a localized scale.

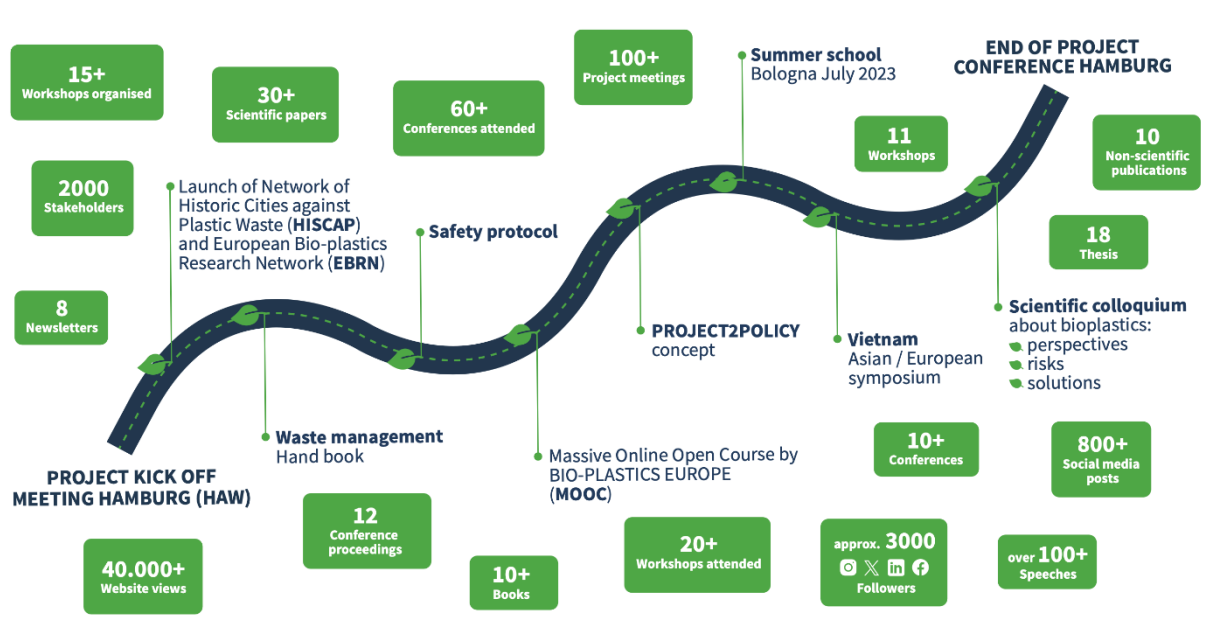


Figure 7: Impactful Journey: Navigating the Bio-Based Plastics Frontier

Thank you for reading! We hope that you have enjoyed our last edition of the newsletters and thank you for following us in our journey!

With this final eighth edition of our newsletter we are celebrating four successful project years. For more information on the project results and outcomes, please feel free to visit us on our website:

www.bioplasticseurope.eu

Sincerely yours,

The BIO-PLASTICS EUROPE Project Team



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