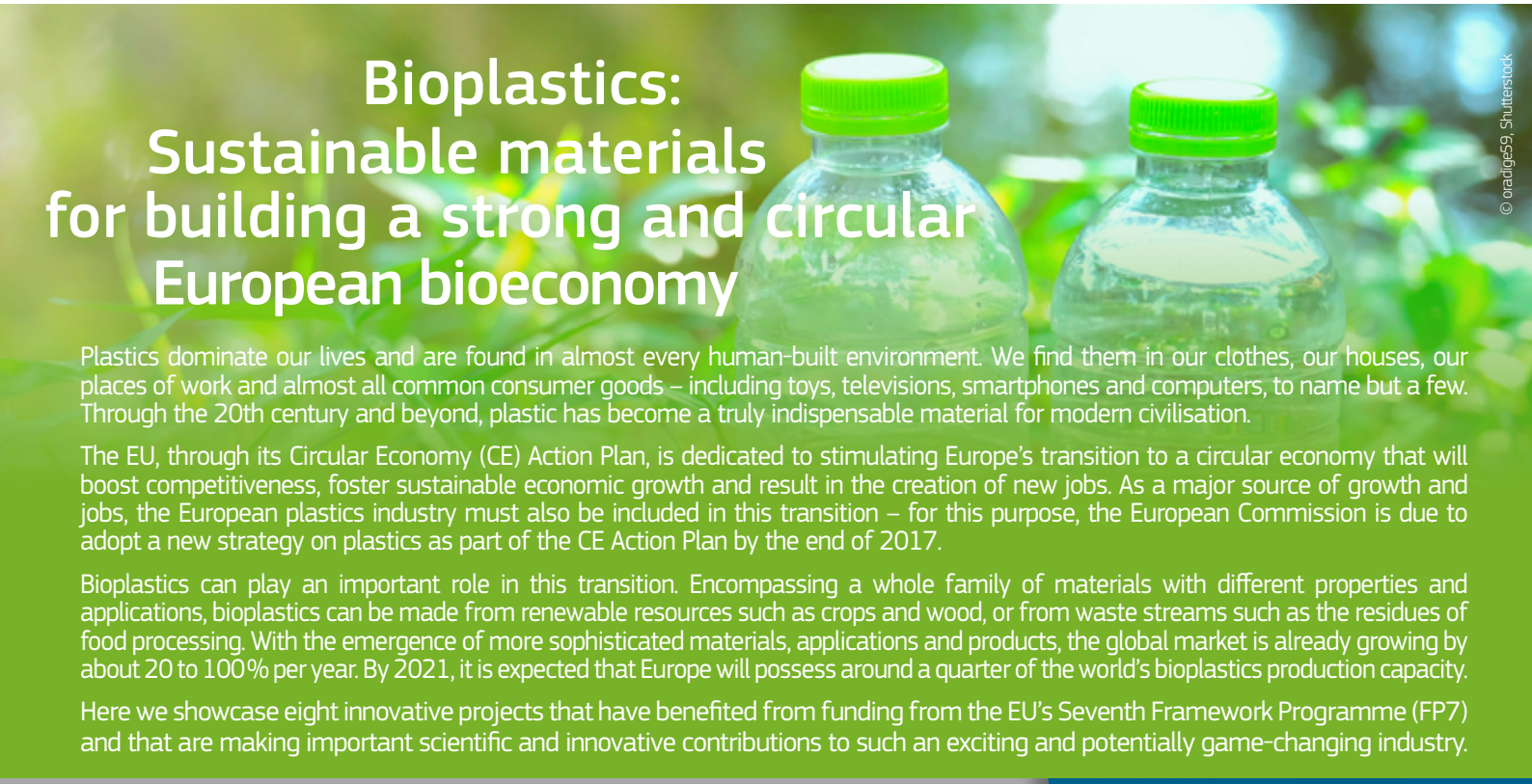
European Commission

Bioplastics: Sustainable materials for building a strong and circular European bioeconomy



Plastics dominate our lives and are found in almost every human-built environment. We find them in our clothes, our houses, our places of work and almost all common consumer goods – including toys, televisions, smartphones and computers, to name but a few. Through the 20th century and beyond, plastic has become a truly indispensable material for modern civilisation.

The EU, through its Circular Economy (CE) Action Plan, is dedicated to stimulating Europe's transition to a circular economy that will boost competitiveness, foster sustainable economic growth and result in the creation of new jobs. As a major source of growth and jobs, the European plastics industry must also be included in this transition – for this purpose, the European Commission is due to adopt a new strategy on plastics as part of the CE Action Plan by the end of 2017.

Bioplastics can play an important role in this transition. Encompassing a whole family of materials with different properties and applications, bioplastics can be made from renewable resources such as crops and wood, or from waste streams such as the residues of food processing. With the emergence of more sophisticated materials, applications and products, the global market is already growing by about 20 to 100% per year. By 2021, it is expected that Europe will possess around a quarter of the world's bioplastics production capacity.

Here we showcase eight innovative projects that have benefited from funding from the EU's Seventh Framework Programme (FP7) and that are making important scientific and innovative contributions to such an exciting and potentially game-changing industry.

BIOREFINE-2G | (Development of 2nd Generation Biorefineries – Production of Dicarboxylic Acids and Bio-based Polymers Derived Thereof), coordinated in Denmark

Second generation biorefineries are all about creating value from waste, so it seems only right that the ideal plant should leave nothing behind. With this in mind, the BIOREFINE-2G project has developed novel processes to convert pentose-rich side-streams into biopolymers.

HTTP://WWW.BIOREFINE2G.EU/

BIO-QED | (Quod Erat Demonstrandum: Large scale demonstration for the bio-based bulk chemicals BDO and IA aiming at cost reduction and improved sustainability), coordinated in Italy

The BIO-QED project has provided bio-based bulk chemicals BDO and IA with a bridge to market. It has done so by generating evidence and collecting all technical and economic key design parameters needed for future investment decisions at production plants.

HTTP://BIO-QED.EU/

BRIGIT | (New tailor-made biopolymers produced from lignocellulosic sugars waste for highly demanding fire-resistant applications), coordinated in Spain

Bringing together 16 partners from 12 countries, the BRIGIT project aimed to develop a cost-effective, environment-friendly, continuous process to produce biopolymers from the sugar byproducts generated during sulfite pulping.

HTTP://WWW.BRIGIT-PROJECT.EU/

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EUROPHA | (Novel technology to boost the European Bioeconomy: reducing the production costs of PHA biopolymer and expanding its applications as 100% compostable food packaging bioplastic), coordinated in Spain

To meet the demands of ever-more environmentally aware consumers, the EUROPHA project has answered this demand by developing 100% natural and biodegradable, polyhydroxyalkanoates-based bioplastic formulations for food packaging applications.

HTTP://EUROPHA.EU/

GRAIL | (Glycerol Biorefinery Approach for the Production of High Quality Products of Industrial Value), coordinated in Spain

GRAIL project researchers aimed to integrate and develop existing and new bio-technologies that use glycerol as a competitive biological feedstock. By doing so, the project will also contribute to improving the economics and environmental viability of biodiesel production.


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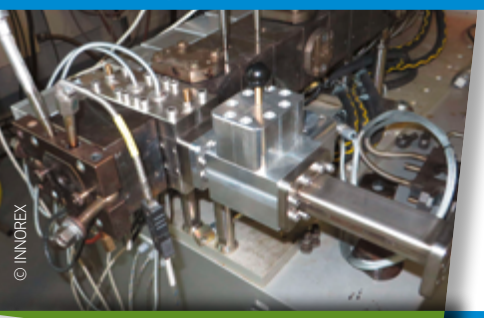
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INNOREX | (Continuous, highly precise, metal-free polymerisation of PLA using alternative energies for reactive extrusion), coordinated in Germany

Demand for biobased polymers is growing fast, but current production technology uses catalysts containing metal which can be an environmental and health hazard. The INNOREX project has developed a new reactor using alternative energies that allow for a continuous and precise metal-free polymerisation process.

HTTP://WWW.INNOREX.EU/

NANO3BIO | (NanoBioEngineering of BioInspired BioPolymers), coordinated in Germany

Researchers with the EU-funded NANO3BIO project are using specially optimised fungi, bacteria and algae to produce the environmentally-friendly chitosans that serve as raw materials for many important applications but are more environmentally friendly and more efficient.


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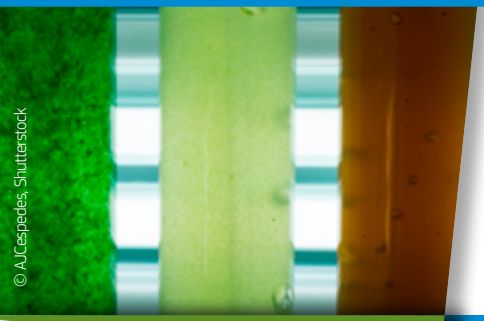
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SPLASH | (Sustainable PoLymers from Algae Sugars and Hydrocarbons), coordinated in the Netherlands

The SPLASH project has shown that microalgae are a viable raw material for the sustainable production of feedstock for chemicals and plastics. This exciting innovation has the potential, at least in the long term, to reduce significantly Europe's over-reliance on fossil-based production.

HTTP://EU-SPLASH.EU/

SYNPOL | (Biopolymers from syngas fermentation), coordinated in Spain

SYNPOL has developed a viable process to efficiently turn waste into biopolymers. The system works by converting complex biowaste into syngas, which is then fed into a bioreactor for bacterial fermentation, creating polyhydroxyalkanoates (PHAs) and building blocks for novel biopolymers.


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HTTP://WWW.SYNPOL.ORG/

Publications Office

Learn more about EU policies on Bioplastics:
https://ec.europa.eu/research/bioeconomy/index.cfm

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