

NENU2PHAR PROJECT UPDATE AFTER 1 YEAR OF WORK



BIOECONOMY | RESEARCH & INNOVATION | NENU2PHAR PROJECT

One year after the launch of the project, the 16 European partners gathered online to review their work and plan the next activities of the project.

Launched in September 2020, the NENU2PHAR project is setting-up an innovative European value chain of bio-plastic products from microalgae and bacteria, these sustainable and renewable resources will provide plastic products an acceptable end of life through of composting, recycling or re-using.

For about 3 years, the project will work on developing an original production route of PHA (Polyhydroxyalkanoate), a family of biobased polymers and biodegradable plastics. 8 PHA-based high volume consumer products, that will be either used for packaging, agricultural or medical applications, will be developed and benchmarked to their fossil-based counterparts.

Over two days in September, the remote event was the opportunity for the partners to share their recent outcomes with great progress on the development of the bio-based plastic material.

NENU2PHAR's partners are pleased to share key outcomes from their first year of work.

FOCUS ON FIRST OUTCOMES

Development of PHA bioproduction

Over its first year, the 16 partners of the NENU2PHAR project have been working on the development of microalgal biomass that will be used as the primary feedstock for PHA-accumulating bacteria. This microalgal biomass is cultivated under specific conditions by the partner CEA triggering a remarkable accumulation of starch. Then, this bio-based substrate is used as a carbon feedstock for bacteria cultivation to accumulate the PHA polymer. UBS-IRDL is in charge of the optimisation of the parameter of new bacteria strains and BIOTREND is performing the upscaling of the cultivation. The extraction processes of the PHA polymer is carried out by CELABOR following innovative processes.

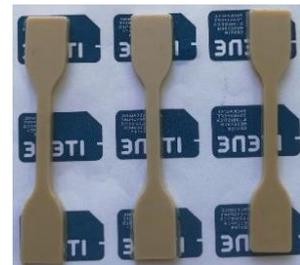


Legal, regulatory, framework, REACH, and policies for plastic products and processes

The first public deliverable has been drafted under the coordination of LOMARTOV: partners have worked on defining the completely legal, regulatory framework, REACH and policies for plastics products and processes. The infographics are available on the [NENU2PHAR website](#).

Other lines of progress

In addition to these two significant developments, the other activities of the project related to the formulation, compounding and processing of the PHA materials has been initiated by partners ITENE, ELIXANCE, BIOMI, IPC and CENTEXBEL.



ZERO-E, with IAR and LOMARTOV have worked on the first versions of the market assessments of bio-plastic products and the identification of value map and consumer needs to allow the industrial partners to target the relevant markets and consumers.

In addition, first tests on compostability, disintegration and ecotoxicity have been launched by ITENE on several samples of reference including PHB and PHB-based blends. At the same time, biodegradation in sea water was also started by IRDL using the same type of materials.

Finally, partners started presenting the work during several events such as the [2nd PHA platform World Congress 2021](#) in September, [7th International Polysaccharide Conference of the European Polysaccharide](#) in October.

PROJECT'S NEXT STEPS

In the forthcoming months, the next steps of the project will be dedicated to:

- the development of product materials in collaboration with the industrial partners (DANONE, KAJ PLASTICS, SOFRADIM PRODUCTION and IFG EXELTO), targeting properties higher than their fossil-based counterparts.

- the upscaling process of biobased PHA from microalgae biomass feedstock
- Biodegradation on land and marine waters and recycling assessments of PHA-compounds

ABOUT NENU2PHAR

The NENU2PHAR project aims at bridging this crucial gap in the EU industry, within an inclusive approach that will address the whole PHA-based plastic value chain, targeting high volume consumer products. The NENU2PHAR project gathers 17 partners, leaders in the different fields of research, from biomass development to formulation of biopolymer up to plastic processes. First, bio-sourced will be tackled by developing and optimised production of PHA biopolymer thanks to the optimisation of carbon feedstock from micro-algae biomass and selection of bacteria strains. Then, innovative polymer processing options will generate different structures with various bulk-surface properties, and various end of life properties. Market uptake of this new PHA will be supported by a competitive cost (5€/kg for PHA compounds), high purity product and processes optimised for PHA bioplastic to tackle functional properties of high-volume consumer products better than fossil-based counterparts. 8 PHA-based products will be developed and benchmarked to their fossil-based counterparts. Full validation of the end-of-life scenarios and environmental footprint will be studied based on biodegradability, compostability or recyclability of the bioplastics formulated.

NENU2PHAR* brings together 16 European partners, coordinated by CEA (France):

- **4 large industries:** DANONE (France), KAJ PLASTICS (Poland), SOFRADIM PRODUCTION (France), IFG EXELTO (Belgium)
- **6 SMEs:** ELIXANCE (France), CELABOR (Belgium), BIO-MI Ltd (Croatia), BIOTREND (Portugal), LOMARTOV S.L. Applied Innovation Engineering (Spain), ZERO EMISSIONS ENGINEERING B.V. (The Netherlands)
- **4 RTOs:** CEA (France's Alternative Energies and Atomic Energy Commission), Innovation Plasturgie Composites (France), ITENE (Spain), CENTEXBEL (Belgium)
- **1 academic:** Université de Bretagne Sud – Institut de recherche Dupuy de Lôme (France)
- **1 innovative cluster:** IAR, the French Bioeconomy Cluster (France)



Duration: 42 months (September 2020 - February 2024) | Total budget: € 6 395 081.2

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More information:

- NENU2PHAR website: <https://nenu2phar.eu/>
- European Commission website: <https://cordis.europa.eu/project/id/887474/fr>
- Subscription to the project newsletter: <https://nenu2phar.eu/contact-us/>

CONTACTS:

Press:

Sophie MURIAS

Communications & European Projects Officer

IAR, the French Bioeconomy Cluster

murias@iar-pole.com | +33 6 12 54 01 99

Project coordinator:

Sophie Mailley - CEA

sophie.mailley@cea.fr



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