

## NENU2PHAR PROJECT END OF PROJECT AFTER 42 MONTHS



### BIOECONOMY | RESEARCH & INNOVATION | NENU2PHAR PROJECT

After 42 months of dedicated effort and collaboration among 17 partners, we are proud to announce the successful conclusion of the project.

Launched in September 2020, the Nenu2PHAR project had the goal to set-up an innovative European value chain of bio-based plastic products from microalgae, a sustainable and renewable resource. For about 3 years, the project worked on developing an original production route of PHA (Polyhydroxyalkanoate), a family of bio-based polymers and biodegradable plastics.

### PROJECT OUTCOMES

#### Project demonstrators

The Nenu2PHAR project has developed in collaboration with major industrial stakeholders a collection of 8 bio-based and biodegradable plastic products that offer a valuable alternative to non-biodegradable, petroleum-based plastics:



#### Key achievements

The following Nenu2PHAR project achievements can be considered the most significant and have been selected by the consortium as the most important project KER's (Key Exploitation Results):

1. Producing starch from microalgae to serve as fermentation substrate.
2. Creating processes to produce and refine starch from microalgae.
3. Creating fermentation processes using starch hydrolysates from microalgae as feedstock.
4. Forming a methodology for PHA extraction and purification using greener solvents (compared to conventional chlorinated solvents).
5. Expertise in PHA formulation and compounding.
6. Building knowledge on the processes, methods and technologies for the compounding of PHA.

7. Using PHA to create trays for cheese slices, cups for compote, and stand-up pouches.
8. Using PHA to create pouches for wet products (yoghurt).
9. Using PHA to create cosmetics packaging (roll-on bottles).
10. PHA-based formulation for thermoforming with medium-high barrier properties and flexibility.
11. Recyclability (sorting, mechanical recycling, and composting) of PHA and PHA-based blends.

### **Raising Biobased Plastics Awareness in the General Public Through Engaging Content and Events**

One of the other goals of the project was to raise awareness on bio-based plastics with the general public as well as the scientific and industrial community. Multiple communication activities were done to raise awareness of the general public, in particular [a video with the Euronews media](#). The monthly EURONEWS documentary series, "Ocean", in partnership with the European Commission DG MARE, has dedicated one of their episodes to the potential of microalgae to solve environmental issues. The Nenu2PHAr project was also covered in the April 2023 special issue of the French popular science magazine Science et vie with a 3-page dedicated article. In terms of events, the Nenu2PHAr project was presented at the Foire de Châlons event in France in 2022 and 2023. With more than 700 exhibitors, an anticipated 220,000 visitors, and a lineup of 200 conferences, the Foire de Châlons stands as the second largest agricultural event in France. In 2022 and 2023, the CEA attended the Fête de la Science in Aix-en-Provence with the aim of raising general public awareness about the scientific field. The project was also presented at various scientific and technical conferences including several Alga Europe editions, EFIB or the CBE JU Stakeholder Forum. In total, the Nenu2PHAr project actively participated in 47 events, ranging from workshops to major international conferences, engaging audiences from the general public to the industrial and research sectors, thus significantly amplifying awareness and collaboration opportunities in the field of bio-based plastics.

### **Boosting Awareness in the Industrial and Academic Community through the organization of two dedicated workshops**

The Nenu2PHAR project organized two workshops during its duration. The first one was held on the 4<sup>th</sup> and 5<sup>th</sup> of April 2023, where more than 70 experts, industry professionals, and stakeholders in the bio-based plastic sector convened at IPC's facilities in Alençon, France, for a specialized event dedicated to address current and future challenges in the field of PHA. Organized by Nenu2PHAR partners IPC and LOMARTOV, the event showcased presentations from various organizations and experts, offering valuable insights and expertise on the subject matter. The event was divided into two days: the first day, orchestrated by IPC, featured technical presentations on PHA, while the second day, led by LOMARTOV, delved into activities and role plays concerning the social acceptance of bio-based plastics. Concluding the first day, attendees were taken to a tour of IPC's premises, providing them with valuable insights of the organization's operations and expertise.

The second workshop, a collaborative effort between the CEA and the Nenu2PHAr project, took place on November 14<sup>th</sup> in Aix-en-Provence. The event attracted 50 participants eager to explore the latest advancements in bio-based plastics derived from microalgae. The morning started with a Tech Time organized by the CEA, where discussions focused around microalgae, bio-based plastics, and recycling. The afternoon included presentations highlighting the advancements within the Nenu2PHAr project, specifically focusing on recyclability, biodegradability, and life cycle assessment.

Both events served as a platform to showcase the Nenu2PHAr project and to gather European stakeholders interested in PHA and bio-based plastics derived from microalgae, fostering collaboration and knowledge exchange among industry experts and researchers.

## NEXT STEPS

As the Nenu2PHAr project concludes, its partners are already committed in other European projects addressing related topics, continuing to drive advancements in Europe's bio-based plastic industry. Responding to industry demand, IRDL, Nenu2PHAr's sole academic partner, is also initiating a strategic maturation project focused on assisting companies in integrating PHAs into their processes. This initiative underscores how the Nenu2PHAr project has empowered IRDL and all participating partners to elevate their knowledge and skills in the PHA sector. Whilst the project has concluded, our website will remain accessible online for three more years. Additionally, we have launched a new website section featuring a [virtual showroom](#), showcasing most posters and PowerPoint presentations presented by Nenu2PHAr partners at various events over the past four years. Looking forward, the Nenu2PHAr partners are steadfast in their commitment to ongoing contributions in the field of bio-based plastics, driven by a shared vision of fostering a more sustainable world for future generations. We extend our heartfelt gratitude to all our project partners for their unwavering dedication, passion, and expertise throughout this remarkable journey!



**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/>

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