



Industrial Feather Waste Valorisation for Sustainable KeRatin-based MAterials

www.karma2020.eu

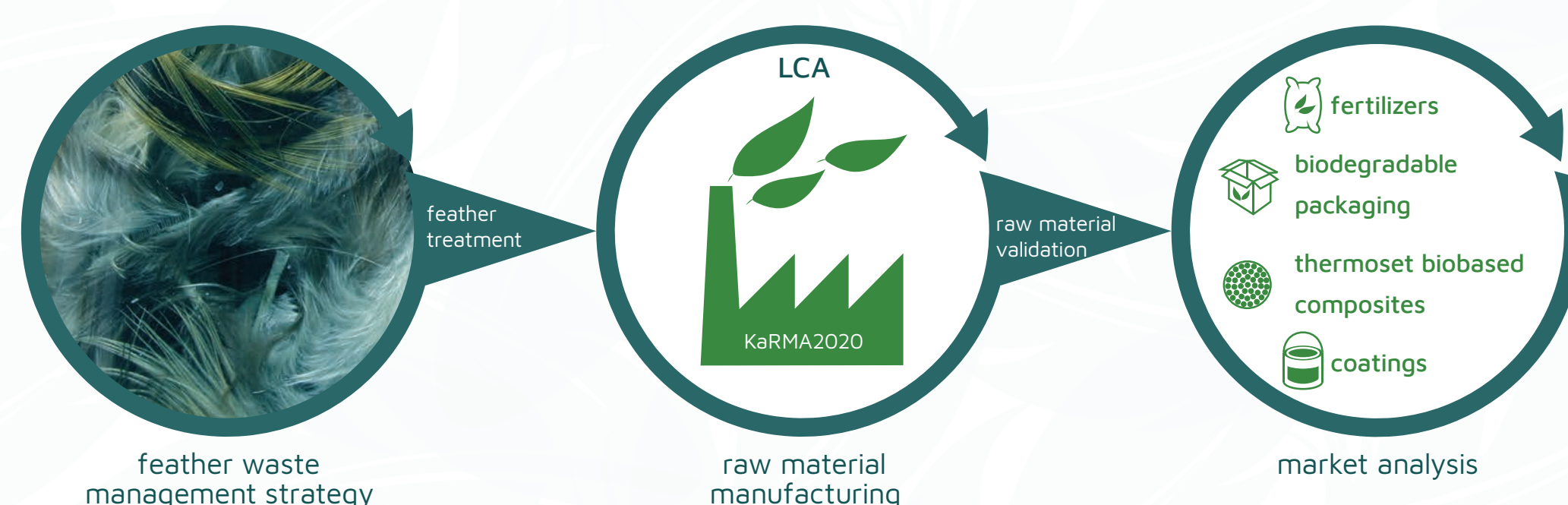
THE PROJECT

In Europe, the majority of the poultry feather waste is disposed in landfills, incinerated, or a minor part converted into low nutritional value animal food, becoming a problematic for the future. At present, the conversion and the use of the feathers as raw material in industrial applications are still very limited. Therefore, the development of industrial conversion methods and exploitation strategies for poultry feathers will not only increase the value of feathers as raw material but also reduce environment impact and health hazards associated to landfill. In this context KaMA2020 Project aims to the industrial manufacture and the exploitation of such underutilized feather waste for the production of valuable raw material that will be employed to develop products for cross-sectorial applications, such as hydrolysed keratin, bioplastics, flame retardant coatings, spun bonded non-wovens and thermoset biobased resins.

OBJECTIVE

The main objective of KaMA2020 project is to develop new bio-based products for high impact sectors, starting from poultry feather waste. This main objective will be reached through the following steps:

- Improving feather waste pre-treatment and conditioning processes
- Optimizing the isolation of keratin and other feather-based raw materials
- Validation of the feather-based raw materials for bio-based end products



BENEFITS

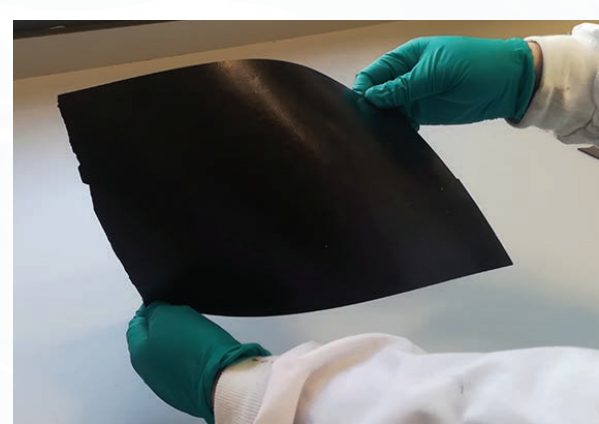
The valorisation of the current waste, together with the technological breakthroughs proposed in KaMA2020 guarantee significant benefits from both environmental and economical point of view. Due to the innovation potential of KaMA2020, the project will have relevant impacts:

- Technical impact, by the optimization of feather processing methods from lab to industrial scale
- Industrial impact, by the manufacturing of bio-based raw materials and by the production and the validation of end products
- Environmental impact, by reducing the negative environmental effect due to the feather waste as well as by the replacement of non-renewable primary raw material with renewable raw materials for the industrial production
- Economic impact, by the promotion of innovative applications and products with higher value from the current waste

KARMA2020 TECHNOLOGIES

After two years of research and development, KaMA2020 has already reached some of the most challenging milestones of the project: the production of feather-based raw materials at pilot scale and the manufacturing of end products: fertilizers, biodegradable packaging, bio-based thermoset composites and technical coated textiles. Now the Project is facing its last phase and these products will be validated according to European Standards. Their environmental impact and carbon footprint will be assessed in order to compare them to corresponding products derived from fossil raw materials.

- Steam explosion process
- Deep eutectic solvent fractionation
- Bioprocessing of feathers
- Hot melt extrusion
- Flame retardants
- Thermoset resins



The KaMA2020 Consortium

 cidetec surface engineering www.cidetec.es	 AIMPLAS PLASTICS TECHNOLOGY CENTRE www.aimplas.net	 VTT www.vttresearch.com	 IBWCh www.ibwch.lodz.pl	 cnrs www.unice.fr	 CEN T E X B E L www.centexbel.eu	 RI SE www.sp.se	 avantium www.avantium.com
 Daren Labs & Scientific Consultants Ltd. www.darenlabs.com	 Claotech PNO www.pnoconsultants.it	 VERTECH GROUP www.vertech-group.com	 SIOEN INDUSTRIES www.sioen.com	 GRUPO SADA a Nutreco company www.sadagrupo.com	 processum PART OF RLSE www.processum.se	 Fertiberia www.fertiberia.com	 FKuR plastics - made by nature www.fkur.com



KARMA2020 is a project funded by the European Commission

This project has received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n° 723268