

THE PROJECT
IS FLOURISHING
AND THE
RESULTS ARE
COMING
TO FRUITION

OUR TECHNOLOGIES,
OUR FACILITIES,
OUR PRODUCTS



NOVAMONT



PROTECTING NATURAL RESOURCES, REGENERATING LOCAL AREAS

Chemistry, agriculture and the environment: these are the ingredients of our bioeconomy model.

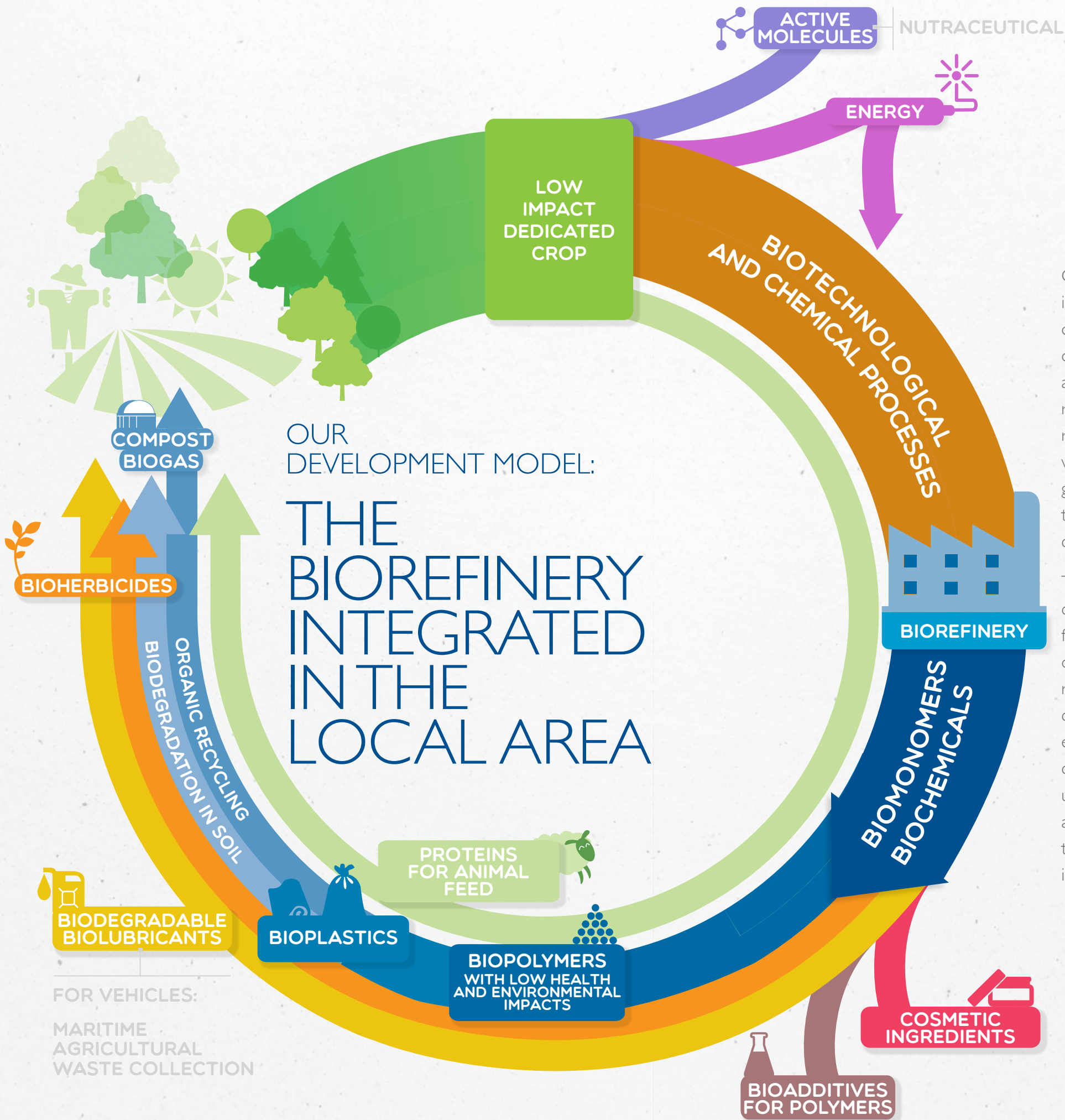
We promote a new cultural approach that can reconcile economy and society, business and citizens, and protect natural resources and biodiversity whilst encouraging the use of crops that respect specific local conditions.

Innovation is the driver of our industrial development: we constantly invest in research activities to improve the performance and the environmental profile of our products and to create proprietary technologies that allow us to

redevelop industrial sites that are no longer competitive into biorefineries integrated in the local area.

We build bridges between different sectors and create jobs and new value by working with all stakeholders in the value chain: from agriculture to research, from industry to local institutions.

Bioplastics and bio-based products are the heart of our business. We have created the innovative bioplastic MATER-BI, which is used to make everyday products that are conceived and designed as solutions to specific environmental and social problems.



Our biorefineries are innovative industrial plants dedicated to the production of high added value bioplastics and biobased products. They rethink the use of renewable raw materials from a circular viewpoint, promoting crops grown in marginal areas that respect specific local conditions.

The adoption of this model can have an important role for the innovation and growth of local areas, as it allows the reindustrialisation of no longer competitive sites, the reuse of existing skills and facilities, job creation through the efficient use of resources as well as cooperation between the various stakeholders in the sector.



MATRÌCA

A CONCRETE CASE OF REGENERATION OF LOCAL AREAS

Matrìca is the joint venture between NOVAMONT and Versalis which was set up in 2011 with the aim of partially reconverting the petrochemical site at Porto Torres (SS) into a biorefinery integrated in the local area. The Matrìca plants makes use of world-leading technology developed by NOVAMONT research, to produce an innovative range of products from vegetable raw materials for use in many different sectors: bioplastics, biolubricants, personal care products, plant protection and additives for the rubber and plastics industry.

The biorefinery of Porto Torres is a virtuous model of integration between industrial and agricultural production which systemises and leverages all the elements of the sector, starting from selection of the

raw materials. Matrìca is located in an area of marginal land that is suitable for the sustainable production of biomass from low-input, multiannual crops, well suited to the production requirements of the biorefinery.

Matrìca is a concrete example of our bioeconomy model, helping to strengthen the competitiveness and innovation of the local area and to maximise its growth potential on several fronts: from the primary sector (local crops that can feed the biorefinery and from which protein meal for animal feed is also obtained), to the secondary (agricultural vehicles and equipment, logistics, processing of biobased products), up to the tertiary sector (partnerships with universities, schools, research institutes and local institutions).



MATER-BIOTECH

THE INTEGRATION OF CHEMICAL PROCESSES WITH INDUSTRIAL BIOTECHNOLOGIES

MATER-BIOTECH, a company set up in 2012 and 100% controlled by NOVAMONT, is based in Adria (RO). It represents a fundamental development of our biorefinery model, since it integrates the chemical processes for the production of biochemicals with industrial biotechnologies and enables the production of MATER-BI with an even higher content of renewable raw materials. The initiative is also associated with the project for the reconversion of a site purchased by NOVAMONT undergoing development and expansion, in the context of the regeneration of the local area and the leveraging of existing skills and professionalism.

MATER-BIOTECH makes use of its partnership with Genomatica, a US leader in the development of microorganisms for fermentation processes, and is the world's first dedicated industrial plant to produce bio-butanediol (1,4 BDO) directly from sugars through a low-impact process whose by-products are reused as energy to power the plant. Butanediol, a chemical intermediate usually of fossil origin, is a strategic raw material not only for the production of biopolymers for biodegradable plastics, but also for a wide range of other sectors (textiles, electronics, automotive, etc.).



MATER-BI, THE ORIGINAL:

CONTROLLED, INNOVATIVE, GUARANTEED BIOPLASTIC

MATER-BI is our innovative family of bioplastics obtained from renewable raw materials and fully biodegradable and compostable.

Under the MATER-BI trademark we manufacture and market various types (grades) of biopolymers, which are suited to the processing technologies used for traditional plastics: film blowing, casting, extrusion/thermoforming and injection moulding.

Our bioplastics provide unique and innovative solutions to specific environmental problems and are used in applications where their properties represent clear added value both during their use and in the end-of-life phase: from carrier bags that can be reused to collect organic waste to disposable catering products contaminated by food, the mechanical recycling of which would be unlikely or not economically viable, to agricultural mulch films that biodegrade into the soil.

Since products made of Mater-Bi are biodegradable and compostable, they can be sent for organic recycling together with the organic waste fraction, thus optimising waste management, reducing the environmental impact and contributing to the development of virtuous systems with significant advantages throughout the production-consumption-disposal cycle. These properties make them useful for a wide range of sectors: the retail trade, separated waste collection, agriculture, catering and packaging.

All grades of MATER-BI are certified by European and international accredited bodies which guarantee their biodegradable and compostable properties (EN 13432), a result of our constant innovation towards attaining the highest and most stringent quality standards.





FOUR TECHNOLOGIES FOR A UNIQUE PRODUCT

MATER-BI is produced using vegetable components and biodegradable polymers obtained from renewable raw materials and raw materials of fossil origin. One of the various components used in the creation process and which helps to improve the performance and environmental characteristics is ORIGO-BI, the family of proprietary biopolyesters derived from vegetable oils.

Over the years we have managed to improve the performance of MATER-BI from both a technical point of view and in terms of sustainability, enclosing a high content of innovation and research, six connected sites, new investments and jobs within a small bioplastic granule. We have thus succeeded in producing materials

featuring greater renewability and an even greater reduction in greenhouse gas emissions and dependence on fossil raw materials.

MATER-BI integrates four proprietary technologies:

THE STARCH COMPLEXATION PROCESS

THE PROCESS FOR OBTAINING POLYESTERS FROM VEGETABLE OILS

THE DIACID PROCESS FOR CONVERTING VEGETABLE OILS INTO AZELAIC ACID AND OTHER ACIDS

THE PROCESS FOR OBTAINING 1,4 BDO (BIOBUTANEDIOL) FROM THE FERMENTATION OF SUGARS



NOT ONLY MATER-BI NEW BIOPRODUCTS FOR NEW MARKETS

Besides MATER-BI, our research has achieved major results in the bioproducts sector, with the aim of offering customised solutions in sensitive areas relating to the environment and health.

MATROL-BI is our line of biolubricants and rapidly biodegradable greases, obtained from renewable resources and consisting of four kinds of products: hydraulic fluids, greases, transmission fluids and dielectric fluids. It is the optimal solution for all machinery operating in ecologically sensitive areas (such as agricultural, forest, marine or urban), offering advantages not only in terms of performance, but also in terms of the environment and safety in the event of accidental dispersion in the ecosystems.

CELUS-BI is our new range of innovative and sustainable ingredients for the cosmetics and personal care sector. The family of CELUS-BI products comes from renewable raw materials of vegetable origin and from European supply-chain.

Products for agriculture, particularly bioherbicides. The perfect allies to reconcile productivity, safety and respect for the environment, they are the result of our research and development of innovative agro-industrial industries created with the collaboration of Consorzi Agrari d'Italia and Coldiretti.



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