

## TALKING TRENDS

# HOW BIOPLASTICS ARE SHIFTING THE PACKAGING SCENE

*Jiae Kim, Marketing Manager for Roquette Performance Material was joined by Stefano Facco, New Business Development Director, and Alberto Fragapane, from the External Relations and Study Center, both from Novamont, an international leader in the bioplastics sector and in the development of biochemicals.*

*In this first conversation, of the Roquette Performance Material “talking trends” series, we discussed the factors shaping the packaging market, the challenges faced, and how Novamont work with Roquette to tackle them!*

### What are the key trends you’re currently seeing in the packaging market?

Looking at the top line figures then the global packaging market is expected to register a compound annual growth rate of 3.94% during the period of 2022-2027<sup>i</sup>.

The flexible packaging market is especially buoyant as brands move away from traditional packaging formats. Tins and jars are being displaced by, for example, stand-up retort pouches, stick packs, bags and sachets made from materials ranging from paper to plastic, foil, and high-barrier films, notably in the food industry, a major focus for us.

High-growth segments such as sweets and confectionery are key targets for innovative, flexible packaging solutions.

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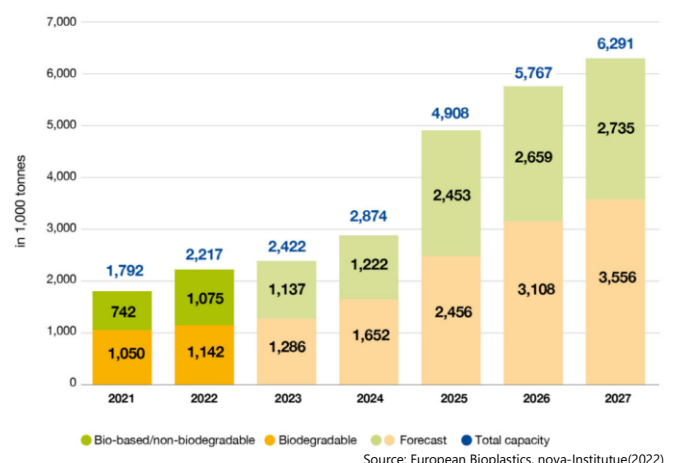
**The need for greater sustainability and to establish circular economies is shaping how the market grows.**

The use of recycled and recyclable materials is increasing, reusable and refillable options are gaining popularity, and we’re seeing a sustained increase in the use of bioplastics. PET recycling is now well-established for beverage packaging with the Coca-Cola European partners pledging to collect 100% of packaging and use 50% recycled plastic in PET bottles in Western Europe by 2025<sup>i</sup>.

**On the bioplastics front, around half of the world’s bioplastic production now goes into packaging and more than half of all bioplastics made are now biodegradable<sup>ii</sup>.** Globally production rates are expected to increase more than 2.5-fold over the period 2022 to 2027<sup>ii</sup>.

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**Global production capacities of bioplastics**



At Novamont these trends translate into increasing interest from brand owners and customers in compostable bioplastic packaging solutions with customized properties and enhanced sustainability profiles.

**End-of-life disposal, overall environmental footprint, and bio-based content are all influential factors when it comes to developing new packaging solutions.**

### *What's behind those trends? What factors are shaping the market?*

Growing concern, consumer awareness and legislation around climate change, and more generally the preservation of our collective natural capital are, of course, major factors.

We see a high level of consumer acceptance of bioplastics against this backdrop, enhanced by recent price hikes in fossil fuels; awareness of the risks of over-dependence on fossil fuels has increased substantially in recent years.

Political strategies also have an important impact. Countries such as the USA and China are making huge investments to establish circular economies and bio-economies, creating secure conditions for strong market expansion.

Europe is lagging here and will need to make more effort to capitalize on the results of years of innovation in the bio-economy sector. Appropriate strategies for the application of EU carbon tax legislation in bioplastics production are also debatable when production is set within the broader value chain context for these products.

**“Bioplastics are now efficient and technologically mature materials; adoption is far easier and quicker than it was for pioneers.”**

Alongside these ‘external’ factors there are ‘internal’ factors that influence customer/company behavior.

Because bioplastics are now efficient and technologically mature materials adoption is far easier and quicker than it was for pioneers.

Switching to bioplastics improves the balance between the environmental benefits and the environmental impact of plastic use, a win that aligns with market trends.

Furthermore, the increasing utilization of biomass and waste from biological sources in bioplastic applications increases renewability and availability.

### *What challenges are proving particularly tough?*

We no longer face any significant technical challenges with the use of bioplastics.

That was not the case maybe a decade ago!

**But today we have a palette of compostable materials with analogous properties to traditional plastic alternatives, materials with excellent barrier properties, suitable for food contact and for high-temperature applications, and so on.**

Unfortunately, the legislative landscape is not so encouraging and the business context for bioplastics can be complex.

For example, for many packaging applications in the EU, compostable plastics are still treated in the same way as conventional plastics under the Packaging and Packaging Waste Regulation which came into force at the beginning of 2023.

We believe that this is a missed opportunity to improve recognition of the advantages of bioplastics and a barrier to their greater use.

### *Do you have a favorite success story or smart solution?*

Our MATER-BI compostable bioplastics are an optimal solution for a range of different packaging but are particularly useful for food.

Waste food packaging is often contaminated with hard-to-remove organic residues so being able to simply add it directly into the wet organic waste stream makes sense.

Essentially our plastics combine with any leftover food to produce a homogeneous waste stream that ultimately feeds the soil after being converted into compost.



The image shows the first high-barrier compostable packaging for fresh pasta.

Consisting of a 100% MATER-BI thermoformed tray, heat-sealed film, and label it has excellent oxygen and water vapor barrier properties, conserving the pasteurized, freshly filled pasta for up to 50 days depending on filling.

The package has good mechanical strength at room, fridge, and freezer temperatures and customers can see clearly what they're buying.

**In summary, it's a biopolymer version of traditional polymer packaging that from a customer perspective looks and behaves just the same – except when it comes to disposal.**

This example highlights the complexity of food packaging, which is usually composed of multiple elements, typically



made of different polymers. This makes recycling tricky even if the packaging is clean. With compostable solutions instead, all the different elements go into the same organic waste stream so that problem is eliminated.

These chocolate bars benefit from a MATER-BI barrier film treated with COATHINK™ Technology from SAES and laminated onto paper. Again, the result is excellent barrier properties that impart a long shelf life, with multi-material packaging that all goes into a single waste stream.

Packaging for Mix-Me, a multivitamin and multimineral nutritional supplement for malnutrition, has similarly been subject to a biopolymer transformation.

**It's the first compostable stick pack made of bio-based raw materials, an important milestone in pharmaceutical packaging.**

Working with our production chain partners we developed a composite paper laminate/bioplastic film structure for this application. It maintains product quality and stability but has a bio-based raw material content of >65% and is compostable in accordance with standard EN13432.

*One thing you wish people understood about packaging?*

**“We should seek to tip the scales towards better performance and benefit relative to environmental impact, taking a holistic approach that recognizes the role of packaging in preventing waste and preserving health.”**

Packaging plays a critical role in preventing waste, so while thinking wisely about its design and use we need to be mindful of its many benefits. Packaging ensures that pharmaceuticals, chemicals, food and drink, and a whole host of other perishable products arrive at the point of use in a state that is safe for use and consumption.

By enabling distribution and extending shelf-life it enables our routine use of many products that could not be economically supplied without it, directly underpinning modern lifestyles. Focusing on food, the role of packaging extends through processing chains, protecting ingredients and finished products alike from physical, chemical and biological contaminants.

**Essentially, rather than viewing packaging as intrinsically problematic we should seek to tip the scales towards better performance and benefit relative to environmental impact, taking a holistic approach that recognizes the role of packaging in preventing waste and preserving health.**

*One thing you'd like people to know about your product or solution?*

**“No one type of packaging is good or bad, it's about choosing the best solution for a specific application. Looking at potential solutions from ‘cradle-to-grave’ is critical when it comes to making a robust comparison.”**

While compostable bioplastics have an important role to play in enabling more sustainable packaging, they are not a drop-in substitution for all applications. Rather, we should use them when biodegradability and compostability add value in terms of developing a solution that supports the proper management of organic waste and prevents microplastic contamination. No one type of packaging is good or bad, it's about choosing the best solution for a specific application.

Where you have mono-material packaging such as PET drinks bottles and HDPE shampoo and detergent bottles then collection and recycling are possible and desirable. On the other hand, where you have multi-layered packaging solutions – food packaging routinely has as many as 7 to 12 different layers - and difficult to remove contamination, you need a different solution.

Bags for organic waste collection, food packaging, coffee capsules, and food-service-ware are all great candidates for bioplastic substitution. So too are agricultural products at risk of dispersion such as mulching films certified for soil degradation.

*Can you explain how you work with Roquette and their contribution to your business?*

**“Our companies share similar values and vision, and our relationship has progressively evolved into one of strategic collaboration with joint research activities.”**

Roquette provides us with a range of raw materials of renewable origin. However, the company is far more than just a trusted supplier. We've been collaborating with Roquette for more than 10 years now, sharing strategy and practice, in public affairs and on specific industrial projects.

Our companies share similar values and vision, and our relationship has progressively evolved into one of strategic collaboration with joint research activities.

A strengthening partnership in development, production and supply is the plan.

i. Packaging Market Size and Share Analysis – Growth Trends and Forecasts (2023 – 2028) <https://www.mordorintelligence.com/industry-reports/global-packaging-market>  
ii. Bioplastics market data <https://www.european-bioplastics.org/market/>