

# bio

# energy

## The promise of bioenergy – advancing the sector

Energy is the driving force behind all life functions and a precondition for human progress. As global energy demands continue to grow, there is a pressing need to explore innovative and sustainable solutions that support a diversified energy system, promoting economic growth, job creation, and environmental stewardship.

Bioenergy, derived from biological materials such as grains, agricultural residues, and waste oils, has demonstrated the ability to deliver a more diverse and sustainable energy future. At Novonesis, we are proud to lead the charge in advancing the bioenergy sector through cutting-edge biosolutions that enhance growth, efficiency and sustainability.

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We collaborate with biorefineries globally to achieve these goals. Here, such biological materials (called feedstock) are broken down to their fundamental components and transformed into valuable products through advanced enzyme and yeast technologies. In this process, our biosolutions aim to maximize the potential for a diverse source of fuel and feed across various applications:

**Biofuel:** We provide advanced enzymes and yeast strains to optimize fermentation processes, enhancing the conversion of starch-based grains into ethanol, corn oil, and dried distillers grains (DDGs), which is commonly used in cattle feed.

**Biomass:** Our enzymes facilitate the breakdown of complex plant materials into fermentable sugars, enabling the production of renewable energy and other bioproducts, including biochemicals.

**Biodiesel:** By using innovative enzymes, we catalyze the conversion of oils and fats into biodiesel. This enzymatic process offers a cleaner, more sustainable alternative to traditional chemical methods.

### Ensuring resilient and profitable operations

Biorefineries rely on partners that not only bring technical expertise and innovative solutions but also profound insight into their strategic challenges in a competitive market.

Our expertise in innovating and optimizing processes like feed stock preparation and biochemical conversion allows biorefineries to diversify their income sources and tap into new markets. By deeply understanding our customers' needs, we empower them to explore new growth opportunities and achieve long-term success, to the benefit of the entire local community.

### Pivotal role

As the world transitions towards a more diverse and sustainable energy mix to meet the growing needs for energy as well as lowering carbon emissions, biorefineries are set to play a pivotal role. In the future, continuous advancements in enzyme and microbial technologies could enable even more efficient conversion of feedstocks into a diverse array of high-value products, including new market segments like sustainable aviation fuel. Diversification, using biosolutions, not only improves resource utilization, but also supports new development in local economies with growth and job creation, building resilient supply chains that are domestically anchored.

Government incentives and renewable energy mandates drive further investment and development in the bioenergy sector, complemented by increasing consumer demand for sustainable products produced in a responsible manner.

<sup>1</sup> Bio.news, June 2024

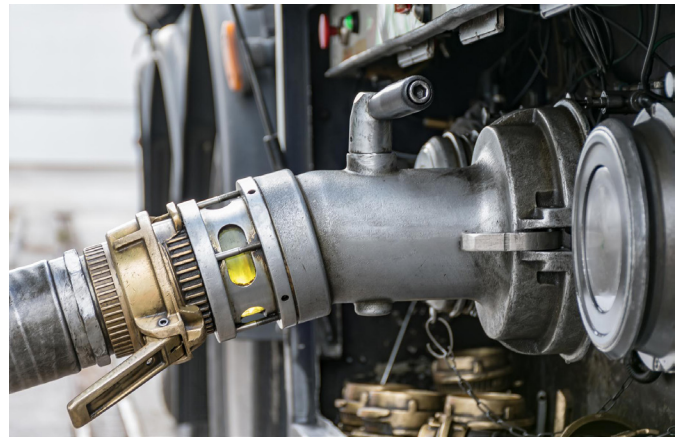
<sup>2</sup> Novonosis annual report 2024

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### Commitment to research and development

Novonosis is committed to continuous investment in research and development in this sector, reflecting the vast potential we see, as well as our purpose to better the world with biology. Only recently, we launched Innova® Eclipse, the latest, most advanced yeast innovation. With this solution, biorefineries can focus on growing their business rather than troubleshooting fermentations.

By pushing the boundaries of what is possible with biosolutions, we position our partners at the forefront of sustainable advancements in the global energy landscape and empower all of us to fuel and feed the world more sustainably. Together, we are contributing to a lasting positive impact on the planet.



In the US alone, biofuels supported nearly 644,000 domestic jobs in 2023, contributing USD 210 billion to the US GDP.<sup>1</sup> Add to this that biofuels save over 60 million tons of CO<sub>2</sub> equivalents annually in global transportation – equal to taking more than 27 million cars off the roads.<sup>2</sup>

**“Our bioenergy business is dedicated to making the world a better place one innovation at a time. We help our customers improve production efficiency and yield, promoting diversification and profitability while significantly reducing environmental impact and sustaining a greener future for all of us.”**

Tina Sejersgård Fanø,  
EVP of Planetary Health Biosolutions