

# FACTS ON BIOSOLUTIONS

## WHAT ARE BIOSOLUTIONS?

**Biosolutions** are products made from a combination of biology and technology

### Innovation powered by microorganisms

Microorganisms, enzymes, bacteria cultures, and yeast are at the core of **biosolutions**, which, through i.e. fermentation and bio-refinement, can solve climate and environmental problems and improve food security.



### Nature's own solutions with a billion years of experience

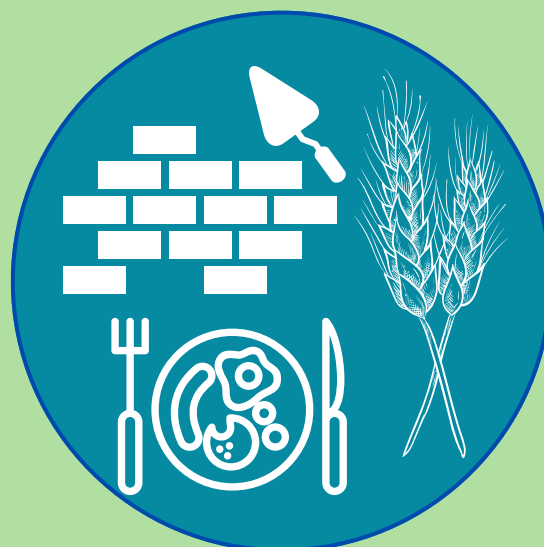
Biosolutions are nature's own solutions, developed through hundreds of millions of years, combined with human research and innovative technology. Biosolutions can thus replace some of the fossil- and animal-based solutions in various sectors, contributing to reduced environmental and climate impact.

### Examples

Biosolutions include:

- bioplastics made from grass
- the upcycling of waste
- plant-based textiles
- milk and cheese made with microorganisms instead of animals
- biological plant protection
- plant-based proteins

and much more. With biosolutions we can thus transition from a linear, fossil-based economy to a circular, biobased economy.



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## POTENTIAL AND CHALLENGES

### The potential of biosolutions

Biosolutions provide innovative answers to some of our most serious problems. The solutions might just be smaller than most people think – microscopic even. Working with some of the smallest problem-solvers in the world, for example microbes and enzymes, there is:

- A way to halt climate change, repair broken food systems, and reduce pollution all at the same time.
- A way to achieve the sweet spot in a business between high-performing products, cost, and sustainability.
- A way to create a daily life that combines better food choices, better health, and a cleaner conscience.

### A window of action

There are currently no mechanisms in EU legislation to quickly modernise or embrace innovation such as biosolutions.

The window for change is now; the European Parliamentary Elections in 2024, and the new European Commission's Work Program.

On March 20, 2024, the Commission presented the EU Biotech and Biomanufacturing Initiative. This initiative is an opportunity to change the legislative framework for biosolutions.

# 8%

CO2 Savings



Is how much the global Co2 emissions by applying the biosolutions we know today.

Additionally, you can add the solutions that are currently in the pipeline.

### The EU is lagging its global peers

Today, Biosolutions are regulated by various regulatory regimes in the EU. These sets of rules have one thing in common: they are not designed with biosolutions in mind.

The European system for regulatory renewal is far slower than other regions. Europe is the slowest in the world in terms of approval of new biological solutions, even though so much of the expertise and companies are founded in Europe.

It takes up to 3 times as long to get approval for biosolutions in the EU than in the US. As a result, the EU is lagging its global peers, losing both tax revenue and access to innovative products of European origin that could deliver on EU's green ambitions.

McKinsey & Co. estimates that up to 60% of the world's raw materials can be created biologically, and thus significantly lower the world's dependence on fossil-based materials.

# 60%



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## KEY CONCEPTS

### Precision fermentation - preservation

Fermentation has been around for thousands of years and used to safely preserve food for a longer period of time.

Fermentation is the breakdown of carbs like starch and sugar by microorganisms such as bacteria or yeast.

In precision fermentation, bioengineering techniques are used to program microorganisms to produce a desired compound when fermented (e.g. protein) to produce an identical DNA sequence found in animals or plants - without the involvement of these.

### Enzymes - speed

Enzymes are proteins found everywhere in nature and have a very important function: they are small, biological catalysts that increase the speed of various processes in living organisms; including our bodies.

When one substance needs to be transformed into another, enzymes are the natural way. They have unique structures with unique abilities to catalyze different processes.

Enzymes can be used on an industrial scale to optimize output, deliver better products, and accelerate processes, while saving water, energy and raw materials.

### Bacteria - booster

Bacteria are living microorganisms and are everywhere on Earth: in the ground, in our homes, and in our bodies.

They are essential for how our ecosystems survive and thrive since over 90% of the genes humans carry stem from bacteria.

With bacteria we can boost plant health, keep products fresh and safe for longer and prevent development of pathogens and mold.

### Yeast - enabler

Yeast is a fungus which has been present in the world for hundreds of millions of years.

Yeast, when fed organic carbon such as sugar, performs the natural process of fermentation, in turn producing alcohol or carbon dioxide.

Beyond its traditional use in baking and brewing, yeast's capabilities can be harnessed as biosolutions with transformative power.

Yeast can be used to produce e.g. plant-based proteins, biological plant protection, and natural aromas.