Cases

Novozymes

Long-lasting clothes for a long-lasting climate

PROBLEM:
The very short life of our wardrobe
The fashion industry is responsible for 10% of the world's CO2 emissions. In the tiny country of Denmark alone, 677 tonnes of textiles get destroyed every year.
Our overuse of clothes puts an enormous pressure on nature. Today, 60% of microplastics in the seas and oceans come from textiles.

Extending the lifespan of our clothes and buying less, better clothes is one of the biggest differences we as consumers can make to reduce the climate and environmental footprint of the shirts, the jeans, and the shoes we wear.

BIOSOLUTION:
Enzymes remove stains, smell, and damaged fibres
The Danish company Novozymes is a worldleading supplier of enzymes – a biosolution that helps solve the problem of extending the lifespan of our wardrobes.

Enzymes are proteins found everywhere in nature and in all living beings. When one substance needs to be transformed into another, nature uses enzymes to speed up and control the process.
Novozymes has developed enzymes that help speed up the efficiency of the detergents we use to wash our clothes – removing stains, smell, and damaged fibres. Used for decades in households all over the world, the enzymes in our washing detergents also enables us to wash our clothes clean at lower temperatures. This means that less energy is used and thereby greenhouse gas emissions are reduced.

IMPACT:
Without enzymes, laundry detergents would have a higher environmental impact
The use of natural enzymes in laundry detergents helps our clothes look, smell, and feel new for longer – with less use of chemicals.

Without enzymes in detergents, laundry washing in the EU would require 12 million MWh more electricity per year for washing at higher temperatures, emit 3.3 million tons of CO2 more per year, and require 220,000 tons of additional chemicals per year.

Additionally, the lifetime of clothes would on average decline by 10% in the EU without enzymes, either due to stains, textile damage, or dinginess and dullness of colours and whites. If this is taken into consideration, the presence of enzymes is estimated to save an additional 22 million tons of CO2 and 4,300 million m3 of water in the EU every year.

Biomason

Growing cement, the same way nature does

PROBLEM:
The world needs cement, but it comes with high CO2 emissions
Cement is used everywhere in concrete production as part of the global construction industry, but the production method is a major climate change culprit.

To make cement, limestone is burned at 1,400 - 1,500 degrees Celsius. To generate this heat large amounts of fossil fuels, need to be burnt, a major contributing factor to the carbon footprint problem of cement. In addition, the associated calcination reactions free up large amount of carbon that get emitted in the atmosphere. Both factors cause the production of cement to be responsible for 8% of the world's CO2 emissions.

After water, concrete is the second most used substance on Earth, and as the demand for cement and concrete continues to grow, so does the need for new technologies that eliminate the climate impact of this construction material.

BIOSOLUTION:
Using bacteria to form clean cement
With inspiration from marine ecosystems, the company Biomason has developed a biological alternative to traditional cement by using microorganisms and natural processes to create more sustainable concrete products.

The production method involves mixing sand, bacteria, and nutrient-rich water. When the mixture ferments, billions of bacteria create crystals of calcium carbonate. The method is inspired by the way coral reefs have been making durable structures for millions of years – also based on calcium carbonate.

The calcium carbonate binds the grains of sand together when reacting with water – just like traditional cement. And the result is high-quality building materials made from biocement.

IMPACT:
Close to zero carbon footprint
The process used by Biomason eliminates the need for fossil fuel-fired furnaces as well as calcination of limestone, which are the largest sources of CO2 emissions in cement production.

This means that biocement has the potential to reduce the carbon footprint of cement to close to zero compared to traditional cement.

Pond

From green grass to green plastic

PROBLEM:
Life with plastic, not fantastic
400 million tonnes of plastic are produced globally – every year. It stays in the environment for ages, threatening wildlife and spreading toxins

Furthermore, the production of plastic today is based on crude oil and responsible for emitting around 2 billion tonnes of greenhouse gas emissions – equivalent to 3.4% of global emissions.

Yet, the demand for plastic is increasing and is estimated to reach around 800 million tonnes by 2050, doubling the negative effects on the planet.

BIOSOLUTION:
From grass juice to biodegradable sportswear
A new technology, developed by the Danish company Pond, holds the potential to revolutionise the plastic industry.

Based on greens like grass, duckweed, and sugar beets, Pond has developed and patented a technology, that first extracts the carbohydrates from the plants and then convert the carbohydrates into a bioplastic through fermentation

With Pond's patented technology, they are able to give the bioplastic a strength and quality that allows it to replace close to all fossil-based plastic that fills our world today.

The use cases are manyfold – the polyester in your sportswear, the plastic cover on your phone, and your children's plastic toys, all made from grass juice.

IMPACT:
Carbon capture bioplastic
Because the bioplastic from Pond is based on plants, it is biodegradable, compostable, and can be recycled endlessly – without losing its quality.

But the real potential lies in bioplastic's ability to absorb and deposit CO2. Based on plants and created by photosynthesis, Pond's bioplastic can absorb and deposit up to 2 kg of CO2 per kg – also known as Biogen Carbon Capture Storage.