My name is Søren Andreassen, and I am the CEO and Founder of Greenway-Denmark.

I started this Greenway 2007 together with Flemming Ramlov with a mission to create a more sustainable future through innovative and eco-friendly products.

Over the years, we have become a leading supplier of sustainable single-use packaging solutions, utilizing renewable resources and reducing waste to promote a more circular economy.

In today's discussion, I will be speaking on PLA, or polylactic acid, and its properties for recycling.

With 16 years of experience with PLA we still believe that PLA is an important biodegradable and compostable supplement to traditional petroleum-based plastics,.
In addition to its potential as a recyclable material, PLA can also help to address some of the problems associated with microplastics and single-use items that are not properly recycled or end up in landfills.
By using PLA instead of traditional plastic, we can reduce the amount of non-biodegradable materials in the environment and promote more sustainable practices.

PLA can be recycled in three different ways:

Composting.

Physical recycling.

Chemical recycling as a material for producing new virgin PLA.

We believe that utilizing sustainable alternatives such as PLA is crucial to help reduce our impact on the environment.

Plant-based products are naturally recycled through composting.

As we face a growing waste problem, it's more important than ever to consider the importance of composting and recycling.

In recent years, the amount of waste generated by humans has increased significantly, and the impact of this waste on the environment cannot be ignored.

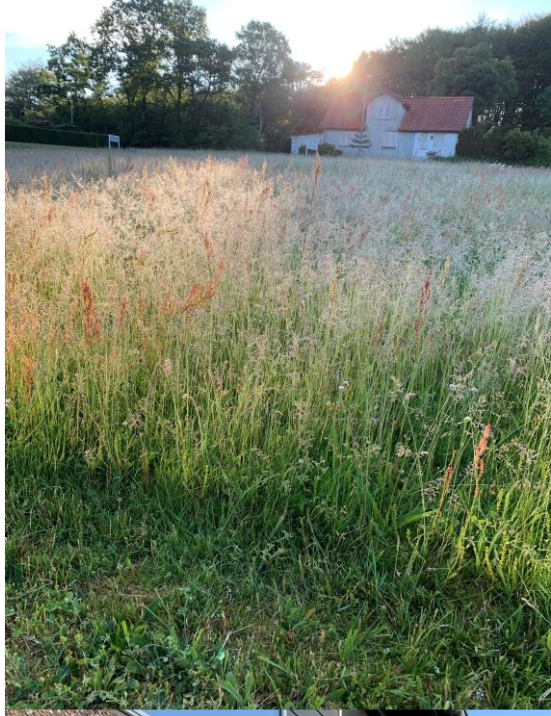
A lot of work is being done to solve the issue of waste, but in the process, PLA and other plant-based products that have the potential to improve the environment risk getting caught in the crossfire, especially when large economic interests defend their positions in this process.

Composting and recycling are two important ways in which we can reduce our waste and promote a more circular economy.

By composting organic waste, we can create nutrient-rich soil and reduce the amount of waste that ends up in landfills.

This is a important alternative to the industrial recycling of materials such as plastics, paper, and metals and can help reduce the need for new resources and minimize the environmental impact of waste.

In the next section, we will dive deeper into the importance of composting and recycling, and how we can work together to create a more sustainable future.



Plant-based products are naturally recycled through composting.

Since 2018, there has been a misunderstanding surrounding PLA regarding its ability to be composted. Many believe that because PLA is often certified as compostable under the DIN13432 standard, which refers to industrial composting facilities, it cannot be composted in areas without such facilities, including large parts of Europe, Denmark, and Norway.

However, this is a total misunderstanding. Through numerous practical experiments with composting PLA under different conditions, we have found that PLA can be effectively composted and returned to the natural cycle after use. In fact, even in relative cold water as in the Oslo Fjord, a fatty coating on PLA has been observed to break down 50% of the PLA we immersed in a plastic net after just 2 years, demonstrating nature's ability to break down and "eat" PLA.

This clarification is important because Ecolabeling “Svanemærket” goes so far as to consider it misleading to advertise PLA and DIN13432 for consumers. We have been told from the swan that we shall move the certification DIN13432 from our products else we can not use the Ecolabeling /Swan !

At the same time, some in the plastic recycling industry have expressed concerns that PLA cannot be separated from the plastic stream, and that its presence could disrupt the recycled plastic batch that forms the foundation of plastic sustainability. However, this fear is unfounded. PLA can be easily separated from the plastic stream using a near-infrared (NIR) scanner, just like other types of plastics such as PET or PP. In fact, most batches can tolerate up to 10% of other plastic types before it becomes a significant issue, worldwide there are produced less than 1% PLA compared to traditional plastic !

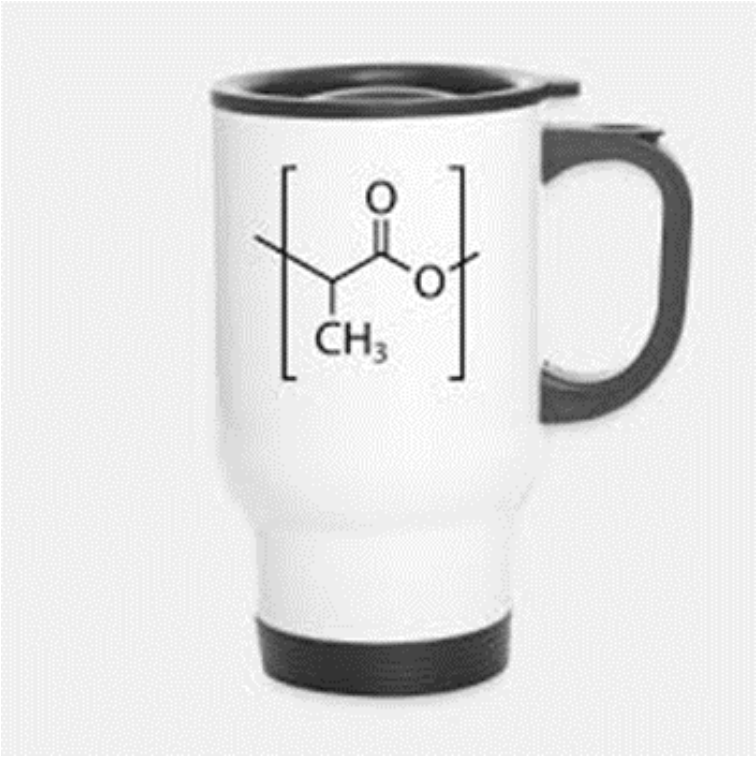
We need to get rid of this misinformation, so that PLA can play a part of the solution. In nature, PLA is relatively quickly composted, even in water, and it does not create dangerous microplastics as it decomposes.

Plant-based products are naturally recycled through composting.

PLA is indeed one of the best plastic materials for recycling.
It can be recycled chemically to create new PLA or physically to create RPLA (recycled PLA). Additionally, PLA is biodegradable and can be composted into humus, which can serve as a foundation for our ecosystem.

By recycling and composting PLA, we can reduce waste and promote a more sustainable approach to plastic use.
Recycling and composting facilities do not currently receive any profit from handling PLA, so it is important to ensure that they are appropriately compensated for their efforts.
By providing financial incentives or subsidies for the recycling and composting of PLA, we can encourage more facilities to invest in the necessary infrastructure and equipment to properly handle this material.
By supporting the recycling and composting of PLA, we can work towards a more circular economy where resources are kept in use for as long as possible.
In light of this, we are pleased with the EU's increased product responsibility and hope that PLA's recyclability will be recognized through composting, physical recycling as RPLA, or chemical recycling to create new PLA, as demonstrated in projects such as Luminy PLA.
As a result, we hope that an appropriate fee will be levied on PLA to cover the costs associated with these forms of recycling.

Charging a fee on PLA could help encourage the proper handling and recycling of this material, as well as support the development of more efficient recycling methods. By creating a system where the costs of recycling and composting are covered, we can promote a more sustainable approach to plastic use and reduce waste in the environment.



Plant-based products are naturally recycled through composting.

In addition to biodegradation and recycling, another strategy for reducing the environmental impact of PLA is to transform old PLA into RPLA through melting and molding a granulate often to used in 3D printing.

This approach offers a way to extend the life cycle of PLA, reduce waste, and create new value-added products.

The process of transforming old PLA into new PLA through melting and molding involves collecting used PLA products, such as cups, cutlery, or packaging, cleaning and shredding them into small pieces, and then melting and extruding the pieces into thread that can be used as raw material for 3D printing.
This process is similar to mechanical recycling, but it is more specialized and focused on creating a specific product.

One of the main advantages of this approach is that it can create a closed loop system for PLA, where old PLA products can be turned into new PLA products without the need for additional virgin materials. This can help reduce the demand for fossil fuels and the carbon footprint of PLA products. Moreover, it can create new opportunities for local businesses and communities to collect and process PLA waste, creating new jobs and economic benefits.

Transforming old PLA into new PLA through melting and molding into thread for use in 3D printing offers a promising strategy for reducing the environmental impact of PLA, creating new value-added products, and promoting creativity and innovation in 3D printing. With proper infrastructure, regulation, and consumer education, this approach can contribute to a more sustainable and circular economy.

An example of this is offered by the company Futerro.
With a wide range of products and services for the circular economy, including PLA recycling and the production of high-quality recycled PLA materials.
Futerro's PLA recycling process involves breaking down the material through hydrolysis, after which the resulting lactic acid is purified and converted back into PLA. Their technology and expertise in the field of biodegradable polymers allow them to offer sustainable solutions for various industries, including packaging, textiles, and consumer goods.
Futerro's commitment to sustainable practices and innovation has earned them numerous awards and recognitions, including the prestigious EU Ecolabel and the Cradle to Cradle certification. They are an excellent example of how businesses can contribute to a more sustainable future through the proper handling and recycling of materials like PLA.

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PLA is biodegradable and will be composted or broken down by various microorganisms such as fungi and bacteria in nature, making it safe an environmentally friendly product not producing micro waste as traditional plastic. As PLA degrades, it is broken down into its constituent molecules, which can be used by microorganisms as a source of energy and nutrients. Ultimately, PLA is returned to its natural state as carbon dioxide, water, and organic matter.

This natural process of PLA degradation have positive effects on the environment, as it goes in to the reduces the amount of waste and pollution in the environment. Additionally, the organic matter created from PLA degradation can serve as a foundation for new plant growth, which can be used to produce new PLA. Therefore, PLA can play an important role in promoting a more sustainable and circular approach to plastic use.

An example of this is a funny experience that Futerro had. They had stored some PLA in an outdoor environment for an extended period of time. During this time, the PLA material had degraded and broken down in the natural environment, resulting in a loss for Futerro. So Futerro learned in the hard way that you do not need a Industrial facility to compost PLA it will be eaten by the nature if you store it outside
PLA is suporting the Nutrient loop !

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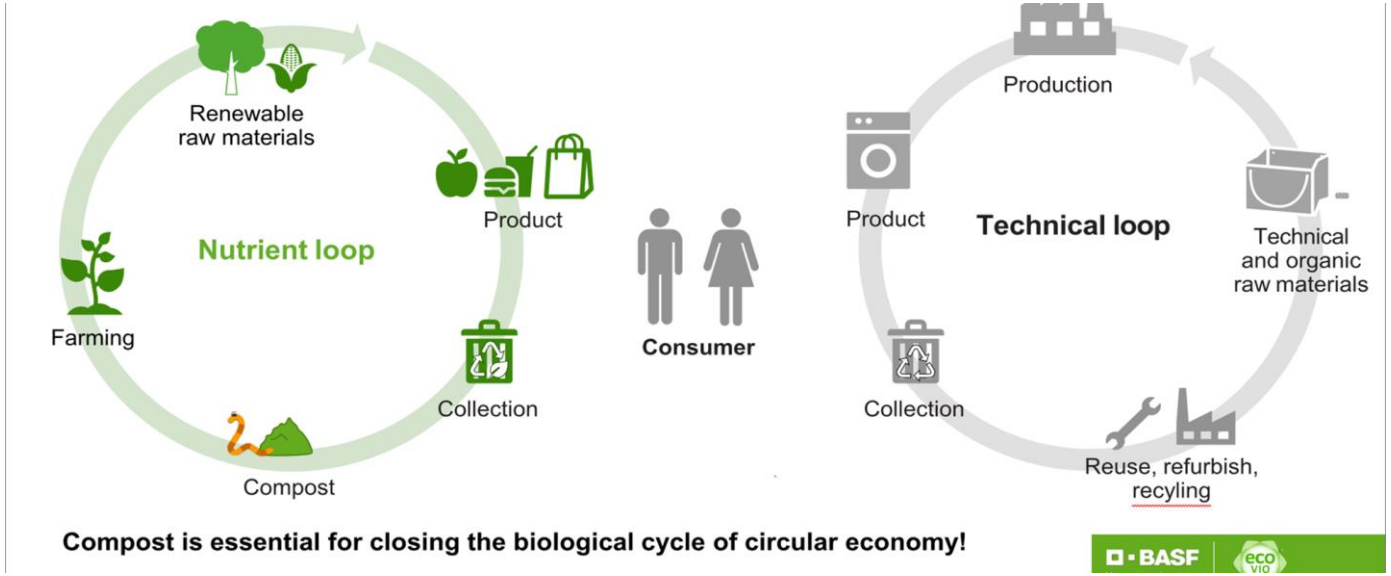

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