

# Bioplastics in a Circular Economy: Myths and Facts, Opportunities and Challenges



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Plastics Conference 2021, 11 February 2021, Athens, Greece

## European Bioplastics' definition of bioplastics

# BIOPLASTICS

are

**bio-based**  
e.g. bio-PE



**biodegradable**  
e.g. PBAT

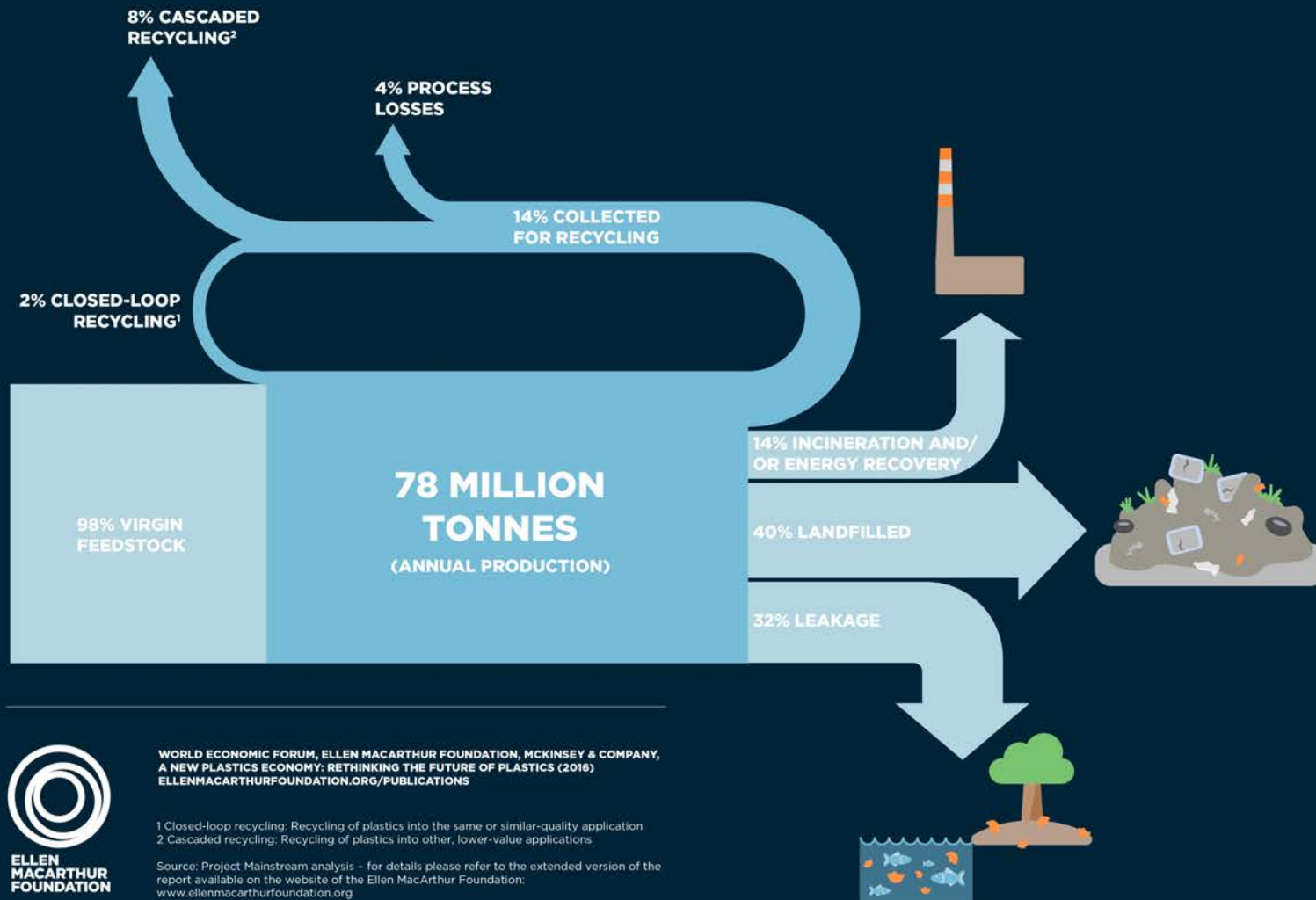


**or both**  
e.g. starch blends



# Myths and facts about recycling of packaging

## TODAY, PLASTIC PACKAGING MATERIAL FLOWS ARE LARGELY LINEAR



## *Myths and facts about biodegradable /compostable plastics*

### Myth

Bioplastics – often perceived as biodegradable in general, i.e. in any environment – are a solution to plastic litter, especially in the marine environment.

### Fact

Plastics, be they biodegradable or not, do not belong in the environment (littering).

Packaging should always be designed for reusability or recyclability (i.e. mechanic, organic and chemical).

Biodegradability should always refer to a specific environment, time-frame, etc., and be third-party certified in accordance to acknowledged norms (with pass/fail criteria!).

## *Myths and facts about biodegradable /compostable plastics*

### Myth

Biodegradable plastics certified according to EN 13432 need 6, respectively 3, months to biodegrade / disintegrate in industrial composting facilities.

But because modern composting facilities mostly allow for an active rotting phase of only between 3 to 6 weeks, the tested materials or product will not biodegrade in time.



### Fact(s)

This timeframe sets the boundaries for the maximum thickness of a product to be certifiable according to EN 13432.

However, the thickness of most products sent in for testing and certification is far below the certifiable thickness.

In the case of biowaste bags, the thickness is often in the range of 5-10% of the certifiable maximum thickness. This means that they will completely biodegrade in just a few weeks.

# Myths and facts about biodegradable /compostable plastics

## Myth

Biodegradable plastics certified according to EN 13432 need only to prove 90% biodegradation.

That means that up to 10% need not to biodegrade and are liable to remain as microplastics in the compost.



## Fact

The 90% biodegradation rate refers to the conversion of the carbon (C) into carbon dioxide (CO<sub>2</sub>).

However, given that up to 40% of the C is converted into new biomass, the requirement of 90% CO<sub>2</sub> conversion poses a high barrier, as this can only be achieved if part of the newly built biomass is mineralized again.

# Myths and facts about biodegradable /compostable plastics

## Myth

Biodegradable plastics disturb mechanical recycling

## Fact(s)

- Bioplastics production capacities well below 1% of overall plastic production
- 45% bio-based durable and recyclable (mostly “drop-ins”)
- 55% biodegradable products (e.g. biowaste bags) intended for biowaste collection
- Pre-sorting always necessary to avoid contamination and widely available (NIR)
- Potential contamination rate is near zero
- Contamination rate of up to 3% rarely poses a problem



## Myths and facts about biodegradable /compostable plastics

### Myth

Composting of biodegradable waste bags and other (flexible) packaging provides no added benefit to the compost.

The intrinsic calorific value of composted plastics is lost to incineration with energy recovery (“cold incineration”).

### Fact(s)

Per se, these statements are correct.

However, the purpose of biodegradable plastics is to allow for better and more collection of biowaste (less odour, better hygiene) and to divert biowaste from ending up in incineration and landfills.





## *Myths and facts about biodegradable /compostable plastics*

### Myth

Paper bags and newspaper as biobin liners are a more sustainable solution to collecting biowaste than biodegradable biowaste bags.



### Fact(s)

Paper waste bags and newspaper are often made from recycled paper and, therefore, contain (unknown) legacy chemicals and inks.

Tested according to EN 13432, they will often not pass the necessary eco-toxicity requirements.

Often, paper waste bags can be coated with a PE film for moisture barrier properties. This renders them non-biodegradable and therefore, they contaminate the compost.

# Myths and facts about bio-based plastics

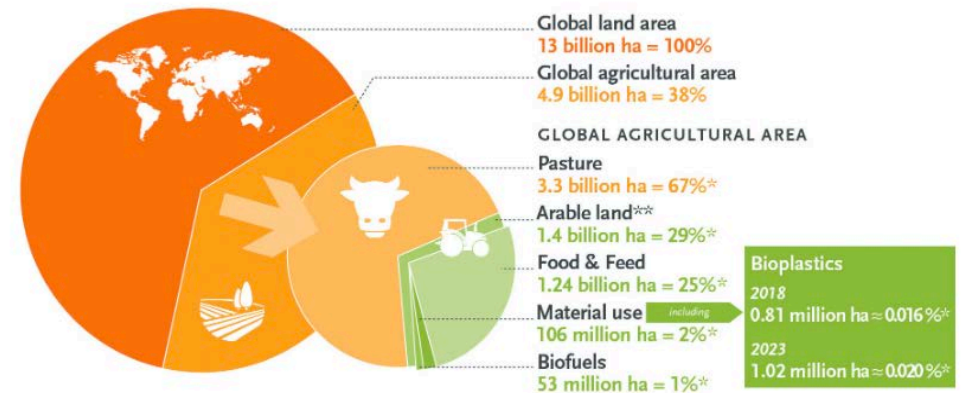
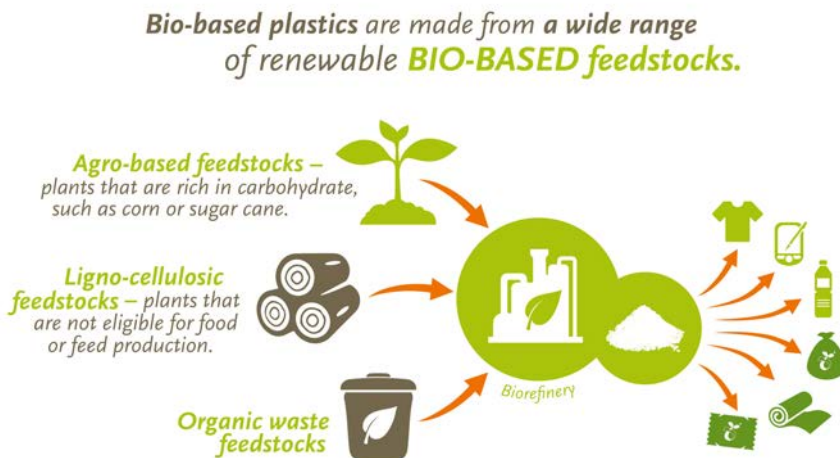
## Myth

Bio-based plastics made from edible crops (1<sup>st</sup> gen. feedstock) pose a threat to the world-wide supply of food and feed.

## Fact(s)

- The competition is not for the crop itself but for the land used to grow it.
- 1<sup>st</sup> gen. feedstock most efficient

*Land use estimation for bioplastics 2018 and 2023*



Source: European Bioplastics (2018), FAO Stats (2014), nova-Institute (2018), and Institute for Bioplastics and Biocomposites (2016). More information: [www.european-bioplastics.org](http://www.european-bioplastics.org)

\* In relation to global agricultural area  
\*\* Including approx. 1% fallow land

- Plant based proteins still available for food and feed

*Thank you!*



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