Bioplastics Packaging: Facts vs. Myths

Hasso von Pogrell, Managing Director, European Bioplastics (EUBP)

Upcycling Bioplastics of Food & Drinks Packaging | 20 October 2021 | Online Workshop

About European Bioplastics (EUBP)

European Bioplastics: over 25 years of experience

- European Bioplastics represents the interest of the bioplastics industry along the entire value chain in Europe.
- Our foremost goal and commitment is to build and strengthen a supporting policy framework in the EU for bioplastics to thrive in through a strong network and engagement in dialogue with all relevant stakeholder.

Our vision: Bioplastics drive the evolution of plastics

- Our Vision

  Bioplastics drive the evolution of plastics and contribute significantly to a sustainable society.

- Our Mission

  European Bioplastics' mission is to align the bioplastics value chain and work in partnership with various stakeholders towards a favourable landscape enabling the bioplastics market to grow.

Members 2021

Supporting members

Renewable raw material Green chemistry
Agrana Staerke
Alcogroup
Allessa
Cargill
Ingevity
Neste Corporation
Total Corbion PLA

Bioplastics manufacturers and auxiliaries
A.P.I.
Avantium
BASF
BIO-FED
BIOTEC
Carbiolice
CJ Europe
Corbion
Danimer Scientific
DuPont
FKuR Kunststoff
Futerro
Futamura Group
Indochine Bio Plastiques
Jinhui Zhaolong High Tech.
Kaneka Corporation
Microtec
Mitsubishi Chemical Europe
Mosca
NatureWorks
Novamont
PJIM Polymer Scientific
Promateris
Sukano
Sidaplax
Sulapac
Taghleef Industries
TIPA Corp
Toro Gips
United Biopolymers
Xinjiang Blue Ridge Tunhe Polyester
Zhejiang Hisun Biomaterials

Bioplastics distribution
BROSBIO

Plastic converters
BioBag International
Fiberweb Berlin
KIK Compounds
Kompuestos
Polifilm
Procos
SIG International Services
SPhere

Machinery, engineering, equipment
Coperion
Sulzer Chemtech

Research, consulting and others
AIMPLAS
C.A.R.M.E.N.
COBRO
DIN CERTCO
Fraunhofer ISC
Fraunhofer LBF
IFA Tulln
IfBB
Institut für Kunststofftechnik
ISCC
nova-Institut
Organic Waste Systems
Packbridge
ProfiKomp
Roundtable on Sustainable Biomaterials
TÜV AUSTRIA BELGIUM
University of Bologna

Industrial end user
Cofresco Frischhalteprodukte
Danone
Ferrero
Lavazza
Reckitt Benckiser
Tetra Pak

May 2021

Networks in Europe

Bioplastics Organisations Network (BON) Europe:

- Inaugurated on 1 April 2015 in Berlin
- EUBP (organiser) and national bioplastics associations
- Objectives: exchange of information between EU and Member State level, harmonisation of standardisation, facilitation of legislation

European Bioeconomy Alliance (EUBA):

- 12 European Associations: EuropaBio, BIC, Copa-Cogeca, CEFS, Starch Europe, CEPF, Primary Food Processors, CEPI, Forest-based Sector, FEDIOL, European Renewable Ethanol
- Lead the transition towards a sustainable, innovative, energy secure post-petroleum society while decoupling economic growth from resource depletion and environmental impact

ASOBIOCOM

BELGIAN BIOPACKAGING

BBIA
BIO-BASED AND BIODEGRADABLE INDUSTRIES ASSOCIATION

Club Bio-plastiques

HOLLAND BIOPLASTICS

NORDISK BIOPLASTFÖRENING

European Bioeconomy Alliance

Verbund kompostierbare Produkte e.V.

INTERNATIONAL NETWORK

For many years now, EUBP has maintained relations with bioplastics associations outside of Europe. Although EUBP considers its main field of activities to be within the European Union, it is also important to know what is going on around the world. As many of our members are active in a globalised market, EUBP strives for a continuous exchange of information to harmonise actions (standards, policies, certification) and enhance the global market for bioplastics. The following bioplastics organisations and interest groups are part of our international networking program:


Australasian Bioplastics Association (ABA)


ABICOM


Asociación Nacional de Industrias del Plástico (ANIPAC)


Biodegradable Materials Group (BMG)


Central Institute of Plastics Engineering & Technology (CIPET)


Israel Bioplastics


Japan Bioplastics Association (JBPA)


Thai Bioplastics Industry Association (TBIA)


The Biodegradable Products Institute (BPI)
Bioplastics Council /SPI

What are bioplastics?

European Bioplastics' definition of bioplastics

BIOPLASTICS

are

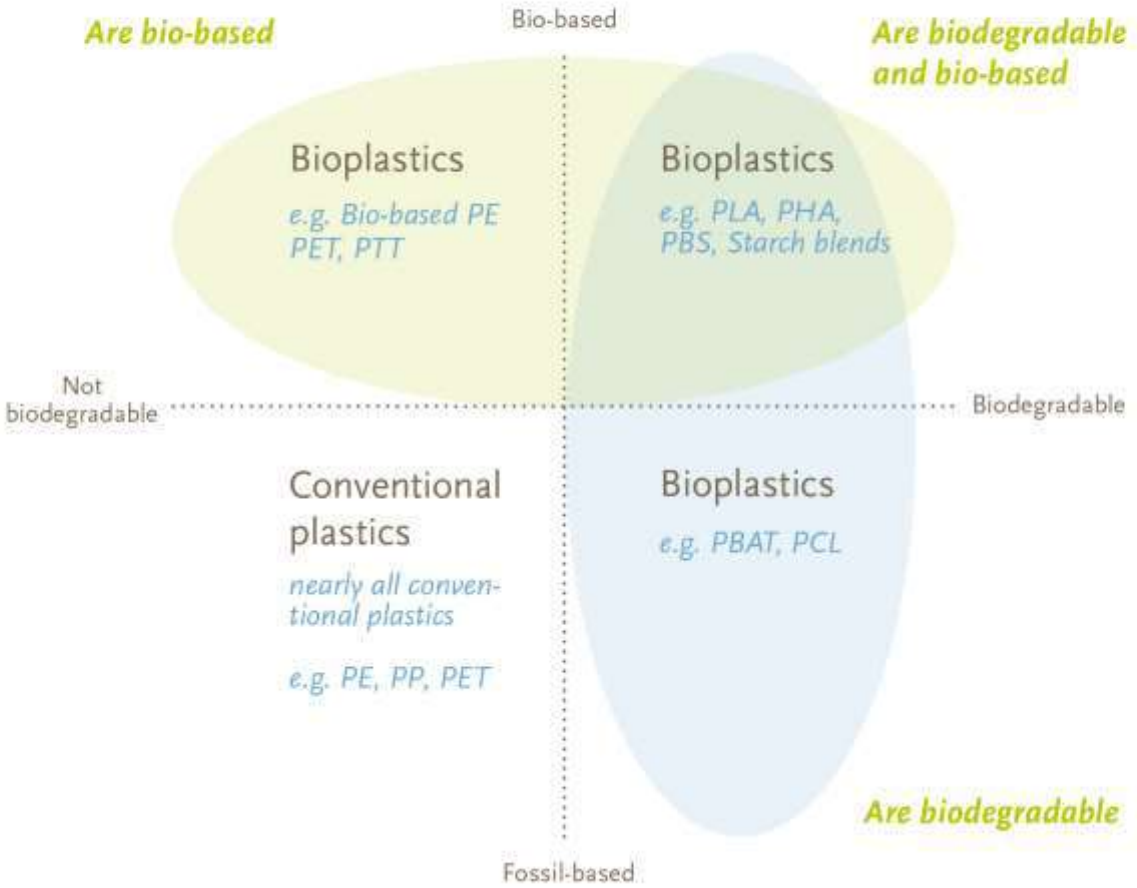
bio-based
e.g. bio-PE

biodegradable
e.g. PBAT

or both
e.g. starch blends

Material coordinate system for bioplastics

Bioplastics are bio-based, biodegradable or both.
(European Bioplastics)



Source: Institute for Bioplastics and Biocomposites (IfBB) and European Bioplastics (EUBP)

Bio-based does NOT necessarily mean also biodegradable

Many customers – be it in a B2B or B2C context – consider the qualities bio-based and biodegradable to be synonymous.

There is a need for a clear differentiation:

BIO-BASED

simply refers to the renewable raw material / feedstock used for the material or product.

BIODEGRADABILTY

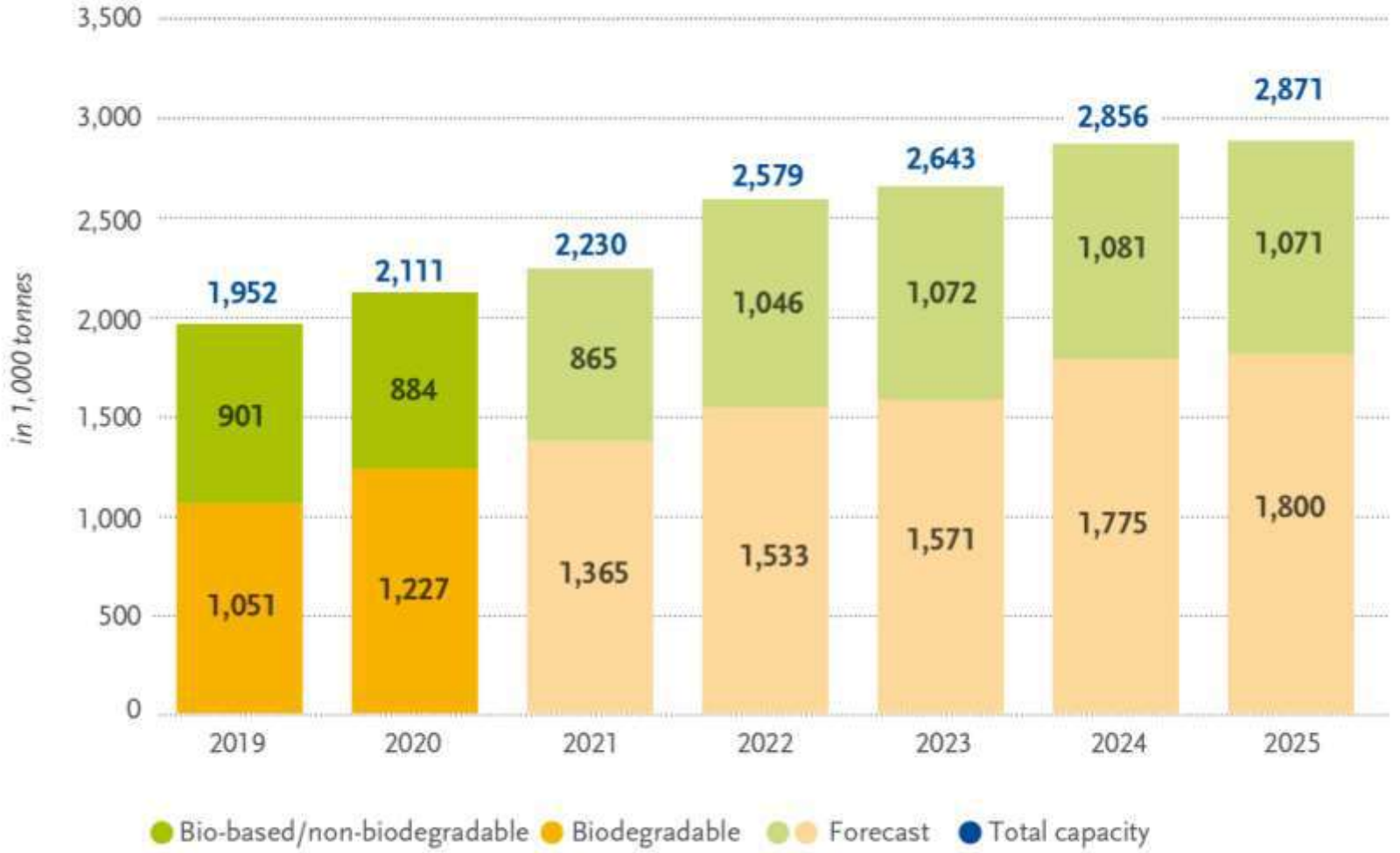
is a property connected to the chemical structure only.

bio-based and fossil-based materials *may or may not be* biodegradable

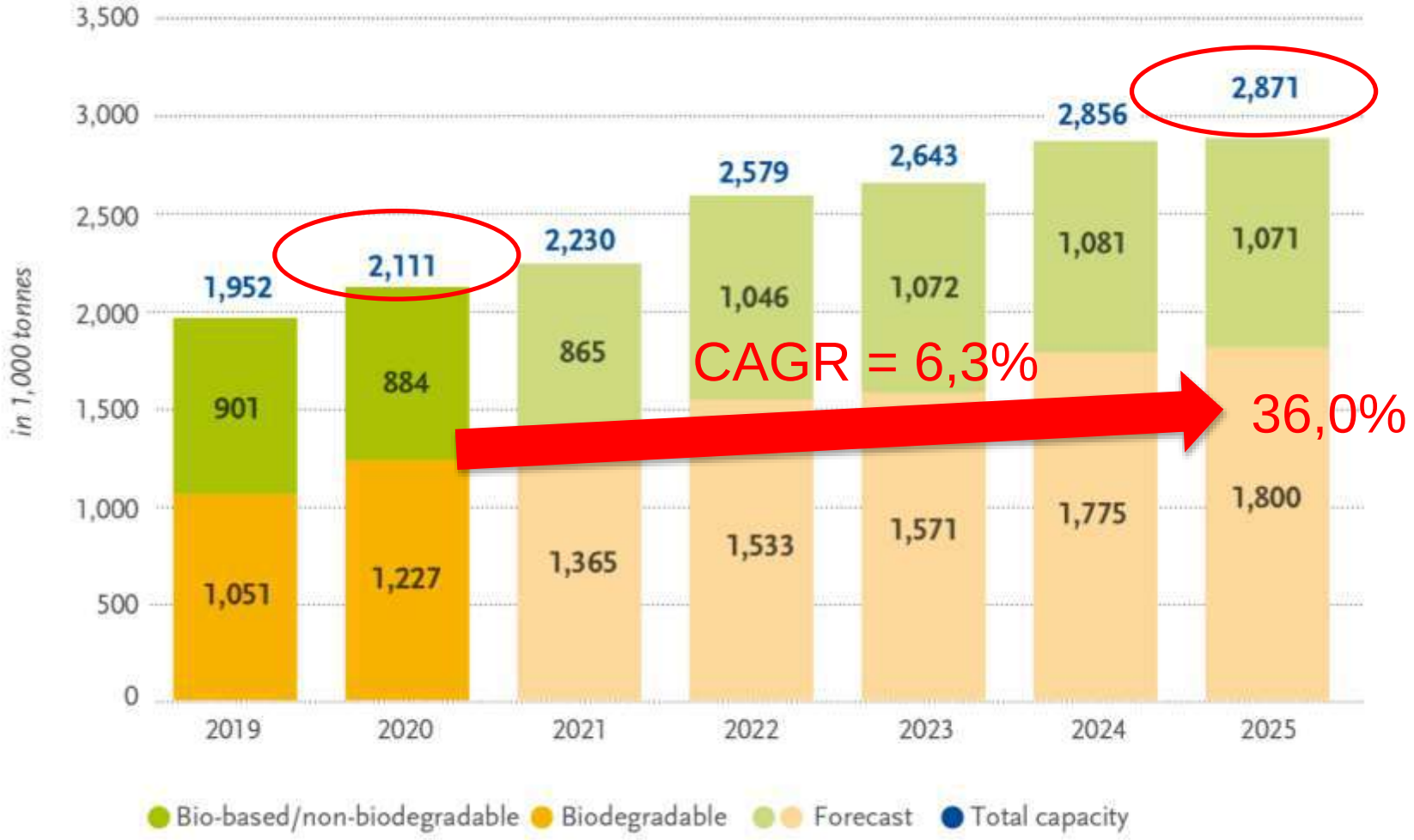
What bioplastics are NOT…

Dynamic market development

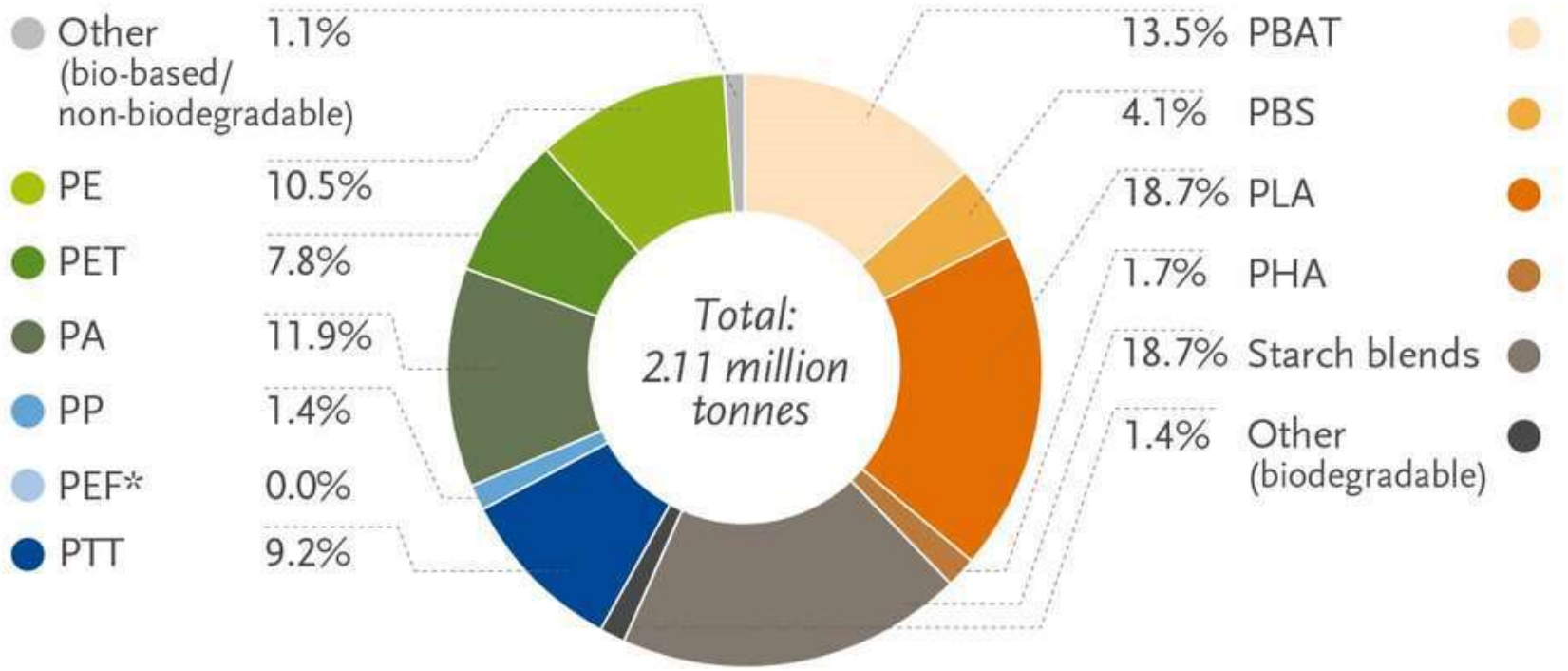
Global production of bioplastics



Global production of bioplastics

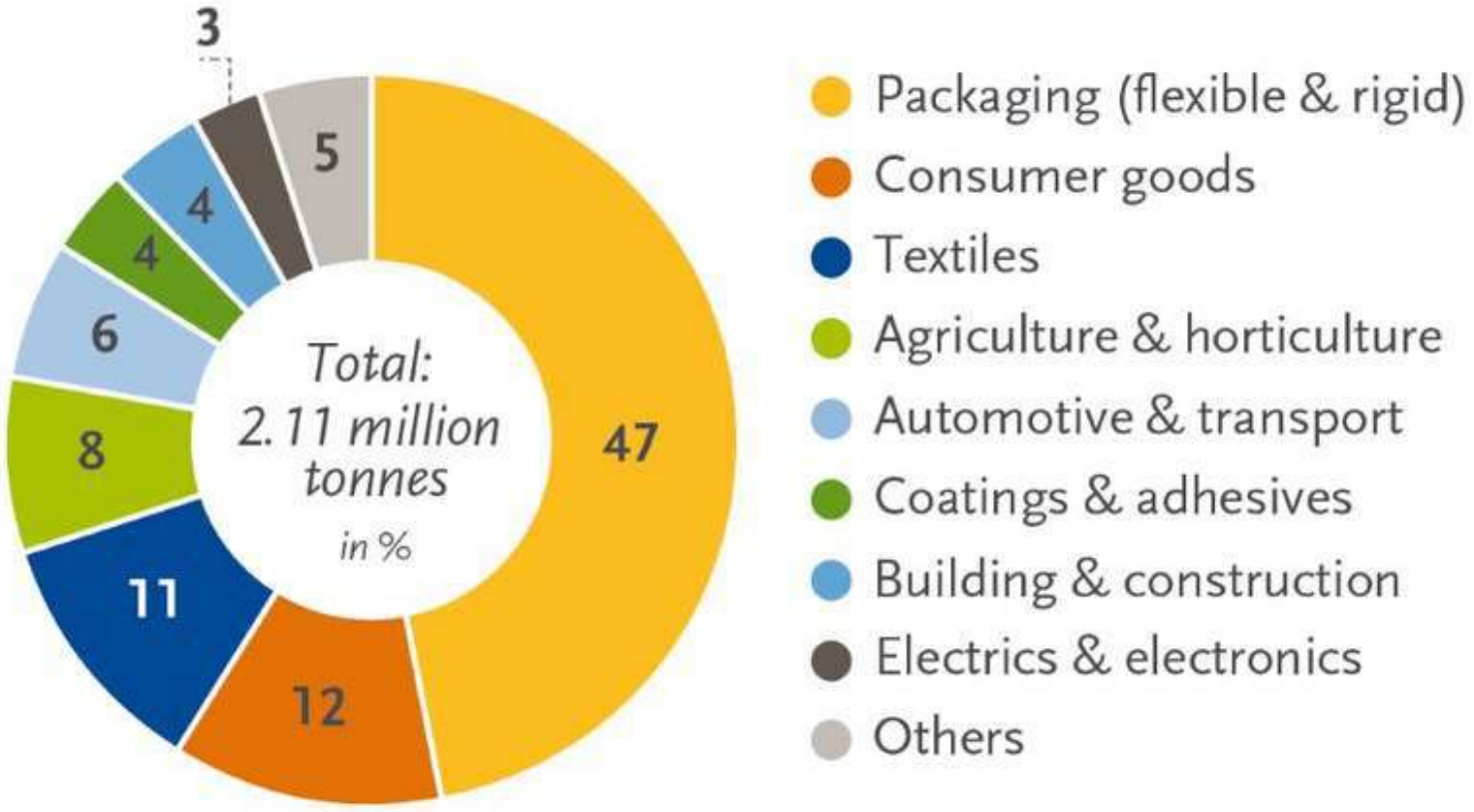


Global production capacities of bioplastics 2020 (by material type)

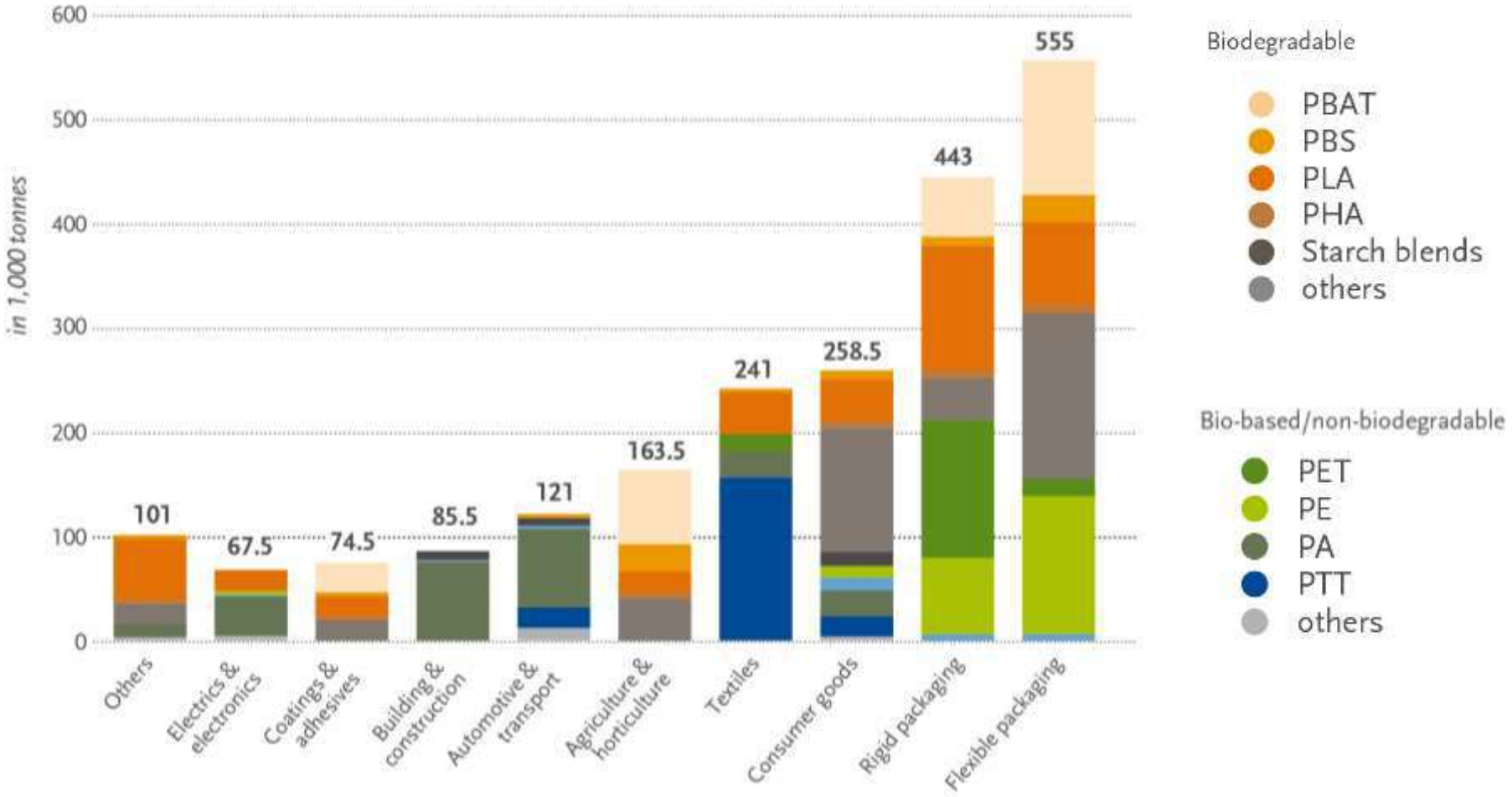


*PEF is currently in development and predicted to be available in commercial scale in 2023.

Global production capacities of bioplastics 2020 (by market segment)

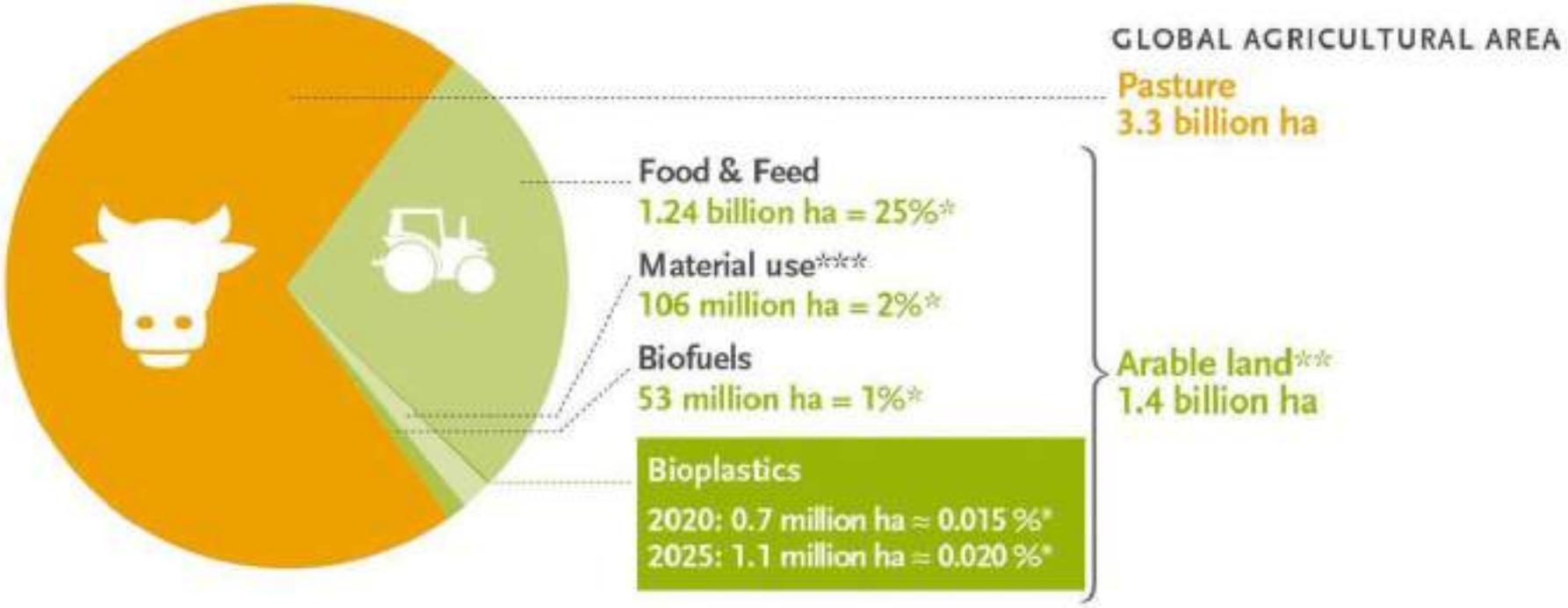


Global production capacities by market segment (2020)



Source: European Bioplastics, nova-Institute (2020). More information: **www.european-bioplastics.org/market** and **www.bio-based.eu/markets**

Land-use estimation for bioplastics 2020 and 2025

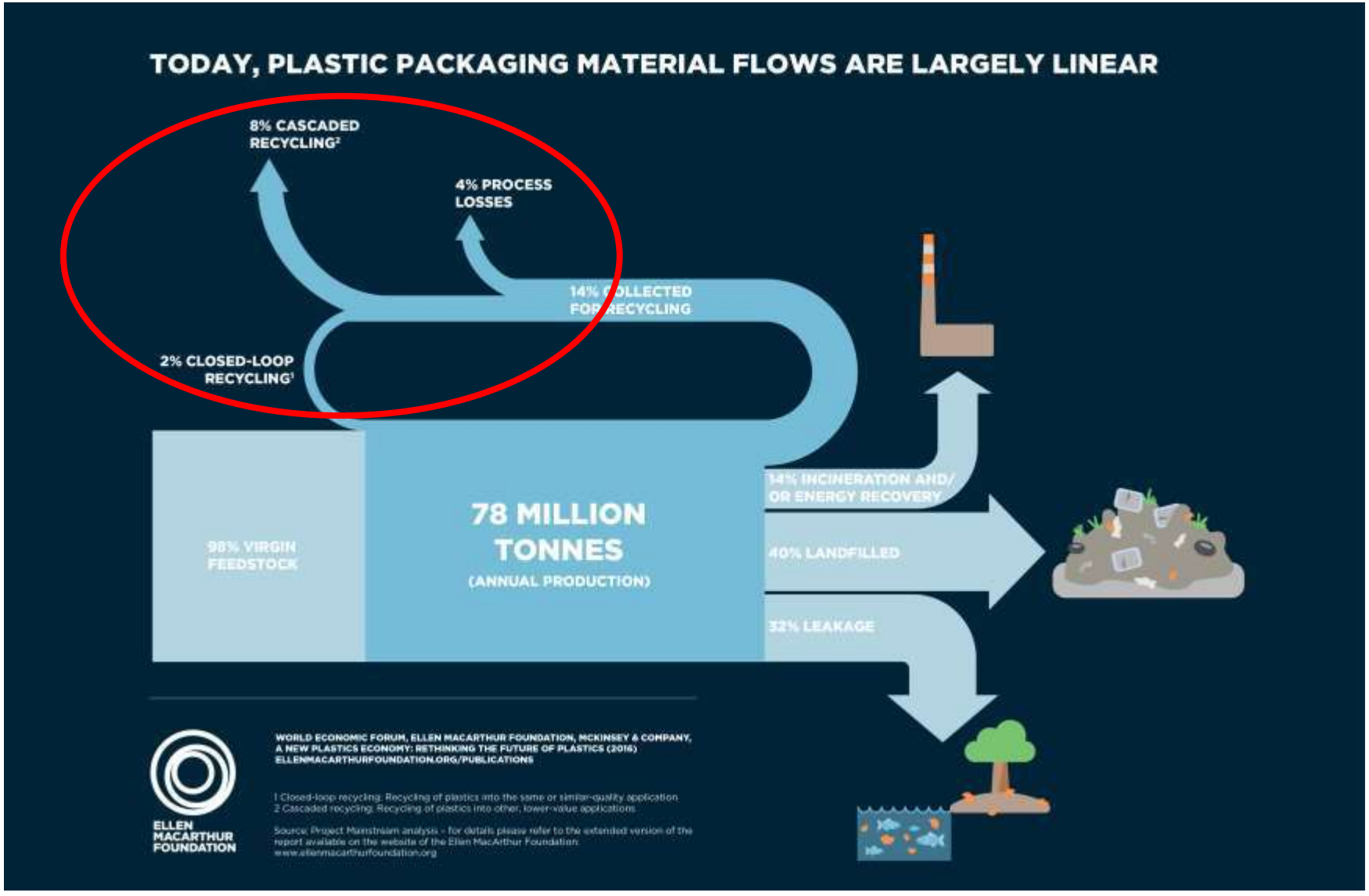


Source: European Bioplastics (2020), FAO Stats (2005-2014), nova-Institute (2020), and Institute for Bioplastics and Biocomposites (2019). ***More information: www.european-bioplastics.org***

* *In relation to global agricultural area*
** *Including approx. 3% follow land*
*** *Land-use for bioplastics is part of the 2% material use*

EU policy frameworks & developments

Mechanical recycling – only part of the solution



Bioplastics – great benefits but complex to explain

- Bioplastics are complex and therefore not easy to explain;
- Low level of information and knowledge leads to misconceptions and false expectations;
- Emotionally charged debate around food vs. fuel, land use, GMO, marine pollution, etc.;
- Greenwashing: more than 95% of products claiming to be green are committing at least one of the “Sins of Greenwashing” (TerraChoice);
- A lot of myths and misconceptions still prevail.

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_2).

However, given that up to 40% of the C is converted into new biomass, the requirement of 90% CO_2 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
- 42% bio-based durable and recyclable (mostly “drop-ins”)
- 58% 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.

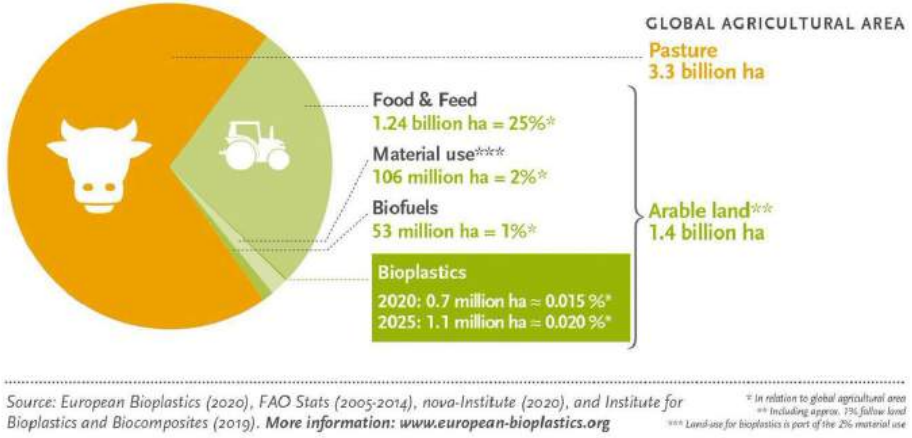
Myths and facts about bio-based plastics

Myth

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

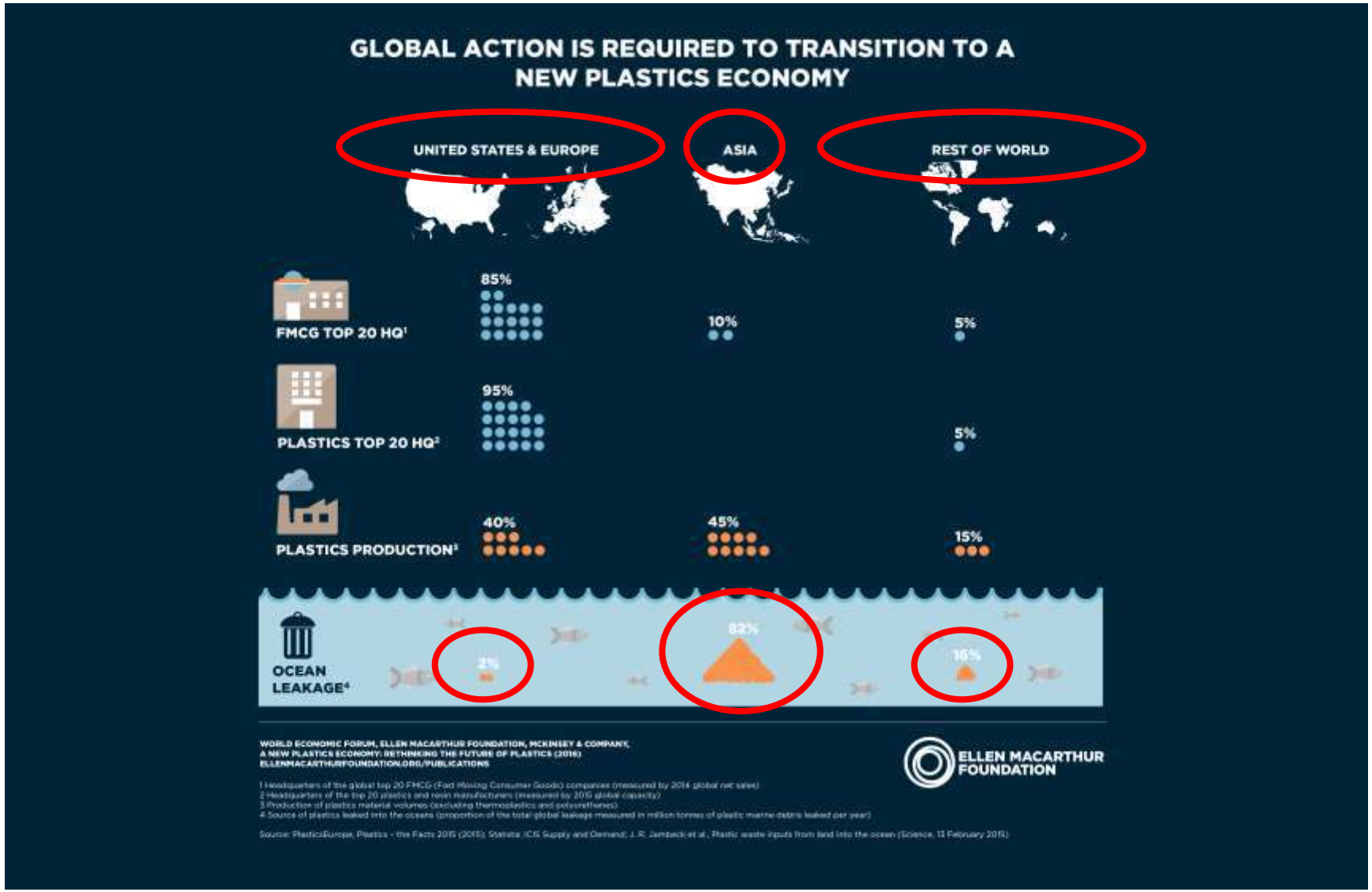
Fact(s)

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



- Plant based proteins still available for food and feed

Mechanical recycling – only part of the solution



16th EUBP Conference
– Berlin, 30 November - 1 December 2021

SAVE THE DATE!

More information on www.european-bioplastics.org/events/eubp-conference/

Thank you!

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