
PRIORITIES FOR ADDRESSING OPPORTUNITIES AND GAPS OF INDUSTRIAL BIOTECHNOLOGY FOR AN EFFICIENT USE OF FUNDING RESOURCES (PROGRESS)

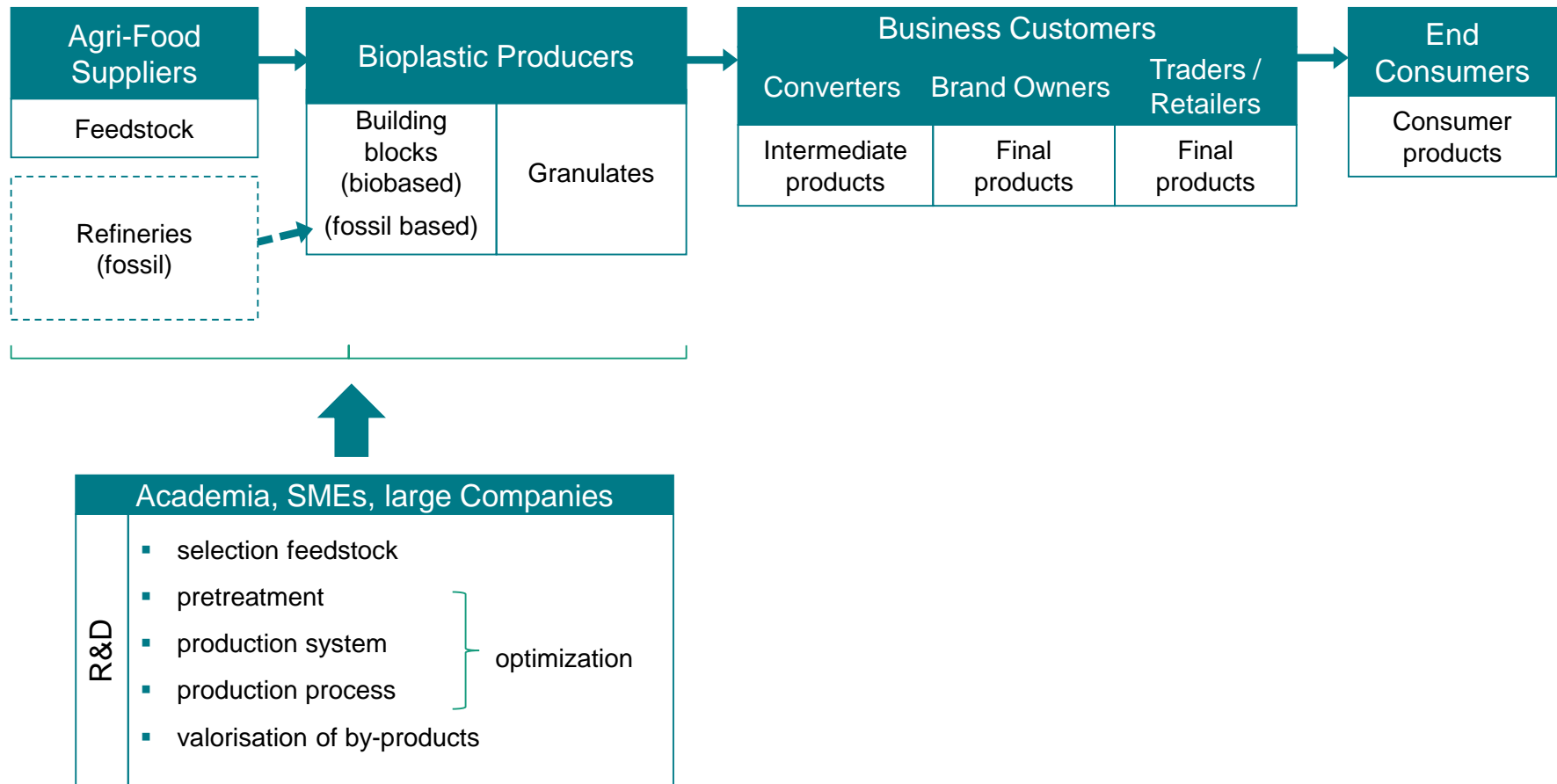
Final Conference September 27th, Brussels

In-depth Analysis and Scenarios for Bio-based Plastics

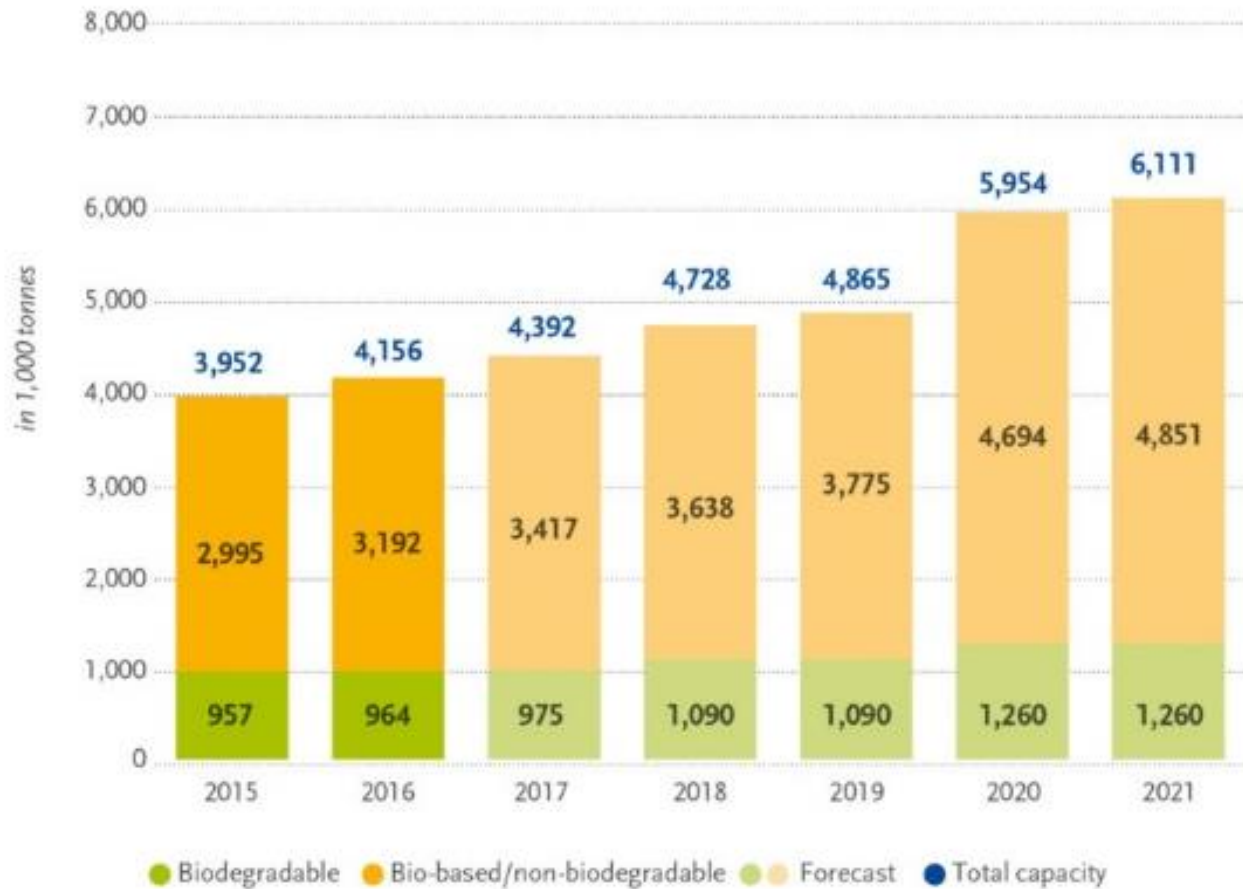
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Value Chain – Bio-based Plastics

PROGRESS definition: produced from renewable biomass as feedstock, production with a biotechnological step, may be durable or biodegradable



Market: Global production capacities

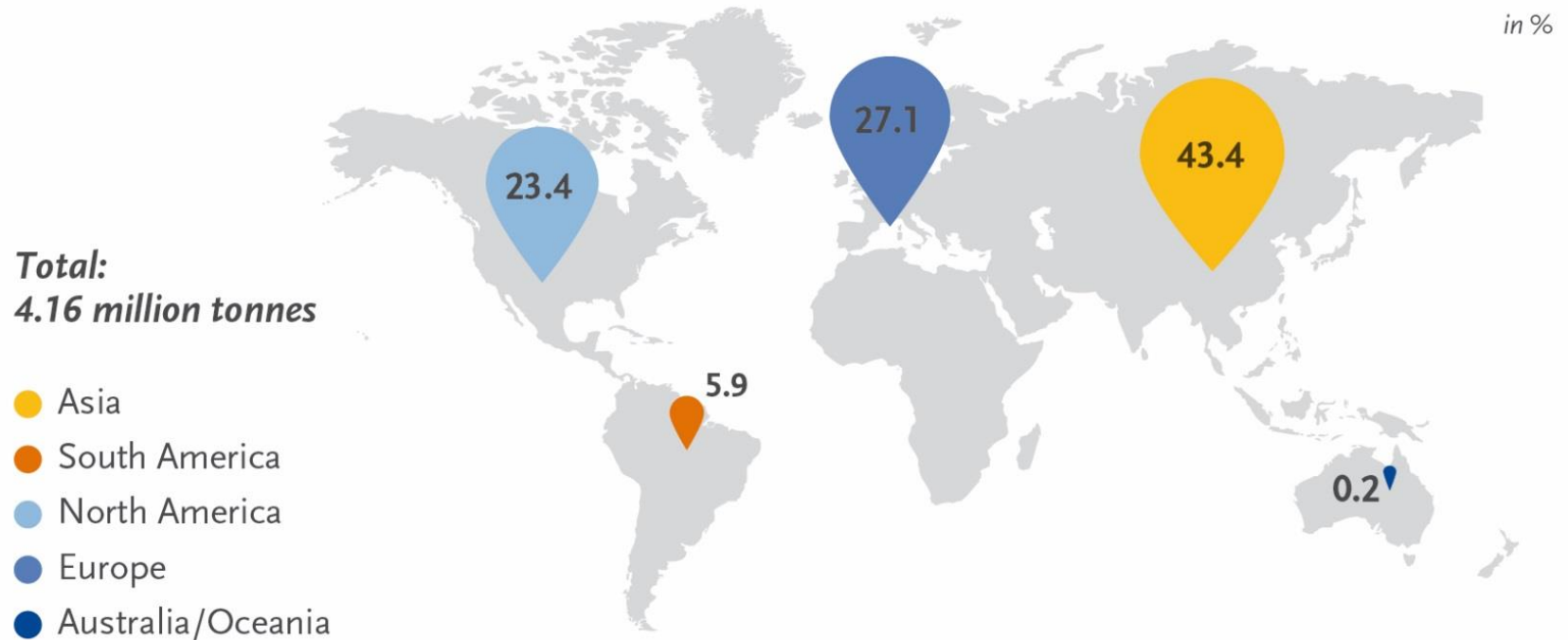


Source: European Bioplastics, nova-Institute (2016).

More information: www.bio-based.eu/markets and www.european-bioplastics.org/market

Distribution of global production capacities

Global production capacities of bioplastics in 2016 (by region)



Source: *European Bioplastics, nova-Institute (2016).*

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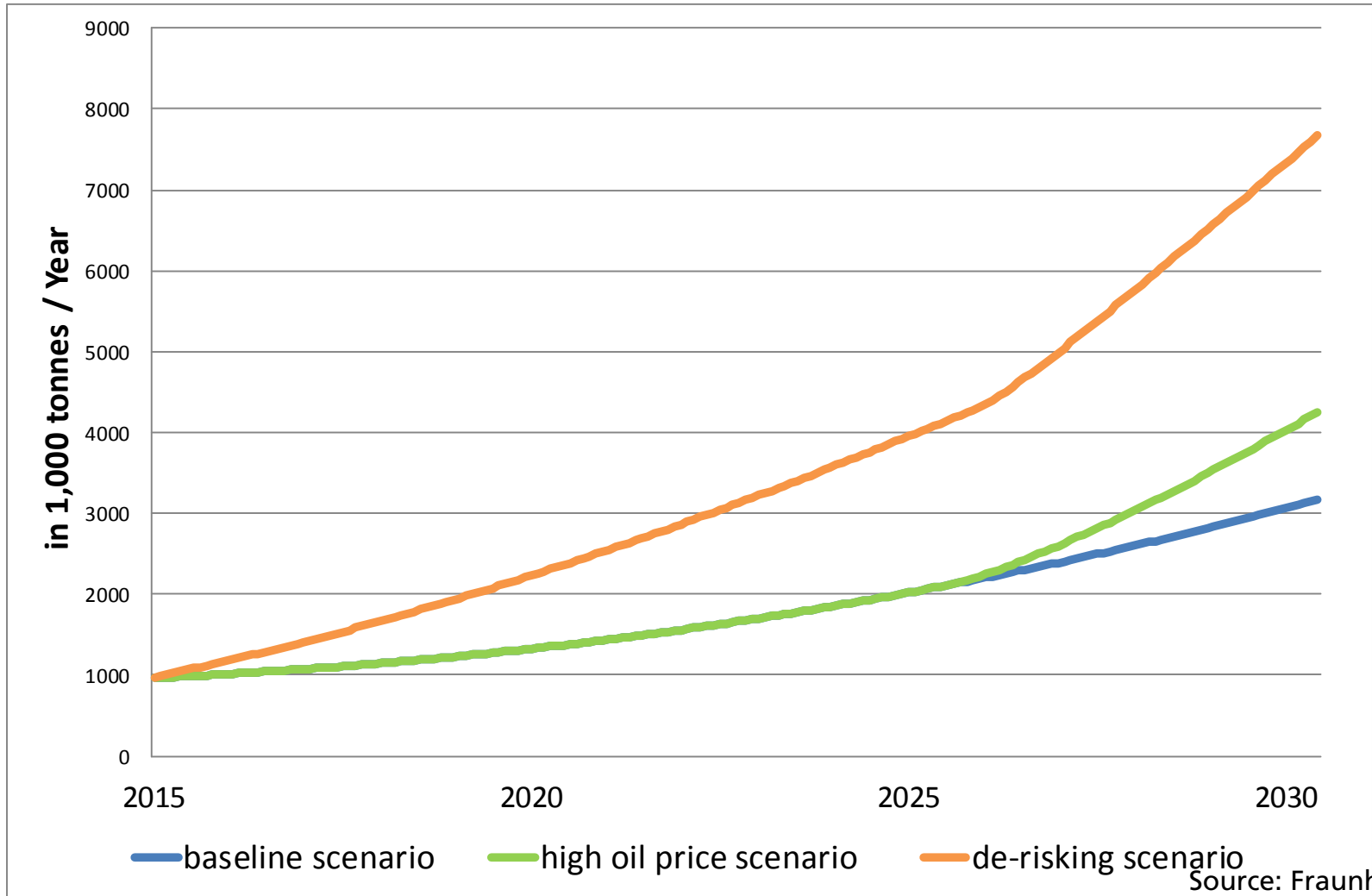
Key developments and factors for the value chain

Technology	Business	Policy
<ul style="list-style-type: none">▪ Reduction of production costs, achieving cost-competitiveness▪ Switch from food to non-food feedstocks, sustainably produced biomass▪ Delivering constant plastics quality despite fluctuating feedstock quality▪ Expand the number of bio-based building blocks and plastics and their properties/functionalities and applications	<ul style="list-style-type: none">▪ Competitiveness of „drop-ins“ largely dependent on relative feedstock prices▪ Consumers' acceptance and willingness-to-pay▪ Strategies of brand-owner companies as gatekeeper for the demand side	<ul style="list-style-type: none">▪ Market-pull measures (bans, public procurement, tax exemptions, etc.)▪ National regulations (e.g. bans)▪ Labelling of bio-based plastics, information on specific features/benefits

Future Scenarios

De-risking strategy	High oil price, no additional policy measures	High attention for (micro)plastics
<ul style="list-style-type: none"> • Financial support for risky business decisions • Coordinated market pull measures implemented • -> many new market opportunities arise • Diversity of production: both in large and small scale processing plants via many production pathways • Possibility of feedstock shortage 	<ul style="list-style-type: none"> • High oil price (127 Euro/bbl) • market opportunities for replacement of fossil-based plastics • Market pull measures remain status quo • Production: few bio-based plastic materials (mostly drop-ins) in large amounts, in large scale plants 	<ul style="list-style-type: none"> • (Micro)plastics in the environment a major concern (public attention, policy) • Ban of plastics for short-term use which do not degrade readily in the environment • Bio-based plastics become established in few niche applications and markets • Production: wide diversity of feedstocks, small scale plants

System-Dynamics modelling of demand for bio-based plastics in the EU



More results soon available on www.progress-bio.eu, Deliverable 3.2

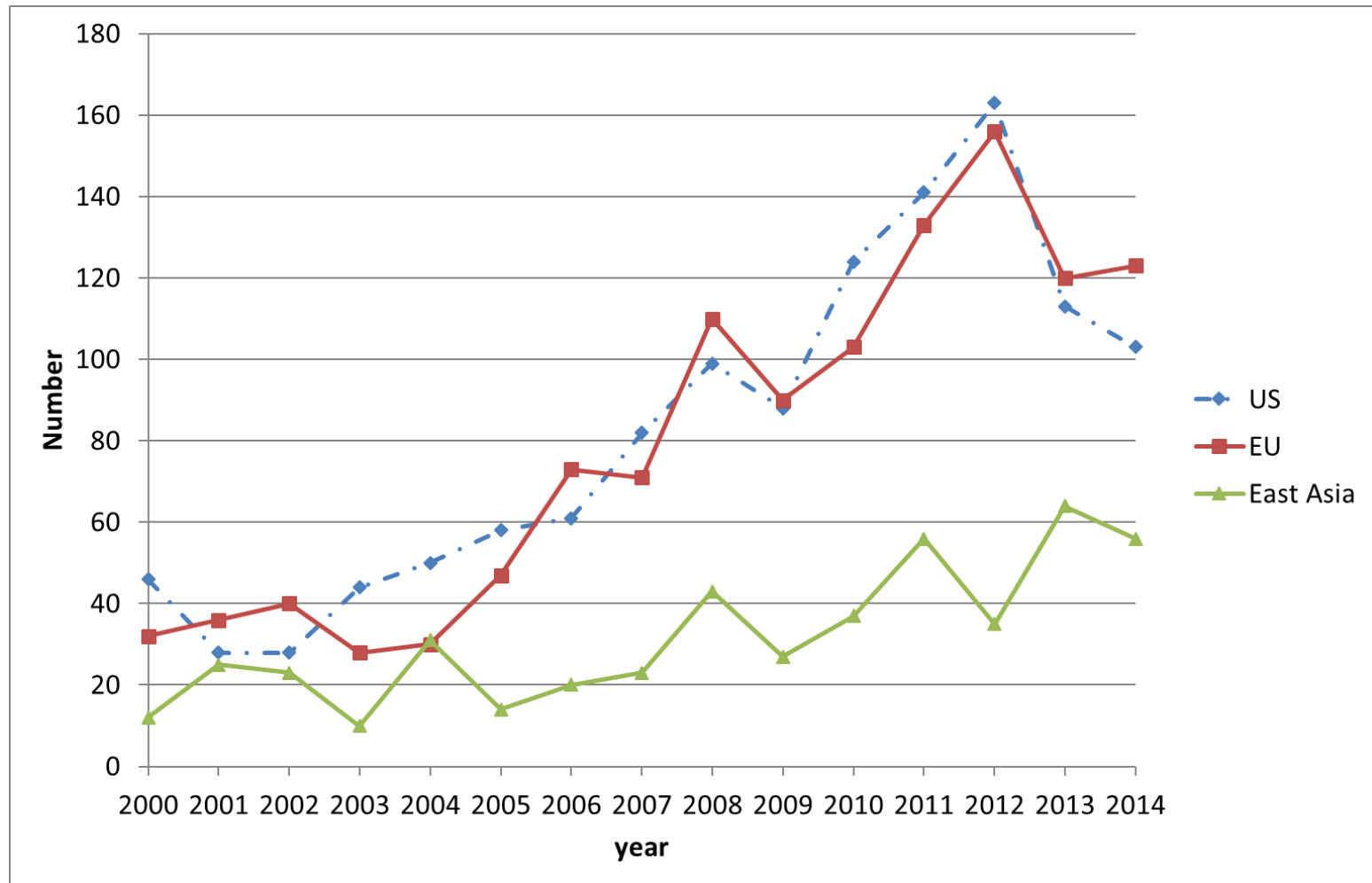
Conclusion

- Signalling function for other IB value chains
 - low-cost mass products (drop-ins), lower-volume-higher-value speciality products
 - public has good understanding of products and applications
- Higher oil prices would support market development, but alone will not be sufficient
- R&D&I policy is important for further development of the value chain, but not the main bottleneck
- Support demand pull for IB products and processes with improved sustainability (e.g. sustainability assessment, labels, public procurement, B2B success stories)
- Close monitoring of activities of countries/players outside the EU required in order to adapt own strategies accordingly

BACKUPS, RESERVE

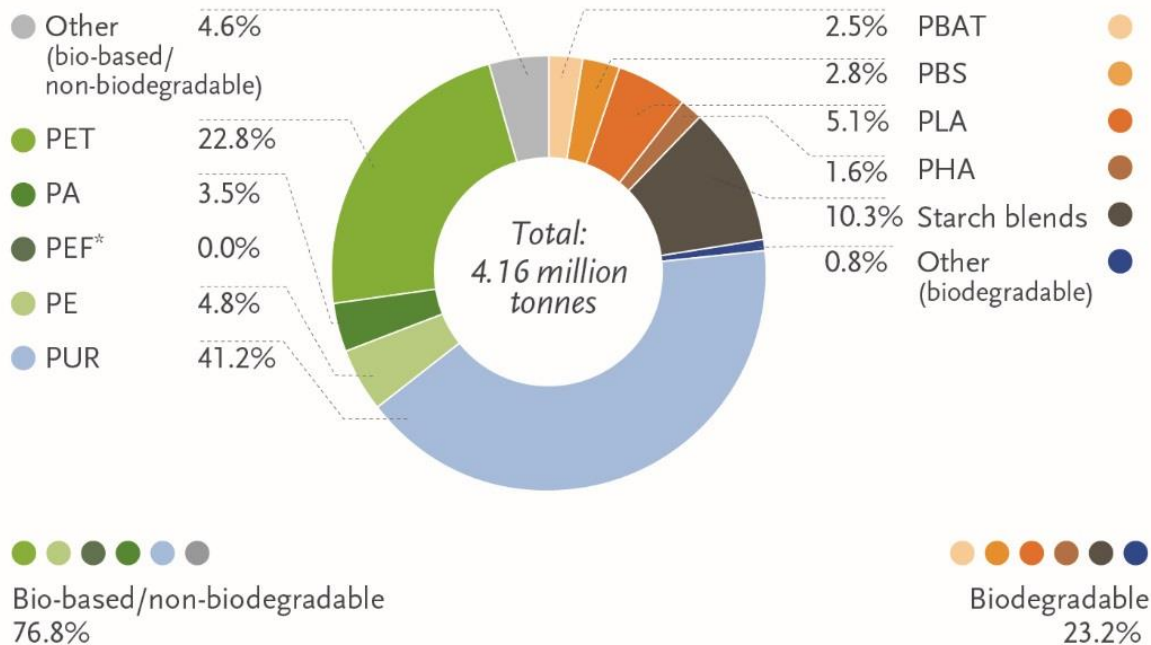
Patent applications

Translational Patent Applications in bio-based plastics



Bioplastics by material type

*Global production capacities of bioplastics 2016
(by material type)*



*PEF is currently in development and predicted to be available in commercial scale in 2020.

Source: European Bioplastics, nova-Institute (2016).

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