NewPack

New BioBased Film for Packaging

Development of innovative bioplastics for the food sector

Workshop: 19th November 2019, **Piacenza**, Italy

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This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 792261

NEWPACK – The Project

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- NEWPACK: Development of new competitive and sustainable bio-based plastics
- Bio-based Industries Research and Innovation action, project number 792261 (Horizon2020)
- Topic "BBI.2017.R6 Competitive biodegradable, compostable and/or recyclable bio-based plastics for a sustainable end-of-life phase"
- Duration from 1.6.2018 to 31.5.2021 (36 months)
- Funding 4 274 587 EUR

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Bio-based Industries Consortium
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Horizon 2020 European Union Funding for Research & Innovation

NEWPACK- Consortium

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13 partners from 8 countries:

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NEWPACK- Objectives

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- Produce at least two new bio-plastics based on PHB-PLA blends/composites with improved sustainability performance for food packaging applications.
- PHB-PLA blends/composites will be improved by addition of natural extracts with antioxidant and antibacterial properties and by nanosize additives based on chitin and cellulose to enhance mechanical properties.
- Production of these new bio-plastic products will be validate at relevant industrial environment.

PHB = polyhydroxybutyrate
PLA = polylactic acid

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NEWPACK - Sustainability

- The feedstock for these new bio-plastics are agro-food waste:
  - potato peels (corn residues)
  - wheat straws
  - orange peels
  - crustacean shells.
- As bio-plastics are defined *)as polymers having bio-based raw material and/or being biodegradable, the aim of the NEWPACK project is to solve issues addressed to petrochemical-based polymers;
  - the adequacy and availability of raw material
  - carbon dioxide emissions
  - waste management
  - microplastic pollution

*) European Bioplastics

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NEWPACK – Food contact, legislation & consumers

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- While developing these new bio-plastic based food packaging application, the NEWPACK project will carefully take into account the regulations and legislation, as well as the end-user preferences and consumer surveys.
- Special care will be taken on not to compromise actual food production at any stage while gaining raw material for the bio-plastics.
- New circular economy value chain will be generated from the agro-food waste.

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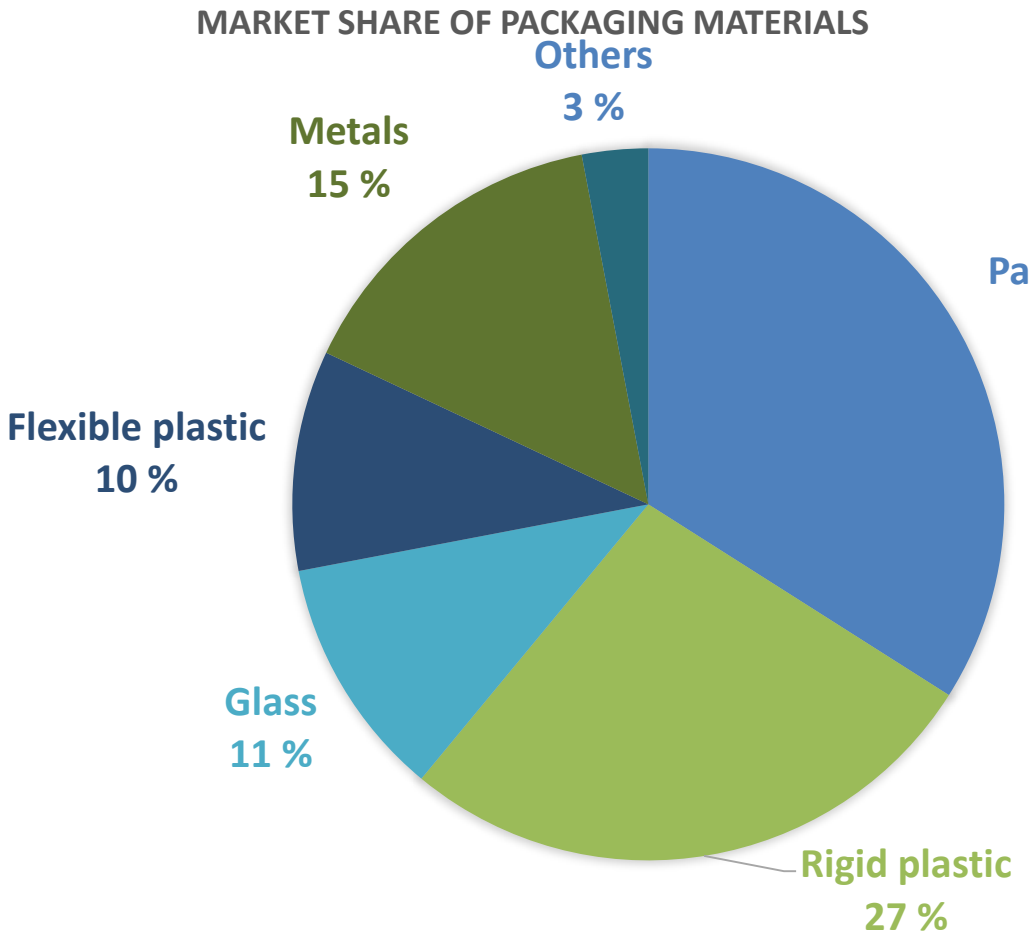
NEWPACK – Background: Polymer market



The most frequently used polymers in food packaging are

- 19.3% for PP,
- 17.5% for PE-LD and PE-LLD and
- 7.4% for PET.

Market shares of packaging materials in food packaging (adapted from Food Packaging Plastic Forum 2012).

Outi Keränen (OBS); Deliverable 1.1 ”Market analysis” for the NewPack project

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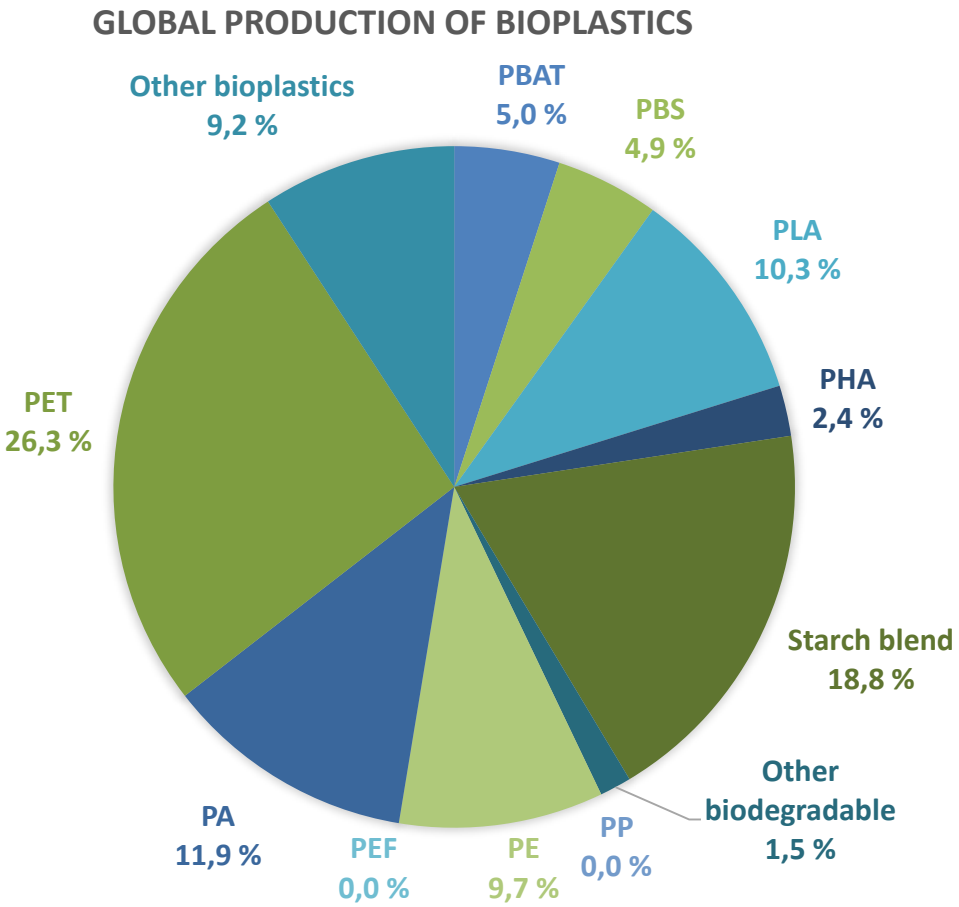
NEWPACK – Background: Polymer market



Global production of bioplastics by material type in 2017

Outi Keränen (OBS); Deliverable 1.1 ”Market analysis” for the NewPack project

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NEWPACK – Background: Biopolymer properties

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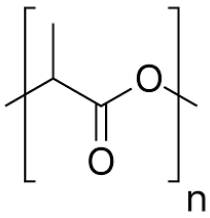
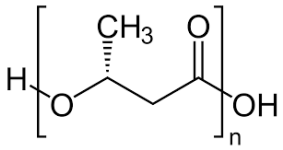
BIO-BASED - BIODEGRADABLE		
Type	**Properties**	**Applications**
PLA 	Thermoplastic polyester Sourced from corn or other carbohydrate rich plant followed by conversion to dextrose and fermentation to lactic acid. High tensile strength, transparent Potential alternative for LDPE, HDPE, PS and PET	Cups, bowls, bottles, bags, jars, films
PHA (including PHB) 	Polyester Produced by micro-organisms (such as *Cupriavidus necator*, *Methylobacterium rhodesianum* or *Bacillus megaterium*) starting from glucose or starch as response to physiological stress Brittle, stiff, thermally instable	As composite can be tuned into different applications

- Food Packaging Forum – Dossier – Bioplastics as food contact material, April 2014, Birgit Geueke https://www.foodpackagingforum.org/fpf-2016/wp-content/uploads/2015/11/FPF_Dossier06_Bioplastics.pdf (Accessed on 4th Nov 2019)
- Chen GQ, and Patel MK. 2012. Plastics derived from biological sources: present and future: a technical and environmental review. Chem Rev. 112:2082-99, https://doi.org/10.1021/cr200162d

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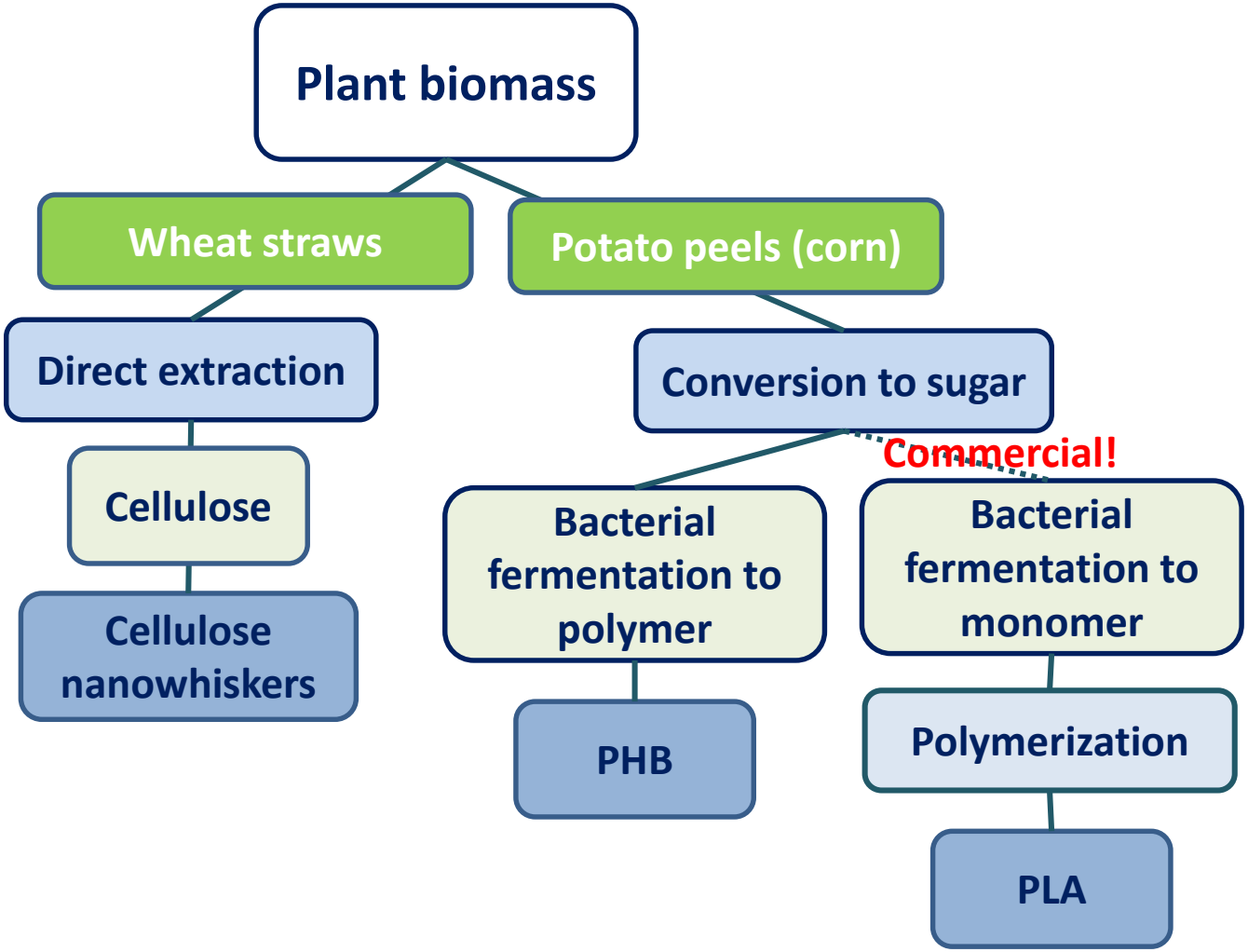
NEWPACK – Use of biomass



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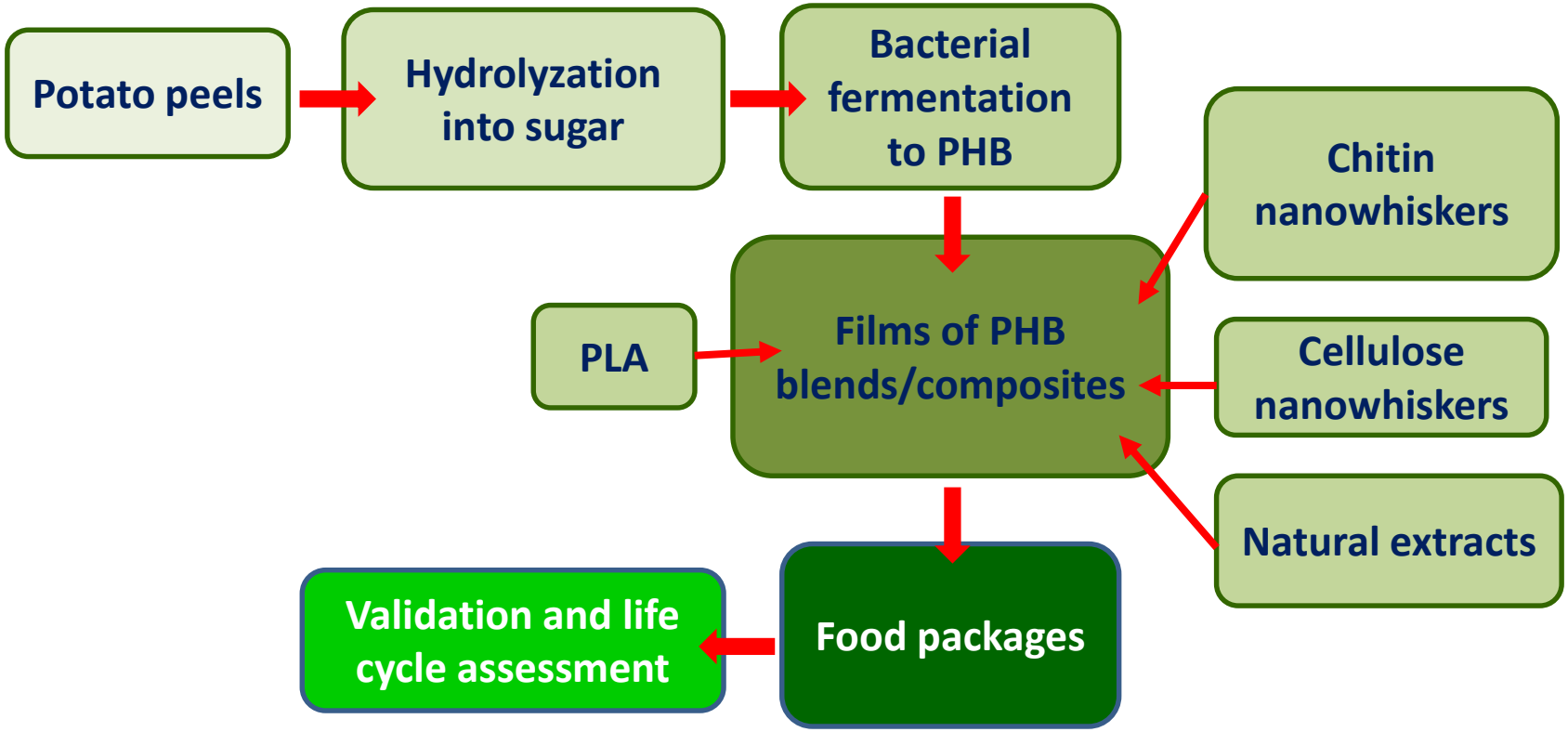
NEWPACK – Process overview



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Thank you!
Questions?

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