

# Opportunity ahead: building a bio-economy

Marcel Wubbolts, CTO Royal DSM , Chair Board BIC, Vice-Chair Board BBI

“Hightech aus Bauernhand“, Vienna, May 4 2015

# Mission

- Our purpose is to create brighter lives for people today and generations to come
- We connect our unique competences in Life Sciences and Materials Sciences to create solutions that nourish, protect and improve performance



# Leader in Health, Nutrition and Materials



## Health

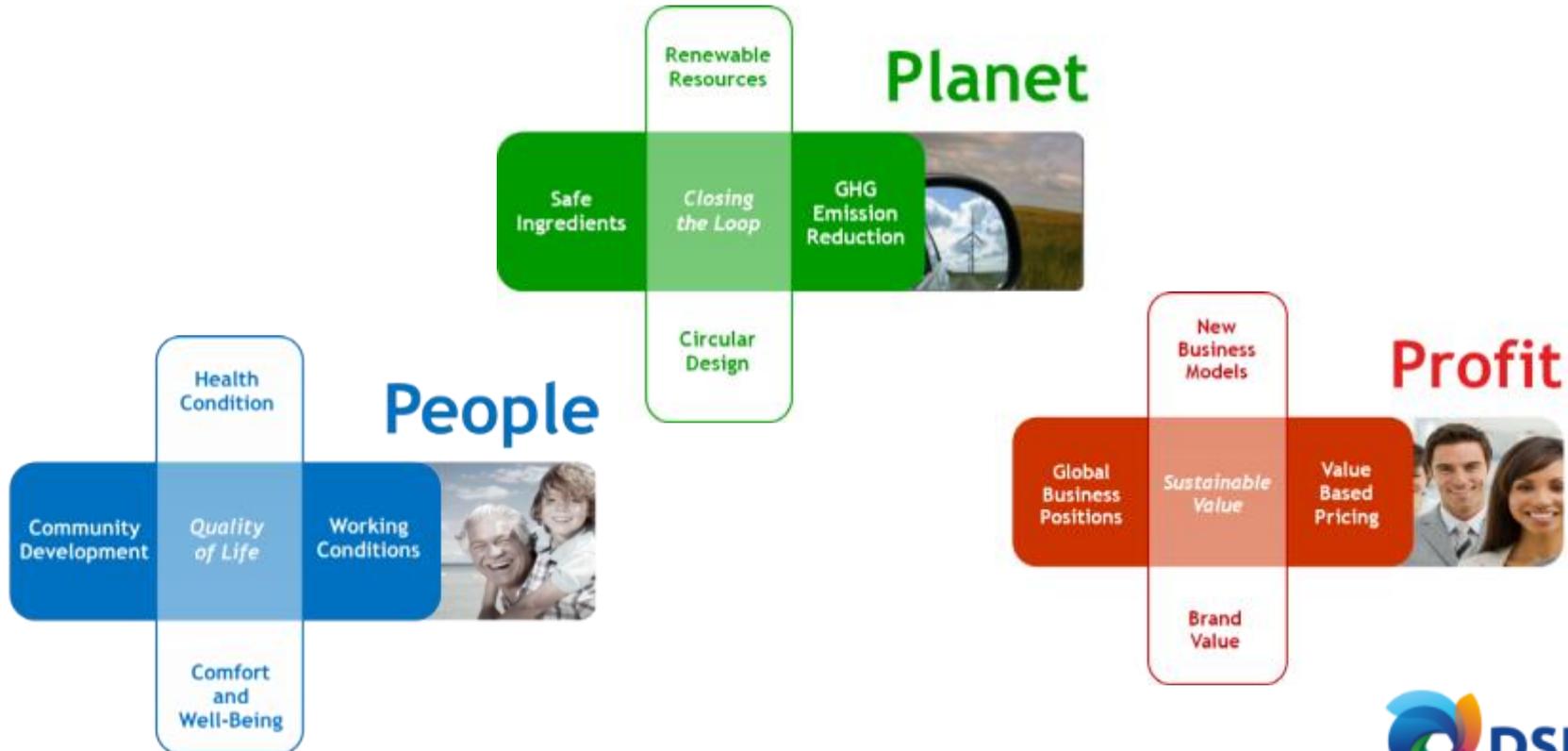
## Nutrition

## Materials

- Leading supplier of nutritional ingredients (including vitamins, carotenoids, omega's, food/feed enzymes, cultures, yeasts, nutraceuticals) for the feed, food and personal care industries
- Leading supplier of sustainable high performance materials for the automotive, electrical & electronics and building & construction industries
- Recognized as top innovator active in biomedical materials, advanced biofuels, bio-based chemicals and advanced surfaces for solar systems

# Triple P as a Business Growth Driver

## *A Compass for all our Business Activities*

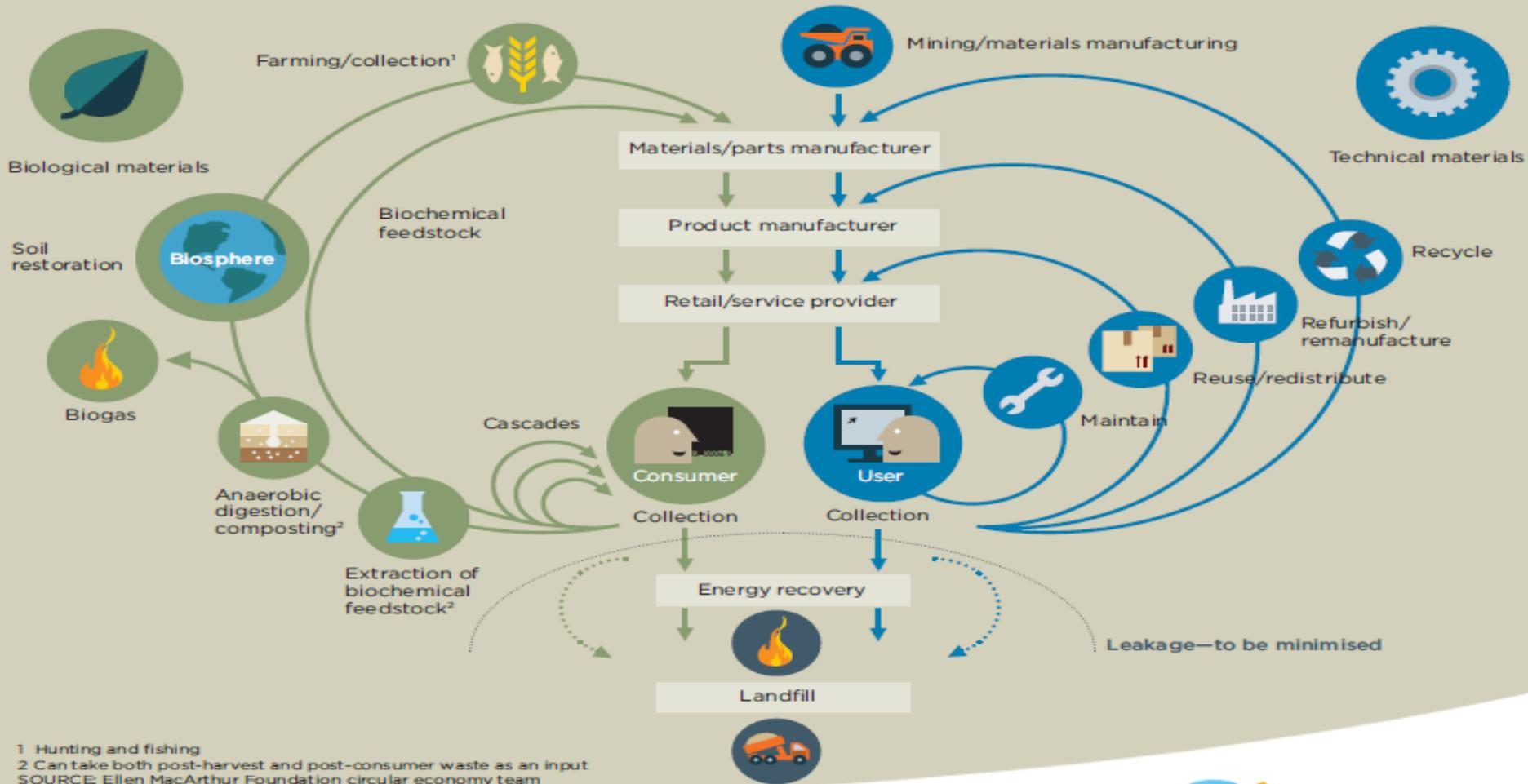


# Global Challenges: Climate Change



# Global Challenges: Sustainable Energy







## Renewable Feedstocks

Renewable biomass from green plants or algae as a feedstock and CO<sub>2</sub> sink

From “Food versus Fuel” to “Food, Fuels *and* Materials”

# Arnitel<sup>®</sup> Eco

- High performance thermoplastic elastomer
- Partially made from renewable rapeseed oil
- UV and heat resistant



# BioBased: EcoPaXX<sup>®</sup> Engine cover

- 70% bio-based engineering plastic
- Metal replacement
- High thermal resistance up to 250 °C
- Reduction of 40% of the CO<sub>2</sub> emissions compared to conventional polyamides

*Mercedes A class*



# Biobased: Waterborne Decorative Coatings

- Need for sustainable paints reducing the carbon footprint
- Bio-based waterborne, VOC free, high performance
- Renewable content between 40 - 70%
- Protecting indoor air quality and improving working conditions

# BioTech: Cellulosic Ethanol



- Biofuels from agro-residue
- Inspired by nature: special yeast and enzymes
- Reduction of up to 85% of CO<sub>2</sub> emissions compared to conventional fuels





# Emmetsburg, September 3<sup>rd</sup>, 2014



 Project LIBERTY  
GRAND OPENING  
September 3, 2014



# Biosuccinium™ Supply Chain is Established



# Market Demand has been Created

## Biosuccinium™ Qualified in Multiple Applications

### Packaging



- PBS
  - Food packaging
  - Cutlery and utensils
  - Disposable cups and lids
  - Shopping bags

### Industrial



- PU foams
  - Insulation
- TPU
  - Building and construction
  - Mining equipment
- Plasticizers
- Pigments
- Resins
  - Coatings
  - Composites

### Sports and Footwear



- TPU and PU
  - Footwear
  - Outdoor garment
- Spandex / Elastane
  - Apparel
- PBS
  - Packaging
  - Buttons
  - Plastic parts

### Non-wovens and Fibers



- PBS
  - Diapers
  - Hygiene products
  - Fishing lines and nets

### Automotive



- PU foams
  - Seats
- TPU
  - Interior and sealing
- PBS
  - Interior

### Agricultural



- PBS
  - Mulch films
  - Plant pots

TPU = thermoplastic polyurethane; PU = polyurethanes; PBS = polybutylene succinate: new biopolymer; Spandex / Elastane = elastic fibers

# Does Europe have a Role to Play in the Bio-Economy?

Realising the European Bio-economy Potential via BBI, a Public Private Partnership of the EC and Bio-based Industries

Supported by



**Marcel Wubbolts**  
Chair BIC  
Vice Chair BBI  
CTO Royal DSM



# Benefits for Europe

EC estimates European bio-economy at **€2 trln** and providing more than **22 mln jobs**

Maximizing potential of **waste, agriculture and forestry residues**

Diversify and grow **farmers' incomes**: up to 40% additional margins with existing residues

Boosting **job creation**, 80% of which will be in rural and underdeveloped areas

Replace at **least 30% of oil-based chemicals and materials** with bio-based and biodegradable ones (2030 target)

Meet **25% of Europe's transport energy needs** with advanced biofuels (2030 target)

# Encouraging initiatives in Austria

- Currently 2 ministries are involved:
  - Transport, Innovation and Technology (BMVIT)
  - Agriculture, Forestry, Environment and Water Management (BMLFUW).
- Several strategy papers published , a.o. “ FTI-Strategie für die biobasierte Industrie in Österreich“ (BMVIT, 2014), a Research, Technology and Innovation Strategy for Biobased Industries in Austria:
  - Sector focus on food, pharma, chemical and wood processing industries
  - R&D focus on biomass conversion technologies, integrated concepts for cascading use of biomass, biorefineries
  - Position of bioenergy: focus on concepts of integrated energy and material use of biomass
- In 2012, renewables contributed 33% to the total energy use (mainly smaller installations) and the bio-energy industry had sales of more than € 2,5 bln.

Source: IEA Task 42 Country Report Austria (2014), Biobased Future (2015), [www.nachhaltigwirtschaften.at](http://www.nachhaltigwirtschaften.at)



**PARIS2015**  
UN CLIMATE CHANGE CONFERENCE  
**COP21·CMP11**

We welcome the focus on climate change at the  
2015 World Bank Group/IMF Spring Meetings

**Let's partner on  
climate action.  
Now.**

We are CEOs from 43 companies and 20 economic sectors. With operations in over 150 countries and territories, together we generated over \$1.2 trillion of revenue in 2014.

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