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**Workshop on the potential of  
'new marine to bio-based products value chains'  
20 April 2016**

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## Strategic Challenges and Potential Barriers of **new marine bio-based products value chains**

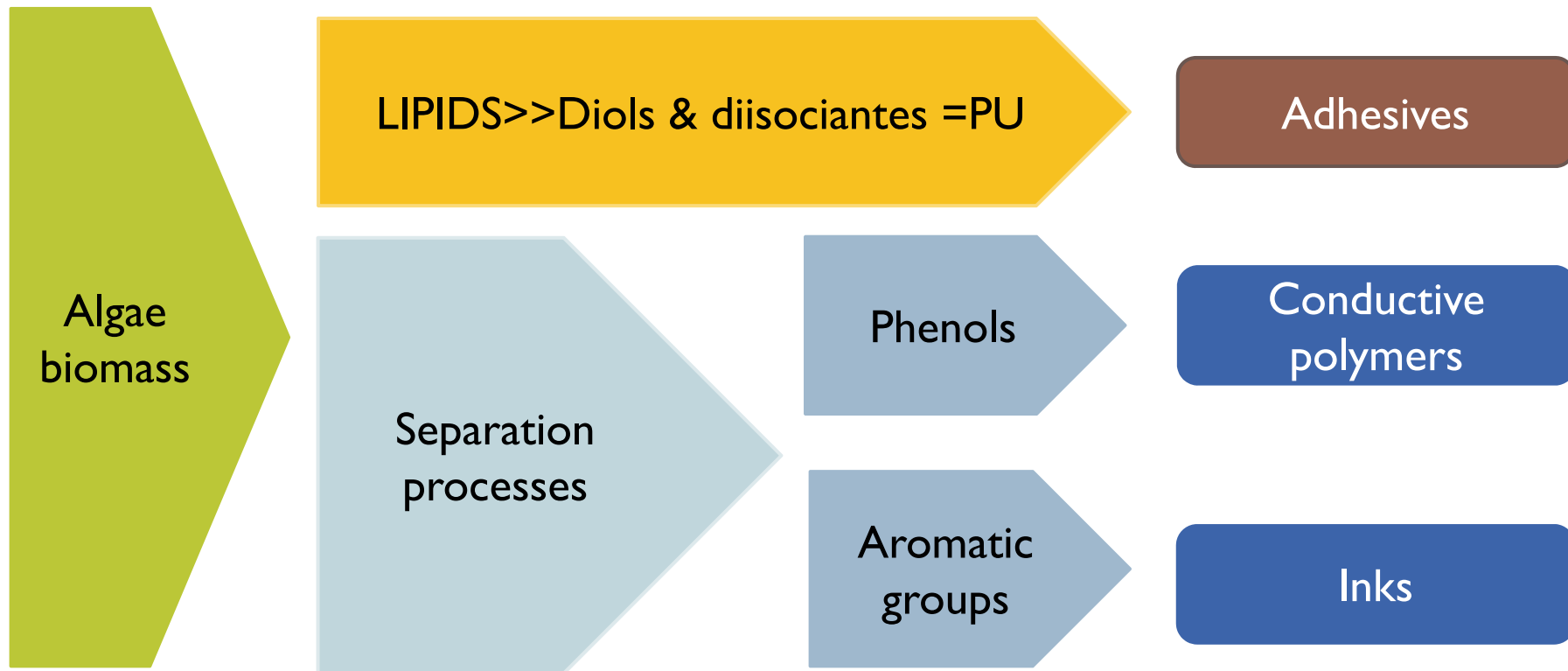
⇒ ***Organisation expertise:***

- Biopolymers & bioplastics
- Bio-adhesives
- Bioresins
- Green chemistry



# Q1 - Which are the marine biomass to bio-based products value chain(s) in which you are focusing your efforts?

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## Q2 - What is the state of the art in terms of available technology for the conversion of this marine biomass to bio-based products and what is the TRL level of your technology?

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- ▶ TRL 4-5
- ▶ Validation from lab level to relevant environment

State-of-the-art properties	Requirements to be achieved
Lipid extraction is based on different type of solvents or high energy consumption techniques.	More environmental friendly technologies required.
Commercial PU produced from bio-polyols and petrochemical diisocyanates.	Synthesis of diisocyanates from fatty acids in a controlled, inexpensive manner.
Models for bio-oil fractionation are based on ideal systems.	More data about the liquid–liquid equilibria (LLE) and vapor-liquid equilibria (VLE) required.
Binders of standard water inks are based on petro-chemical polymers.	Production of suitable monomers from renewable resources.



### **Q3 - What are the possible upcoming disruptive innovations being considered in Europe or other parts of the world?**

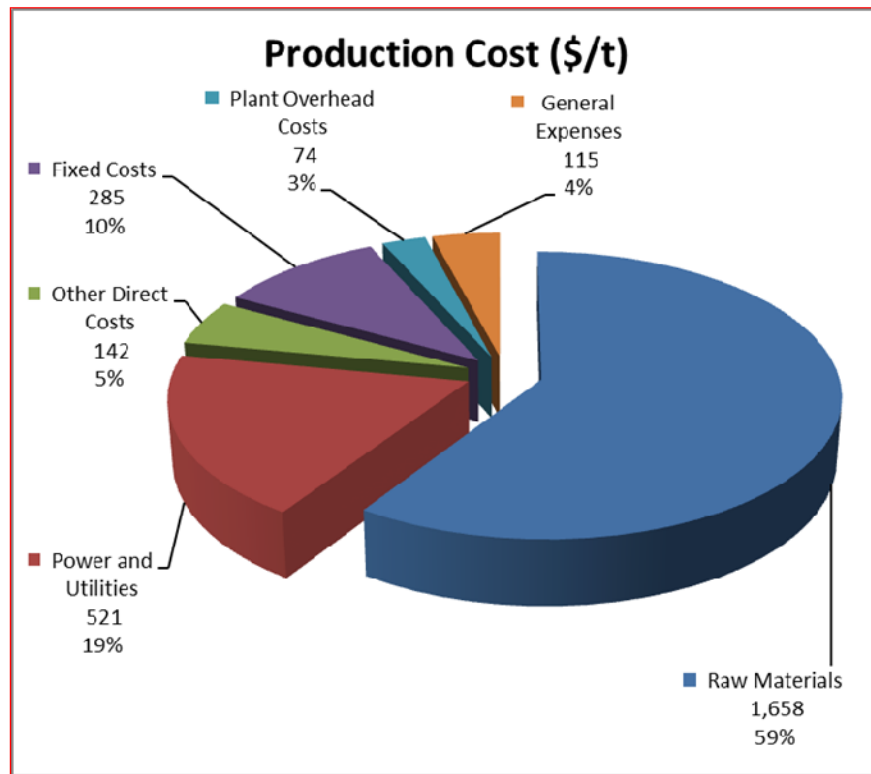
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- ▶ **Innovative downstream processes involving:**
  - ▶ Extraction of high algae-derived added value products
  - ▶ OPEX reduction
  - ▶ Reduction of extraction time
  - ▶ Reduction of thermal consumption: Positive energy balance



## Q4 - What are the production costs and business cases of the marine to bio-based products value chain vs. technologies already available in the market?

	Petrol based PU	Algae based PU
Price	PU 3-4 €/kg	PU production cost+ lipid extraction costs



- High added value applications
- ↓
- High lipidic content at affordable price

## Q5 - What are the main research and innovation gaps to address major technological bottlenecks and opportunities?

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- ▶ Avoid contamination
- ▶ Homogeneous biomass: increase algae-based products reproducibility
- ▶ Adjustment and optimization of the separation strategies:
  - ▶ Increase the efficiency of extraction:
    - CAPEX
    - OPEX
    - Energy balance



**Q6 - What are the main non-technical barriers preventing the access to an extended market and the forecasts of costs and timing required to upgrade technology or develop products to an extended market?**

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- ▶ Make biomass viable: competitive cost
- ▶ Downstream processes cost
- ▶ PU petrol based already in the market with competitive cost
- ▶ Regulatory issues: food contact approval
- ▶ Initial investment

