

EUROPEAN INDUSTRIAL BIOENERGY INITIATIVE (EIBI)

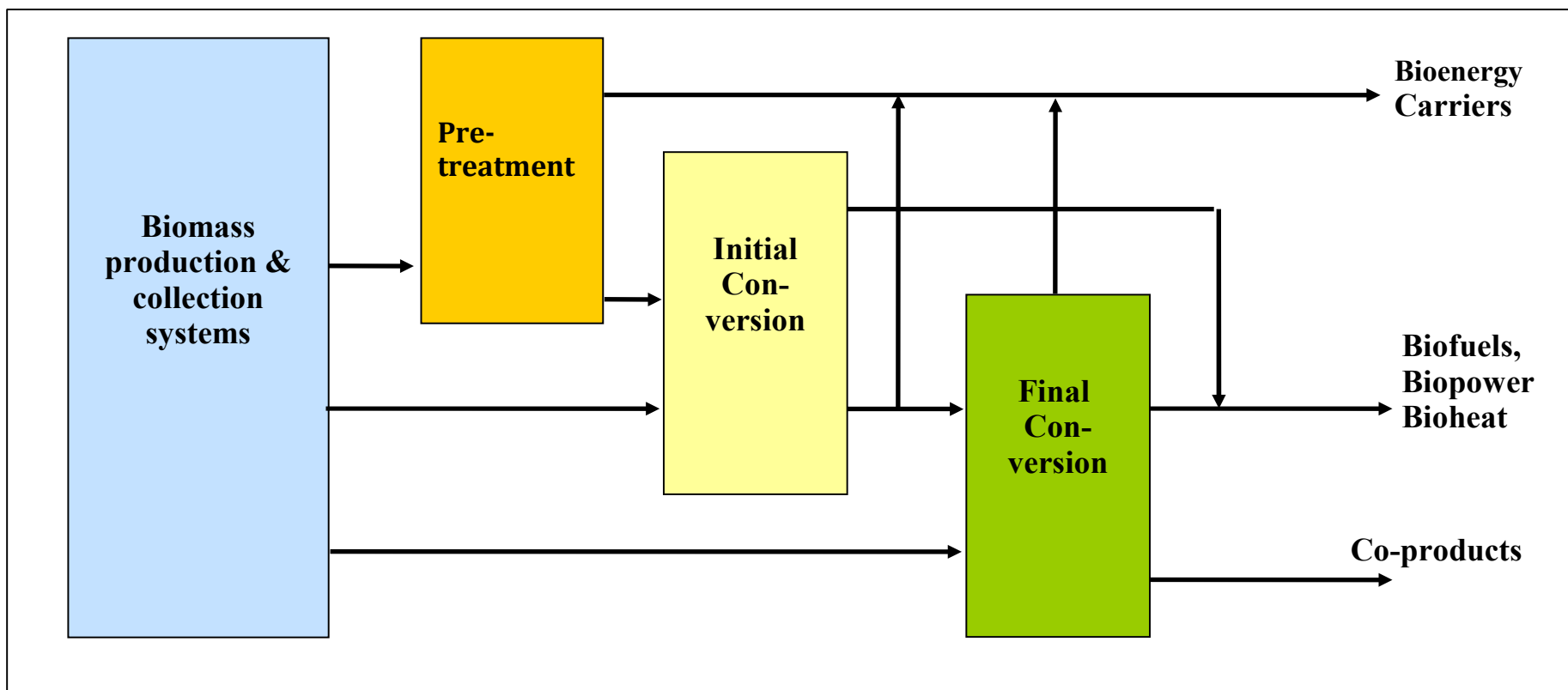
Defining the scope: the value chain approach

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- The SET Plan is calling to set up European Industrial Initiatives to accelerate the commercial deployment of advanced technologies to boost their contribution to the EU 2020 Climate & Energy targets.
- In the area of Bioenergy, many different technologies are under development, because of:
 - the variety of actual and potential feedstocks
 - the different end uses (fuels for different type of engines, electricity, heat)
- ➔ Which technologies should EIBI focus on:
 - Feedstock production related technologies? For which feedstock? Based on which criteria?
 - Conversion related technologies : which ones, based on which criteria?
 - Thermochemical technologies?
 - Biochemical technologies?
 - Chemical technologies?
 - End use related technologies: which ones, based on which criteria?

Value Chain: specific combination of feedstock, processing technologies (possibly with several steps) and marketable end products



Conversion paths based on thermochemical processes

1. Synthetic fuels / hydrocarbons from biomass via gasification (main markets: renewable transportation fuels for jet and diesel engines)
2. Bio-methane and other gaseous fuels from biomass via gasification (substituting natural gas and other gaseous fuels)
3. High efficiency power generation via gasification of biomass
4. Bioenergy carriers from biomass via other thermochemical processes like pyrolysis, torrefaction etc. (main markets: fuels for heating, power generation or intermediate for further upgrading into transportation fuels)

Conversion paths based on biological and chemical processes

5. Ethanol and higher alcohols from sugars containing biomass (renewable transportation fuels as gasoline components, E85)
6. Renewable hydrocarbons from sugars containing biomass via biological and/or chemical processes (main market: renewable transportation fuels for jet and diesel engines)
7. Production of bioenergy carriers from CO₂ & sunlight through microorganism based production (algae, bacteria etc) and further upgrading into transportation fuels and valuable bio-products (main market: renewable transportation fuels for jet and diesel engines)

Scope of the European Industrial Bioenergy Initiative

- Bio-energies and bio-energy carriers (solid, liquid, gaseous fuels, heat, electricity) produced at industrial scale (i.e. corresponding to energy-driven biorefineries).
- Innovative value chains: not yet commercially deployed
- Large scale potential: large scale single units or large number of smaller scale units
- Maturity/time to market: need to have an impact on the market by 2020

Several demonstration and reference plants needed

- Significant variations within the individual generic value chains: feedstocks, conversion technologies, level of technical maturity.
- Combinations of thermochemical and biological processes are also possible. They all correspond to different types of energy-driven biorefineries
- Demonstration of the sustainable performance of these technologies over the complete value chain is critical for securing financing for commercial large scale deployment and gaining social acceptance.