

VI Framework Program RTD 2002 – 2006 INFORMATION DAY

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Renewable Energy Technologies and Socio-economic Tools
BIOMASS – Biological and Chemical Solutions for Managing Sustainable Development

Background and Motivation

- EC directive 2003/30/CE, May 8th 2003 on biofuels
- Biofuels production is still more expensive than conventional fuels
- Biorefinery intends principally to reduce the biofuels cost production, by using the whole plant for energy and non energy (high value) uses
- IPs on biorefinery topics has been included in Call of FP6 launched on September, 2004.

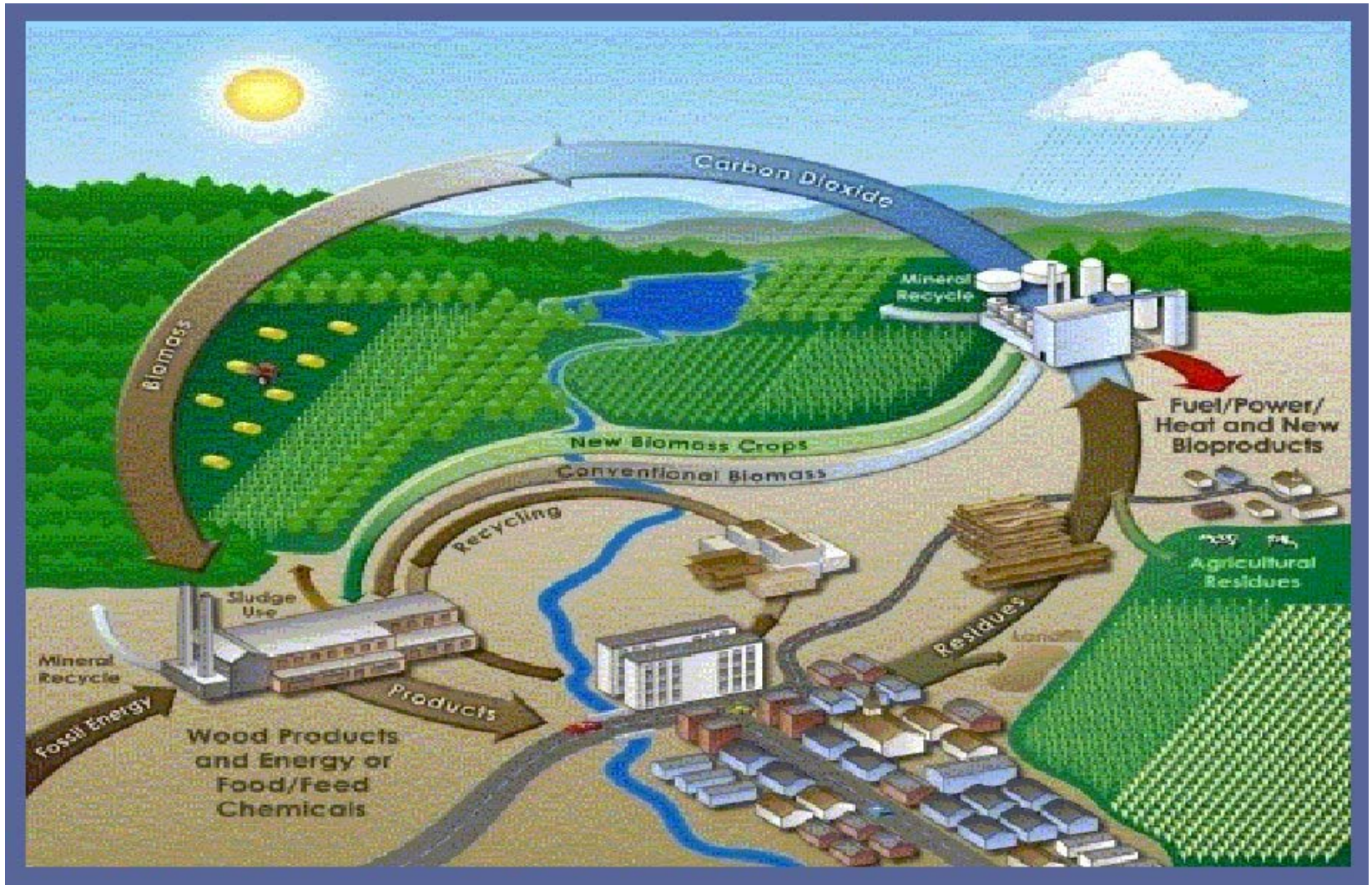


Relevant sub-thematic priority

- Sub-priority 6.1.: « Sustainable energy systems »
- 6.1.ii Research activities having an impact in the medium and longer term - New and advanced concepts in renewable energy technologies - Research areas and topics for 2005 (Call 2005.ML)
- Integrated production of energy and other products through the concept of bio-refinery.
The objective is to cover the whole chain from various biomass-based production schemes downstream to upgraded materials and chemicals, refined fuels and direct conversion to energy in order to integrate the production of bio-energy and other bio-products (fuels, chemicals and materials) through the bio-refinery approach.
- Research should address in particular integrated biomass-based production systems using advanced fractionation and conversion processes.



Biorefinery



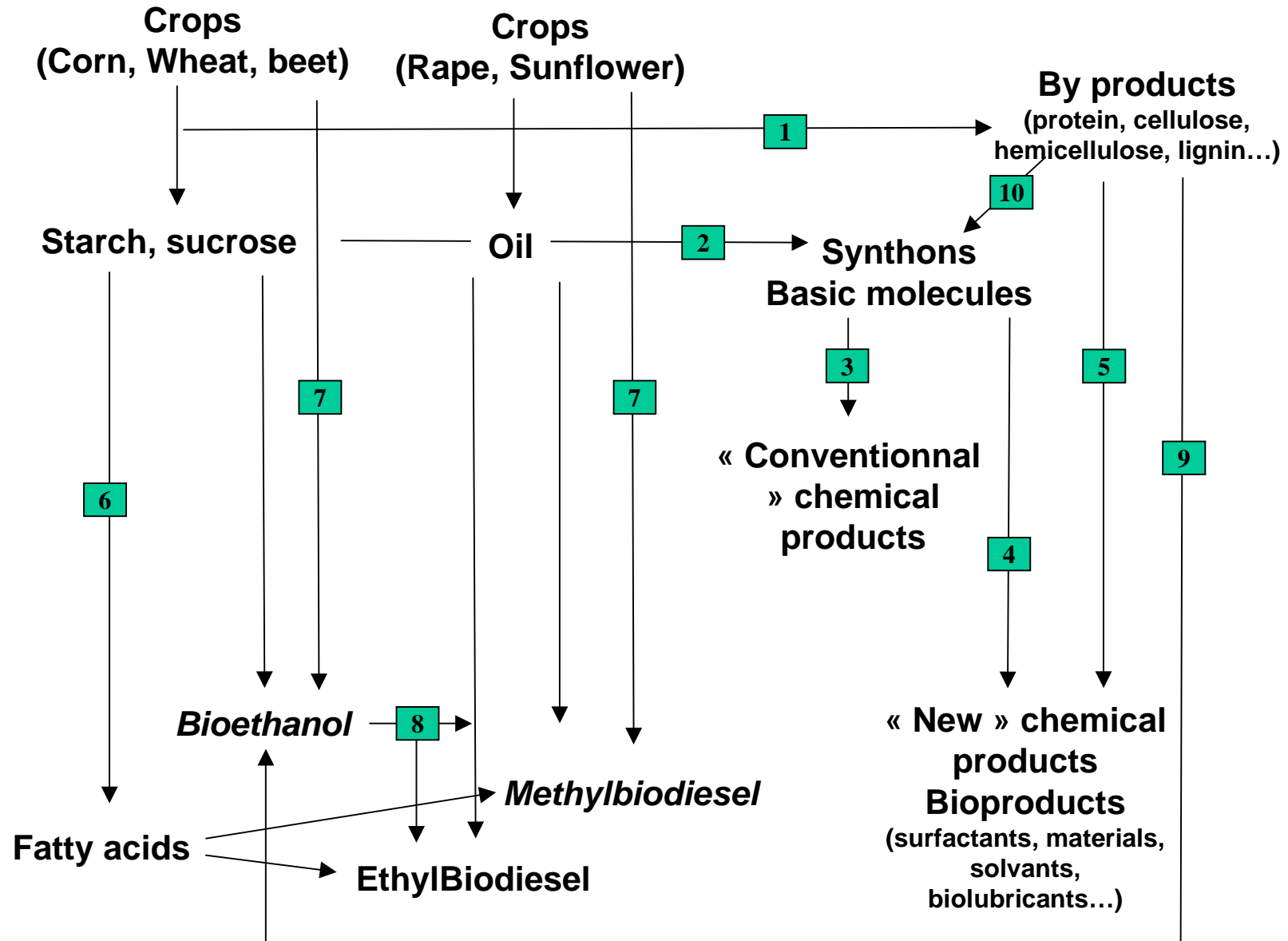
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Other sub-thematic areas 6.1.ii

- **Cost effective liquid biofuel production from biomass (IP)**
 - The objective is to explore the non-thermal production of bioethanol from lignocellulosic feedstock, primarily for the transport sector
- **Energy from crops (IP)**
 - The objective is to develop productive and low cost agricultural feedstock production systems covering the whole chain from perennial crops to energy
- **Production of hydrogen-rich gas from multiple biomass feedstock (IP)**
 - The objective is to develop non-thermal processes for the production of hydrogen rich gas
- **Pre-normative research and standardisation (STREP)**
 - The objective is to cover pre-normative research on (a) a wide spectrum of liquid biofuels (including bio-ethanol, biodiesel, synfuel and other types of biofuels), and (b) solid biofuels (including recovered solid biofuels)
- **Advanced biomass gasification technologies (STREP)**
 - The objective is to develop innovative gasification technologies for efficient power production (for example Integrated Gasification Combined Cycle)
- **Co-ordination of research activities in the field of biomass co-firing (CA)**
- **Projects (NoE or IP already selected within the first call)**



Conceptual view of a biorefinery



Scientific and technological objectives

- Identifying the best pathways from an economical, environmental and technological point of view
- The identification of those pathways will determine the future technological developments
- Using the existing industrial projects from various European companies



Goals of the Integrated Project

- Reducing production costs, two possibilities:
 - To develop new processes
 - Improving existing processes
- Using part of the plant for biofuel production
- Exploring high added value market for by-products
- Bringing together a critical mass of research
- Ensuring dissemination and training



RTD Innovation Technologies

- New biochemical conversion technologies
- Bioethanol and Biodiesel combination:
Synthesis of ethyl-ester coming from both starchy and oleaginous pathway
Synthesis of fatty acid from the starchy pathway and manufacturing of Methyl-Ester or Ethyl-ester
- Conventional chemical products (manufacturing of chemical building blocks and raw and basic molecules for the chemical industry)
- Direct Manufacturing from crops (enzymatic)



Conclusions

- Linking scientific and industrial partners at the European level interested in biofuels and chemical uses of biomass
- It will be based on a strong involvement of industrial partners with (existing or planned) biofuel, petrochemical/chemical production facilities
- A strong involvement of the European chemical industry is needed

