

Crops2Industry

“Non-food Crops-to-Industry schemes in EU27”

WP 6

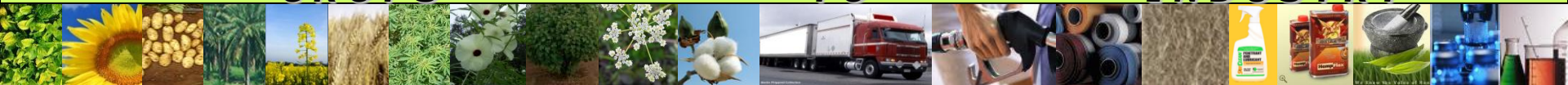
Overall assessment of crops-to-products schemes

WP leader: Uli Schurr - Forschungszentrum Jülich

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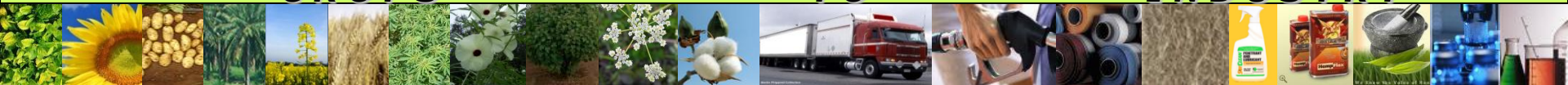
Non-food Crops-to-Industry schemes in EU27

- to perform an integrated technical, environmental and economic assessment
- to help selecting and prioritising non-food crops so as
- to enhance
 - competitiveness of the European industry and
 - improve rural development through diversification and
 - provide new sustainable sources of income for the farming community

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The concept



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other specialty products

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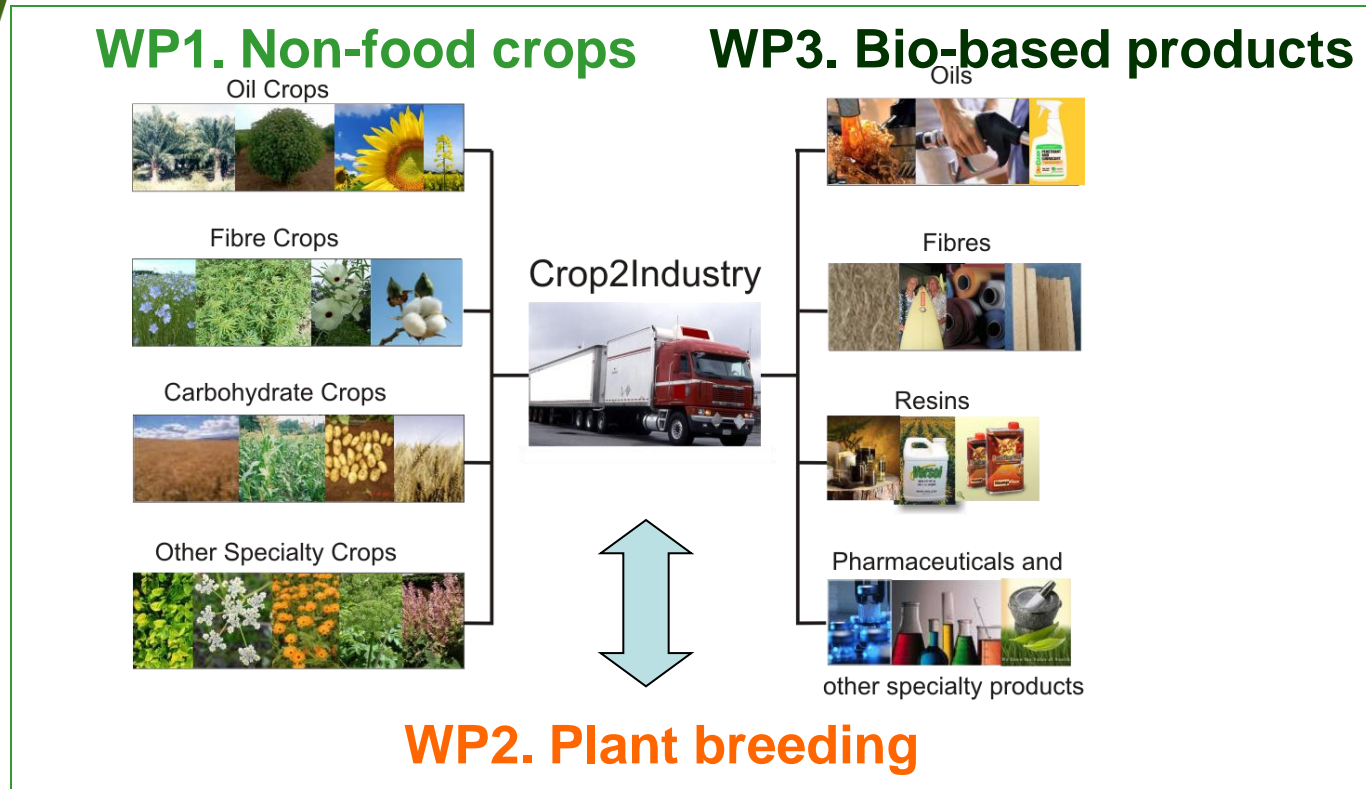
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Project structure

WP7. Dissemination



WP6. Overall assessment

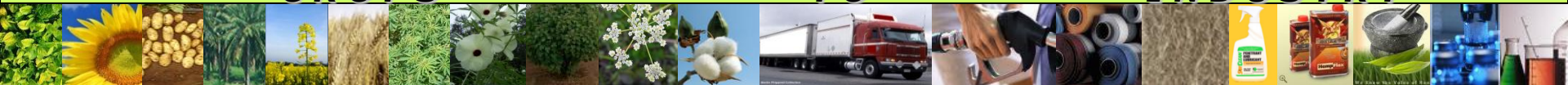
WP4. Costs and socio-economic impacts

WP5. Sustainability standards

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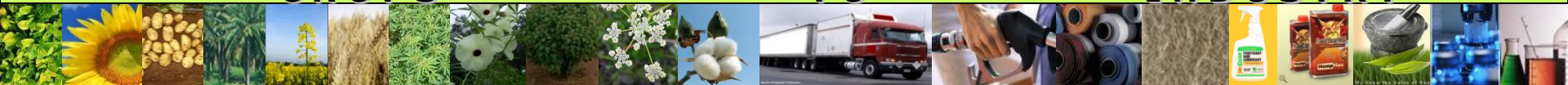
The consortium

CRES - Centre for Renewable Energy Sources, Greece	Crops
UNIBO - University of Bologna, Italy	
INF&MP - Institute of Natural Fibres and Medicinal Plants, Poland	
BIOS - BIOS AGROSYSTEMS S.A., Greece	
NCPRI - National Institute for Chemical and Pharmaceutical Research and Development, Romania	
ITERG , France	Industry
KEFI - Kenaf Eco Fibers Italia S.p.A, Italy	
Hempflax B.V, The Netherlands	
CHIMAR Hellas S.A, Greece	
AUA - Agriculture University of Athens, Greece	Biotechnology
ICCEPT - Imperial College London, UK	Economics
OeKO - Institut of Applied Ecology, Germany	Sustainability
BOKU - University of Natural Resources and Applied Life Sciences, Austria	
FZ-JUELICH Forschungszentrum Julich GmbH, Germany	Overall assessment

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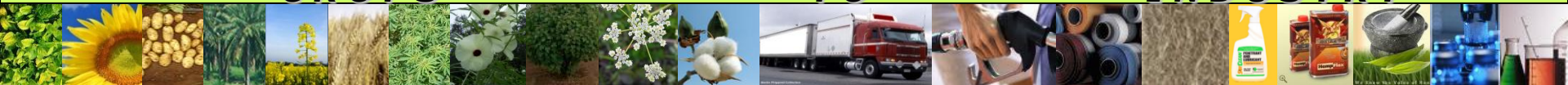
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Oil Crops

1. Calendula/pot marigold (*Calendula officinalis*),
2. Caper spurge (*Euphorbia lagascae*),
3. Cardoon (*Cynara cardunculus*).
4. Castor (*Ricinus communis*),
5. Cotton seed (*Gossyium annum*),
6. Crambe (*Crambe abyssinica*),
7. Cuphea (*Cuphea spp.*)
8. Ethiopian mustard (*Brassica carinata*),
9. Honesty (*Lunaria biennis*),
10. Jatropha (*Jatropha curcas*)
11. Linseed/flax (*Linum usitatissimum*),
12. Rapeseed (*Brassica napus*), incl HEAR
13. Safflower (*Carthamus tinctorius*)
14. Sunflower (*Helianthus annus*) incl high oleic



Fiber Crops

1. Banana (*Mussa spp* L)
2. Fibre flax (*Linum usitatissimum* L)
3. Giant reed (*Arundo donax* L.)
4. Hemp (*Cannabis sativa* L)
5. Kenaf (*Hibiscus cannabinus* L)
6. Loofah (*Luffa cylindrica* L.)
7. Miscanthus (*Miscanthus x giganteus* GREEF et DEU)
8. Nettle (*Urtica dioica* L)
9. Reed canary grass (*Phalaris arundinaceae* L)
10. Yucca (*Yucca gloriosa* L)

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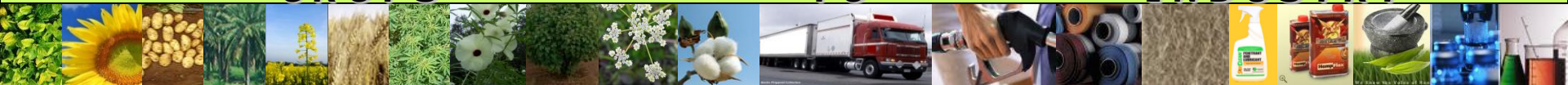
Carbohydrate Crops

1. Cassava (*Manihot spp* L.)
2. Potato (*Solanum tuberosum* L.)
3. Sugar beet (*Beta vulgaris* L.)
4. Sweet sorghum (*Sorghum bicolor* L.)
5. Maize (*Zea mays* L.)

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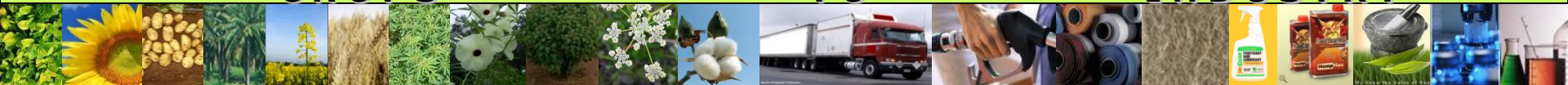
Other specialty Crops

1. Calendula/pot marogold (*Calendula officinalis* L.)
2. Coneflower (*Echinacea angustifolia* DC)
3. Lavender (*Lavandula angustifolia* Mill.)
4. Pepermint (*Mentha x piperita* L.)
5. Ribwort/plantain (*Plantago lanceolata* L.)

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WP3. Bio-based products

Oils

Biodiesel
Lubricants
Paint and ink
Polimers

Fibers

Nonwoven,
insulation,
Composites
Pulp & paper
Technical fabrics
Decorative fabrics,
twine, ropes
Particleboard
Woven and knitted
fabrics, garments
etc

Resins

Cellulose
Hemicellulose
Lignine
Protein
Tannin
Starch
Free sugars
Natural oils
Specialty
ingredients

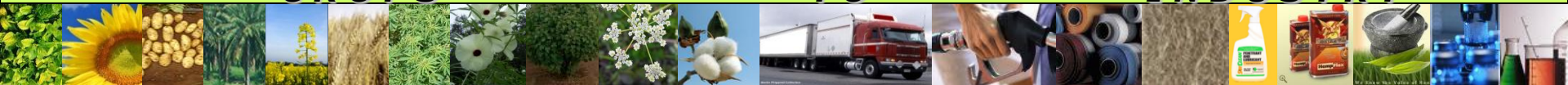
Other specialties

Pharma
industry
Cosmetics
Dyes,
colourants
Insecticides

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Objectives of the Integrated Assessment



- Set of criteria to achieve the goals



Identify bottlenecks and developments to define systems boundaries as well as solutions to overcome them

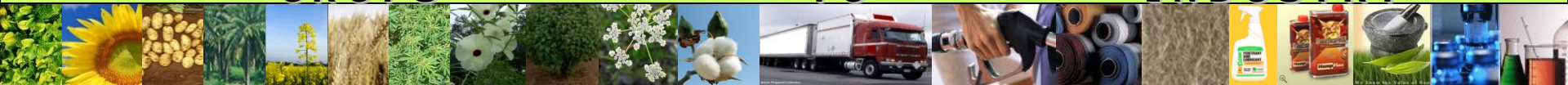


- Identification and prioritization of the most important crops for the EU industry

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Identification of bottlenecks and of potential solutions



Major bottleneck categories

Availability: quantity and quality

- crop
- Land
- climate change
- Seasonality
- Crop rotation
- New business development

Competition with fossil- base/ existing products

- Cost of raw material
- Technology and integrated systems
- Existing infrastructures
- Traditional business cases/ relations

Public regulation and perception

- Public perception
- Regulatory issues and support by public bodies

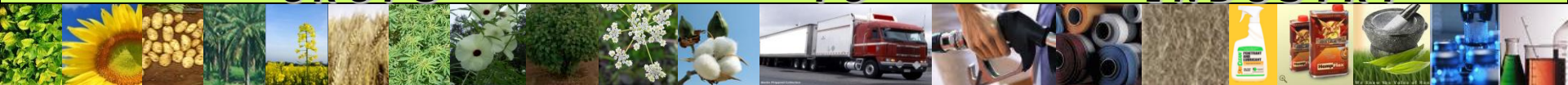
Different roles for stakeholders for solutions

Farmer, industry, politics/ regulation, academia

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Integrated assessment



Integration of WP 2, 3, 4, 5 results

WP 2: Crop status

WP 3: Products status

WP 4: costs and socio
economic impact

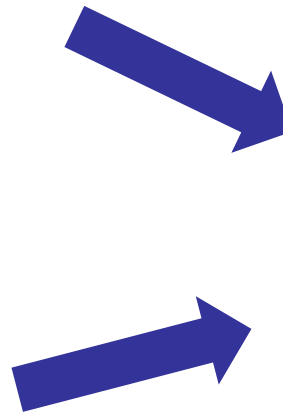
WP 5: ecological/
sustainability

D6.1 criteria



Identification and prioritization of
the most important crops for
the EU industry

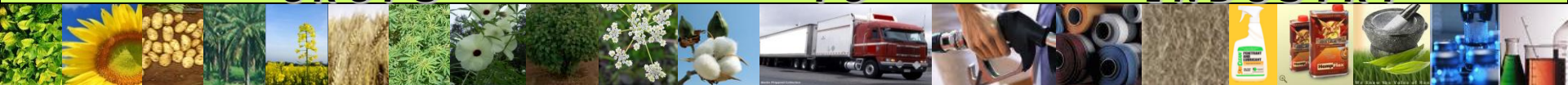
D6.2 bottleneck list



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Integrated assessment



Criteria/ Bottleneck specific lists (almost finished by FZJ)

- ✓ Speciality crops
- ✓ Oil crops and oil products
- ✓ Carbohydrate crops and carbohydrates
- ✓ Fibre crops and fibres



Summary tables of WP 1-5

Crops	Origin	Area of EU cultivation	Yields	Products /Markets	Pros (+)	Cons (-)	Remarks /Referen ces
Brassica napus	Asia, S EU, Med	6,500 Mha*	2.5 t/ha (EU mean)	Biodiesel Food	<ul style="list-style-type: none"> Traditional Many varieties, Mechanical cultivation 	Genetic improvement	
Sun-flower	USA, Med	3,300 Mha	1.9t/ha	Food Biodiesel	<ul style="list-style-type: none"> Traditional Many varieties, Mechanical cultivation 	Genetic improvement	
Linseed	N. USA	15,000 ha	1.2-2 t/ha	Food Chemicals Pharma	<ul style="list-style-type: none"> Traditional Many varieties, Mechanical cultivation 	Genetic improvement	
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Summary
Consolidation of data



Integrated report and ranking

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