Horizon 2020 – ISIB-5-2014 Renewable oil crops as a source of bio-based products

PoISCA meeting

12 February 2014, Brussels

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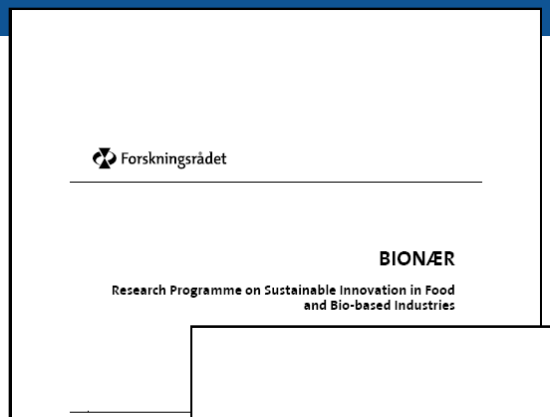
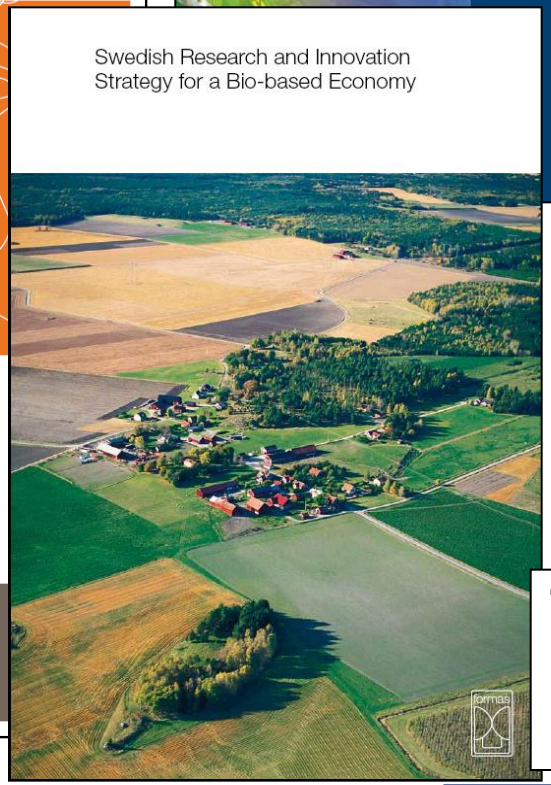
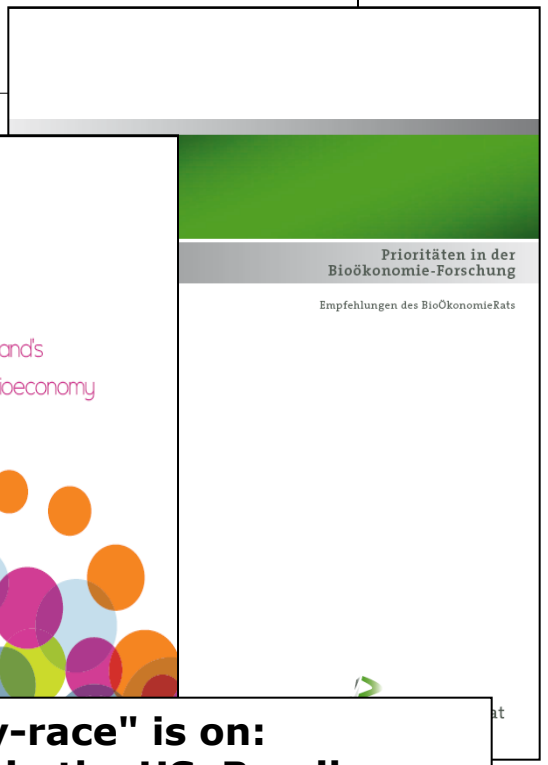
The global context





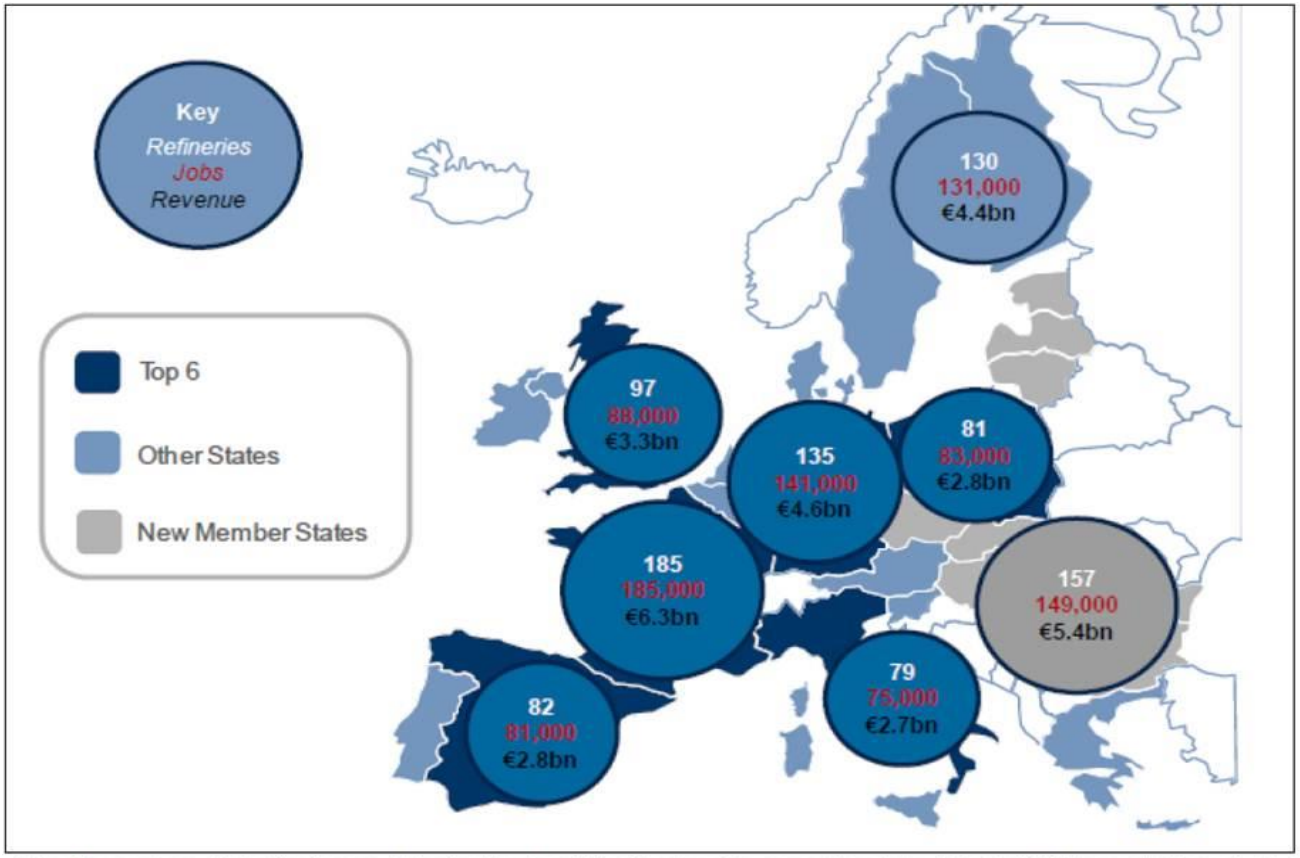


The "Bioeconomy-race" is on: Similar activities in the US, Brazil, Russia, India, Thailand, Malaysia and many others.

The EU Bio-based Industries today

- Nascent and fragmented industrial sector today, many small and mid-cap companies lacking critical mass
- Agriculture and Forestry are the prime biomass suppliers
- EU producers and industries global market leaders, e.g. in enzyme technology (64% of all companies operate from within the EU)
- About 10% of EU chemicals today produced from renewable biomass, expected to rise to 30% in 2030 globally
- Several EU industrial sectors concerned: chemical, textile, pulp and paper, sugar, starch, woodworking, biotechnology;

The regional potential of bio-based industries



- Building a strong biobased economy in Europe will create both revenues and jobs directly and indirectly
- Next to direct jobs, a biobased economy will also increase farmer income and improve economic activity in developing rural regions

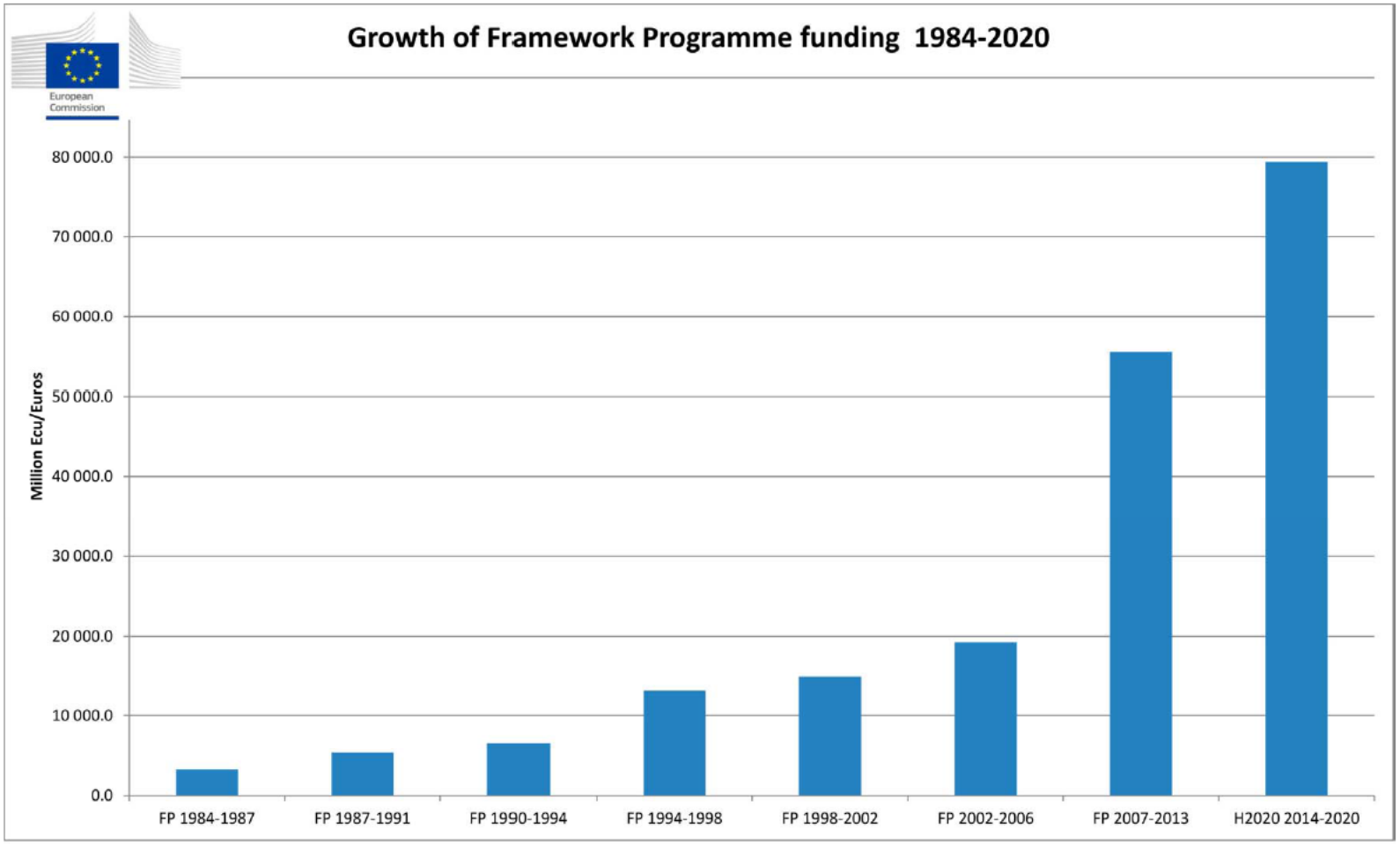
Note: The numbers of biorefineries are determined by the ability of each region or member state within the EU27 to supply bioproducts. Jobs in the chart represent the total man-years of employment between 2010 and 2020, not the number of jobs in 2020 alone. Included jobs are in management, operation and construction of the biorefineries. Revenues are per year
Source: Bloomberg

Horizon 2020: What's new

- **Better coupling of research and innovation** – from research to technology uptake, reducing time-to-market
- **Focus on societal challenges** facing EU society, e.g. climate change, health, energy and transport
- **A single programme** bringing together three separate programmes/initiatives*

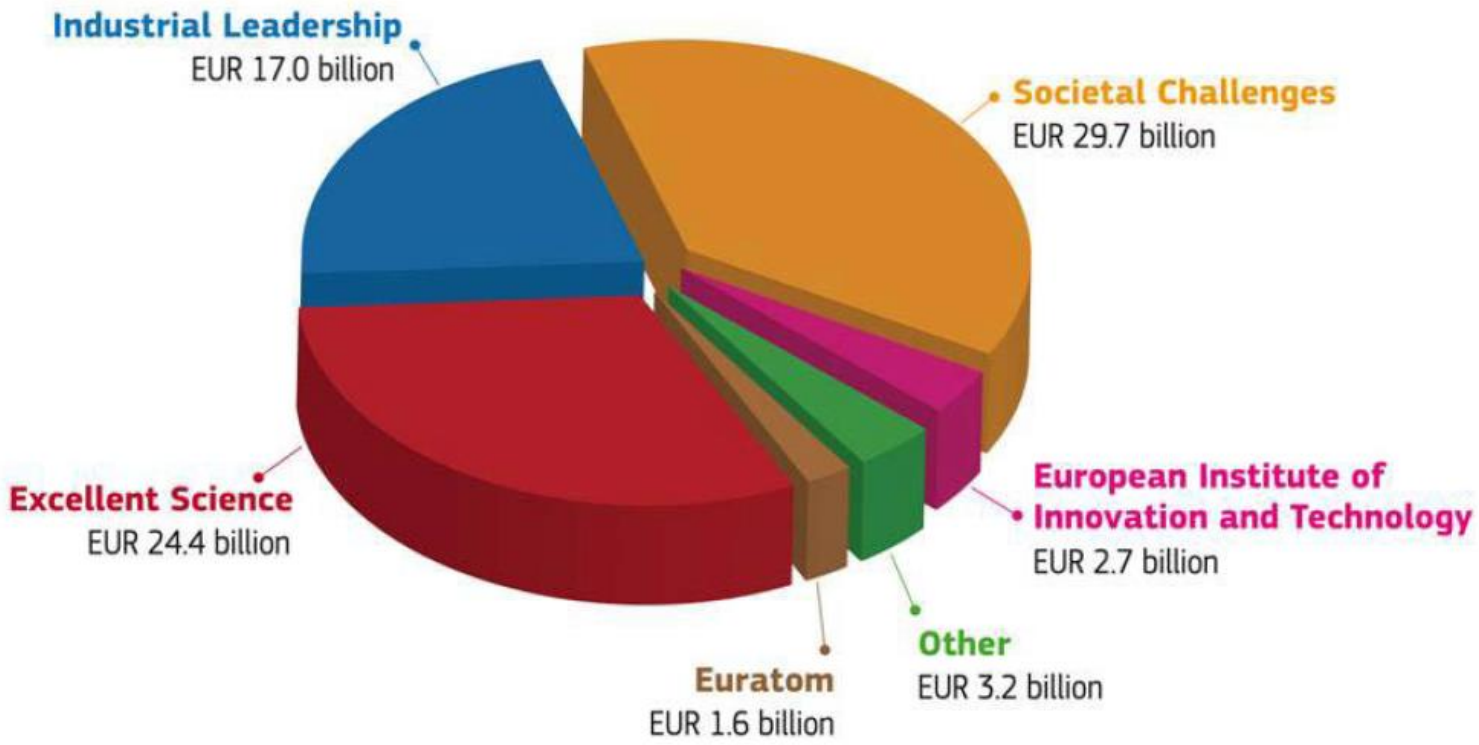
*The 7th Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)

How has EU Research and Innovation funding evolved over recent years?



European Commission

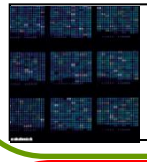
HORIZON 2020 BUDGET (EUR 78.6 billion, current prices)



FP7 KBBE Biotech


Industrial biotechnology


Environmental biotechnology


Emerging trends in biotechnology


Novel sources of biomass and bioproducts


Marine and fresh-water biotechnology


Biorefinery

(2) H2020 LEIT Biotech

- Biotechnology-based industrial processes
- Boosting cutting-edge biotechnologies as future innovation drivers

- Innovative and competitive platform technologies

NEW

(3) H2020 SC2

Food security, sustainable agriculture, marine and maritime research and the bioeconomy

KET Biotechnology

Boosting cutting-edge biotechnologies as a future innovation driver

Development of emerging tools such as synthetic biology, bioinformatics, systems biology and exploiting the convergence with other enabling technologies such as nanotechnology (e.g. bionanotechnology) and ICT (e.g. bioelectronics).

BIOTEC 1 – 2014: Synthetic biology – construction of organisms for new products and processes
BIOTEC 2 – 2015: New bioinformatics approaches in service of biotechnology

Biotechnology-based industrial processes

Industrial biotechnology for competitive industrial products and processes (e.g. chemical, health, mining, energy, pulp and paper, textile, starch, food processing) and its environmental dimension.

BIOTEC 3 – 2014: Widening industrial application of enzymatic processes
BIOTEC 4 – 2014: Downstream processes unlocking biotechnological transformations
BIOTEC 5 – 2014/2015: SME-boosting biotechnology-based industrial processes driving competitiveness and sustainability

Innovative and competitive platform technologies

Development of platform technologies (e.g. genomics, meta-genomics, proteomics, molecular tools) to enhance leadership and competitive advantage in a wide number of economic sectors.

BIOTEC 6 – 2015: Metagenomics as innovation driver

Societal Challenge 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy

€ 3 851 Million

Calls for:

- **Sustainable Food Security (SFS)**
- **Blue Growth: Unlocking the potential of Seas and Oceans**
  - ✓ **Sustainably exploiting the diversity of marine life**
- **Innovative, Sustainable and Inclusive Bioeconomy (ISIB)**
  - ✓ **Sustainable and Competitive Bio-based industries**

Activity 2.4. Sustainable and competitive bio-based industries

2.4.1. Fostering the bio-economy for bio-based industries

2.4.2. Developing integrated biorefineries

2.4.3. Supporting market development for bio-based products and processes

Most activities related to sustainable and competitive bio-based industries as defined in the Horizon 2020 Specific Programme will be implemented through the* ***Joint Technology Initiative (JTI) on Bio-based Industries.*

ISIB Call (1)

Sustainable and competitive bio-based industries

- ISIB-5-2014: Renewable oil crops as a source of bio-based products
- ISIB-6-2015: Converting CO2 into chemicals
- ISIB-7-2014: Public procurement networks on innovative bio-based products

- **Activities proposed are complementary to those undertaken by the JTI, and target the supply side of the biomass to bioproducts value chain through the development of innovative feedstocks, research and innovation on next generation bio-refineries using CO_2 as direct feedstock, and supporting markets for bio-based products.

The presentation shall neither be binding nor construed as constituting commitment by the European Commission

Topic ISIB-5-2014 Renewable oil crops as a source of bio-based products – 1/3

Specific challenge: At present, oils crops are already an important source of innovative bio-based products such as bioplastics, lubricants, paints or added value fine chemicals. With the opening of new markets for these products the demand for oil crops is increasing. The challenge for Europe here is to sustainably match this demand without increasing our dependency on external biomass or competing with food production or increasing environmental pressure (particularly on soil and land). The development of dedicated and optimised multipurpose oil crops, the full use of the biomass in a cascade approach as well as the environmentally sound and sustainable use of natural resources should be key to meet this challenge.

Topic ISIB-5-2014 Renewable oil crops as a source of bio-based products – 2/3

Scope: Proposals should focus on development of dedicated and optimised oil crops adapted to industrial needs. Research should encompass gene discovery and optimisation through to full use of biomass oil including vegetative tissues and ensure efficient exploitation of the residual biomass through modern breeding technologies. It should consider the environmental aspects (e.g. organic matter levels, biodiversity impact and water needs) of such full use of biomass. It should also ensure development of oil production with sufficient quantity, quality and homogeneity. The concepts should take into account the cascading approach and focus on added value products. A strong participation of SMEs should contribute to the realisation of the expected outcomes. Proposals should include demonstration activities to assess the techno-economic viability of the proposed concepts. The Technology Readiness Levels covered by the projects should range from **4 to 6**; please see part G of the general Annexes. The overall economic, social and environmental sustainability issues as well as its Life Cycle Assessment should also be critical elements.

The Commission considers that proposals requesting a contribution from the EU in the range of **EUR 10 million** would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Topic ISIB-5-2014 Renewable oil crops as a source of bio-based products – 3/3

Expected impact:

☐ Broadening the range of suitable oil feedstock candidates with optimally-lowered resource inputs and developing economically viable and sustainable, eco-friendly end bio-based products

☐ Measurable improvement of critical aspects along the value chain from the cultivation issues, to optimisation of desired biochemical parameters and extraction of oils and other biomolecules, to improved valorisation of the raw materials, to allow development of industrial end products.

☐ Contribution to European policy initiatives, including the EU Bioeconomy strategy and the EU Innovation Policy as well as to other related policies such as Lead Market Initiative on bio-based products.

Type of action: Research and innovation actions

Research and innovation actions

Description: Action primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment.

Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

Funding rate: 100%

Technology readiness levels (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- ☐ TRL 1 – basic principles observed
- ☐ TRL 2 – technology concept formulated
- ☐ TRL 3 – experimental proof of concept
- ☐ TRL 4 – technology validated in lab
- ☐ TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- ☐ TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- ☐ TRL 7 – system prototype demonstration in operational environment
- ☐ TRL 8 – system complete and qualified
- ☐ TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

ISIB-5-2014 Submission Process

Stage 1: *2014-03-12 17:00:00* *Page limit: 15 pages*

Stage 2: *2014-06-26 17:00:00* *Page limit: 70 pages*

Evaluation Criteria:

For the evaluation of first-stage proposals under a two-stage submission procedure, only the criteria 'excellence' and 'impact' will be evaluated. Within these criteria, only the aspects in bold will be considered. The threshold for both individual criteria will be 4. For second-stage proposals the threshold for individual criteria is 3. The overall threshold, applying to the sum of the three individual scores, is 10.

Participant Portal Self Evaluation Form:

http://ec.europa.eu/research/participants/data/ref/h2020/call_pte f/ef/h2020-call-ef-ria-ia-csa_en.pdf

Thank you for your attention!

Horizon2020:
ec.europa.eu/research/horizon2020

Bioeconomy:
ec.europa.eu/research/bioeconomy

Bio-based Industries consortium:
http://biconsortium.eu/

Horizon2020 on Participant Portal (e.g. evaluation guide):
http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

Topic ISIB-5-2014 Submission:
http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2294-isib-05-2014.html#tab3

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