

First2Run

Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production

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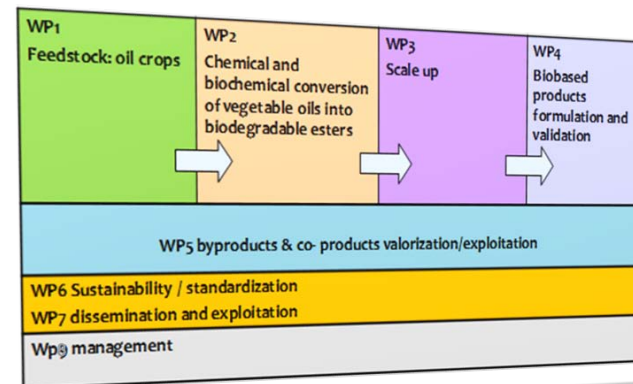


AGENDA

- 🌀 Facts & Numbers
- 🌀 Scope & Objectives
- 🌀 Consortium
- 🌀 Macro objectives
- 🌀 Impacts
- 🌀 BBI_JU: opportunities and potentialities
- 🌀 **Website: www.first2run.eu**

FACTS & NUMBERS

- ❑ Horizon 2020 / BBI-JU; **Call: H2020-BBI-PPP-2014-1**
- ❑ Topic: BBI.VC3.F1/ Type of action: **BBI-IA-FLAG**
- ❑ Action type: **innovation Action**
- ❑ **6 partners** from **4 different countries**
- ❑ The total effort in the project is relevant, being **1.665 MMs** with a total **eligible cost of 25.022.688,75 €** and **around 30 mil €** of estimated Additional Activities (Granted: 16.995.882,00 €)



SCOPE & OBJECTIVES

The **FIRST2RUN** project aims at demonstrating the technical, economic, environmental and social sustainability at pre-industrial/large scale (TRL8) of a value chain in which **low input and underutilized oil crops (i.e. cardoon) grown in arid and marginal lands** and not in competition with food nor feed, are exploited for the **extraction of vegetable oils to be further converted into bio-monomers (mainly pelargonic and azelaic acids) as building blocks for high added value bioproducts (biolubricants, cosmetics, bioplastics, additives)** through the integration of chemical and biotech processes.

1. Agronomic objectives

2. Industrial objectives

3. Energetic objectives

4. Environmental objectives

5. Social objectives

- Challenges and Innovations
- Areas of research
- Further investments

MACRO OBJECTIVES

- ④ Large scale cultivation of cardoon crop with **strong involvement and support of local farmers** (with dedicated contracts)
- ④ Realization of a **first of its kind biorefinery integrated in the territory** for the production of:
 - ④ 10 kton/year of **azelaic acid**, 30 kton/year of **azelate based biopolyesters** and 50 kton/year of **starch complexed or compounded biopolyesters**;
 - ④ 10 kton/year of **pelargonic acid** and 10 kton/year of **pelargonate-based esters** to be used in **biolubricants, plasticizers and cosmetics**
 - ④ 2,5 ktonnes of **glycerol** to be used as **pelargonate esters in cosmetics**.
- ④ Application and testing of the developed biobased materials for the formulation of **biobased products (biolubricants, bioplastics and cosmetics)**.
- ④ **Valorization of downstream process by- and co- products**, such as **energy** generation plant using the lignocellulosic fraction, extraction panel for **feed** application with positive impact of local farmers and economy as well as the use **compost** (coming from the composting of bioplastics) to improve soil fertility

CONSORTIUM

SIP:

- ❑ Formulation and validation of biobased lubricant

SOLIDQZ:

- ❑ Products recovery: Feasibility tests, standards and industrial scale evaluation

NOVAMONT:

- ❑ Management and Coordination,
- ❑ Field management,
- ❑ Implementation of catalytic and bio-catalytic conversion of vegetable oil,
- ❑ Demonstration activities at the biorefinery site,
- ❑ Biobased materials formulation;
- ❑ Conversion of by and co-product;
- ❑ Standardization and Dissemination & Exploitation

BIOPHIL:

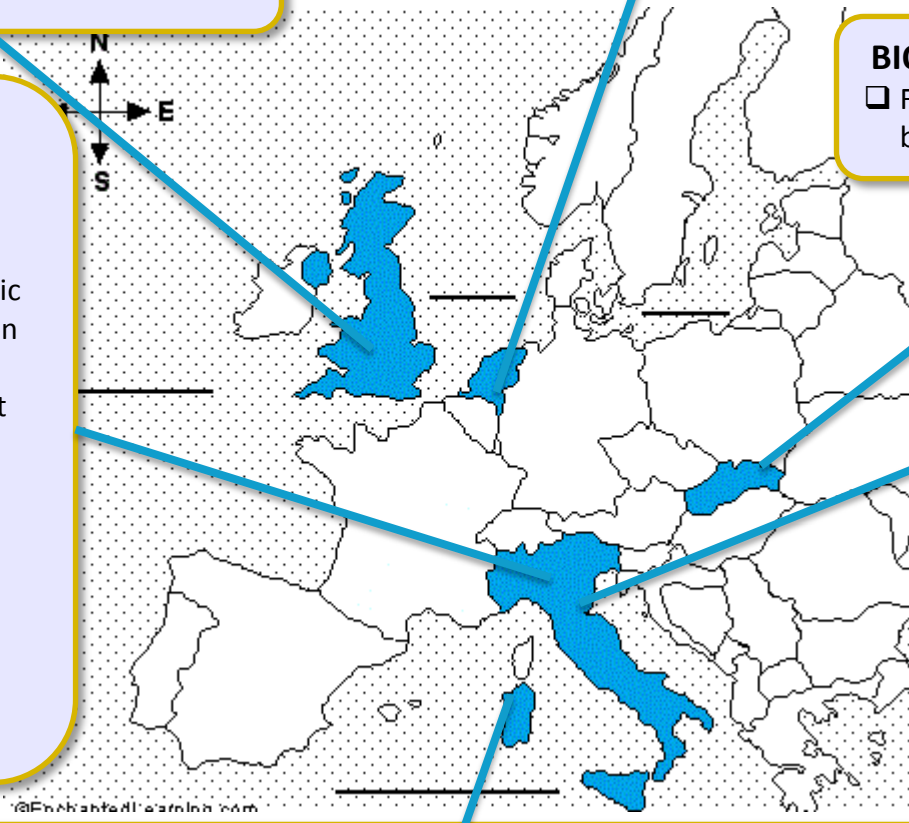
- ❑ Formulation and validation of biobased cosmetics

UNIV. di Bologna:

- ❑ Development of catalyst for oxidative cleavage

MATRICA:

- ❑ Catalytic and bio-catalytic esterification processes of carboxylic acids with polyols,
- ❑ Demonstration of biobased monomers production up to 20,000 ton/year,
- ❑ Demonstration of biodegradable esters of pelargonic acid production up to 10,000 ton/year
- ❑ Recovery and valorisation of residual lignocellulosic biomass



EXPECTED IMPACTS AT WIDER EU SCALE

- ④ **Transferring the cardoon model** to enhance the potential **valorization of currently unexploited 3500 ha of marginal lands**, which results in at least 0.375 ton/ha of vegetable oil to be processed to bioproducts and 16.2 MWth of installed thermal power from the energy generation plant using the lignocellulosic fraction
- ④ Potential **revitalization of the local economy** by reconverting old industrial sites and through the creation of skilled green jobs: **estimated 60 new skilled jobs every kton of produced bioplastics**, taking into account the **whole value chain**, from **agriculture to the end life of the final products** (i.e municipalities, composting plants)

BBI-JU: OPPORTUNITIES & POTENTIALITIES

OPPORTUNITIES

- 🌀 Main players in the biobased sector are represented
- 🌀 Active dialogue on bioeconomy with the private/public as well as the main players in the sector
- 🌀 “Biobased” dedicated work programmes with long term priorities

POTENTIALITIES

- 🌀 Research and/or exchange of good practices for standards and norms to boost the biobased sector
- 🌀 Aligning Investment *versus* work programs timeframes
- 🌀 Support and promotion of an efficient and synergic use of European Structural and Investment Funds (ESIF) for full industrialization (TRL9)



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