



WELCOME TO FIRST2RUN

Welcome to the second issue of the newsletter about the project **FIRST2RUN** – Flagship demonstration of an Integrated bioRefinery for dry crops Sustainable exploitation **T**owards biobased materials **p**roduction.

The **FIRST2RUN** project aims at demonstrating the techno, economical and environmental sustainability at industrial scale of a first-of-kind value chain where low input and underutilized oil crops (i.e. cardoon) grown in arid and marginal lands and not in competition with food or feed. These kinds of renewable raw materials 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 biotechnological processes.

A SEMESTER FULL OF EVENTS

The last semester saw an increase of different communication activities with the aim to disseminate the project and its main results. Last July, it took place the 2^o semestral consortium meeting, a good opportunity to meet the other partners, share ideas and knowledge. Then the autumn was full of European events. In particular, we collaborated with BBI-JU (Bio-Based Industries Joint Undertaking), the public/private partnership between the European Union and the Bio-based Industries Consortium (BIC) in order to show the project and its potential:



6/7 OCTOBER 2016 - [IV EUROPEAN BIOECONOMY CONGRESS LODZ | POLAND](#)

A congress with the aim to create a friendly atmosphere around the innovative, effective and competitive approach to activities intended to support the development of bioeconomy. A good opportunity to bring together participants engaged in the development of bioeconomy in the European Union and intensify the collaboration between regions of Central and Eastern Europe.



17 OCTOBER 2016 - [BBEC 2016 - BRATISLAVA BIOECONOMY CONFERENCE | SLOVAKIA](#)

A high level conference as a part of the European Bioeconomy Strategy and as an important input to the future orientation of the European Bioeconomy Strategy. During the conference BBI JU organized a walking exhibition, an innovative and engaging way to show how everyday products can have biobased ingredients, and how the application of biobased technologies offers new opportunities for developing the bioeconomy in Europe: from biodegradable carrier bags to high performance biolubricants.



18/20 OCTOBER 2016 - [EFIB - THE EUROPEAN FORUM FOR INDUSTRIAL BIOTECHNOLOGY AND THE BIOECONOMY | SCOTLAND](#)

A conference with the aim to bring together a global audience, from the business and policy areas of the industrial biotech and the biobased economy, in order to discuss and elaborate on future developments and policy initiatives. During the event **FIRST2RUN** was presented as one of the successful projects that have received funding in order to stimulate growth and employment by developing the circular economy.



09 NOVEMBER 2016 - [ECOMONDO 2016 - HORIZON 2020 AND THE BIO-BASED INDUSTRIES JOINT UNDERTAKING \(BBI JU\): OPPORTUNITIES FOR JOBS AND GROWTH IN THE MEDITERRANEAN REGION | ITALY](#)

A conference with the aim to identify common challenges and opportunities for the Bioeconomy and the biobased industries in the Mediterranean Region and analysing the R&I potential offered by Horizon 2020 and the BBI JU. The conference was organized during Ecomondo, the largest fair in the Euro-Mediterranean area dedicated to the sustainable development. A meeting place where new models for economic growth can be compared through innovation and clean technologies.



Horizon 2020
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FIRST2RUN: MAIN RESULTS ACHIEVED



Within the first 18 months of the project we obtained significant results especially for the activity related to the oil crops production and management (WP1) and chemical and biochemical conversions of vegetable oils into biodegradable esters (WP2). In particular:

- Study on the availability on the territory of oil source with high potential of application in the bio-based sector
- Optimized agronomic protocols for cardoon crop cultivation and fields management
- Optimized protocols for harvesting, separation and storage
- Optimized system for oil extraction from cardoon seeds and qualitative assessment of oil and cake
- Report on the catalysts preparation
- Optimized protocols of oxidative cleavage of vegetable oil
- Market analysis of biobased materials and products

THE ITALIAN STRATEGY OF BIOECONOMY

In November 2016 the Italian government launched the [Italian Bioeconomy Strategy](#) promoted by the Ministry for the Economic Development, the Ministry of Agriculture, Food and Forestry, the Ministry of Education, University and Research, the Ministry of the Environment and Protection of Land and Sea, the Committee of Italian Regions, the Agency for territorial cohesion and the Italian Technology Clusters for Green Chemistry and AgriFood.

Its aim is to provide a shared vision of the economic, social and environmental opportunities and challenges associated with the carrying out of an Italian Bioeconomy based on longer, more sustainable and locally rooted value chains. It also represents a significant opportunity for Italy to enhance its competitiveness and role in promoting sustainable growth in Europe and in Mediterranean basin.

The strategy also mentions **FIRST2RUN** as the European flagship project based on the reconversion of industrial sites affected by the crisis into biorefineries for the production of bioproducts and biochemicals from renewable sources. In particular, the document stresses the project's positive impacts on employment, environment, product profitability and integration with oil-based products to enable greater specialisation and competitiveness.

PARTNERS SPEAK OUT

Why the choice of cardoon as a 'model crop' for the biorefinery?

The cardoon has been selected for the development of an agroindustrial value-chain in Sardinia for different reasons: it is a low input dry crop, well adapted to the Mediterranean area that can offer an added value throughout the value-chain. New income opportunities for farmers, a cascading use of resources which enhances all the cardoon components: not only vegetable oils for the industrial production of innovative chemical intermediates but also by- and co- products (i.e. energy, proteins for animal feed and molecules to be used in the field of nutraceuticals) for a fully integrated biorefinery approach.



Michele Falce - WP1 leader (Feedstock: oil crops), Novamont

PARTNERS SPEAK OUT

What is the University of Bologna's role in the project?

The role of the "Catalytic Processes Development" Team, Department of Industrial Chemistry "Toso Montanari" of Bologna University, is to investigate on the transformation of the oil, extracted from cardoon crops, into monomers for biopolymers synthesis. More in detail, the oxidative cleavage of triglycerides into C9 acids and esters is one crucial step along the value chain; the challenge here is to develop an innovative catalyst, showing both optimal performance and low environmental impact.



Prof. Fabrizio Cavani - Alma Mater Studiorum, University of Bologna

The total effort of the Project is relevant, being **1.665 MM** with a total eligible **cost of 25.022.688,75 €** and **around 30 mil €** of estimated Additional Activities (Granted: 16.995.882,00 €)

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