



Plenary meeting

Meeting Minutes

Meeting Details

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Project Contractual Details

Project Title:	Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production
Project Acronym:	FIRST2RUN
Grant Agreement No.:	669029
Project Start Date:	1 July 2015
Project End Date:	30 June 2019
Duration:	48 months
Supplementary notes:	This document is only for use among the Partners of FIRST2RUN

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Agenda

Time		Topic	Speaker / Moderator
10h00	10h15	Welcome Message by the coordinator	Novamont
		WP Session WP leaders are asked to present a more detailed look on Work Packages (30 min each)	
10h15	10h45	WP1 – Feedstock: oil crops	Novamont
10h45	11h15	WP2 – Chemical and biochemical conversions of vegetable oils into biodegradable esters	Matrica
11h15	11h30	<i>Coffee break</i>	
11h30	11h40	WP3 – Scale up	Matrica
11h40	11h50	WP4 – Biobased products formulation and validation	Biophil
11h50	12h20	WP5 – By-products and co-products valorization/exploitation	Matrica
12h20	13h00	WP6 – Sustainability / standardization	Novamont
13h00	14h00	<i>Lunch</i>	
14h00	14h30	WP7 – Dissemination and exploitation (Review Grant Agreement and Consortium Agreement), Including Q&A Session	Novamont
14h30	15h00	WP8 – Management and Coordination	Novamont
15h00	15h30	Next steps and conclusions	All
15h30	16h30	Novamont Labs tour	
16h30		End of the meeting	

List of Participants

Name of Organisation	Attendee (Surname, Name)
ELEMENTI	Federica Carlomagno



D'APPOLONIA	Andrea Leoncini
D'APPOLONIA	Elisabetta Noce
MATRICA	Piergiorgio Sedda
MATRICA	Giovanni Sanna
NOVAMONT	Cecilia Giardi
NOVAMONT	Sara Ambrosio
NOVAMONT	Luigi Capuzzi
NOVAMONT	Francesca Digioia
NOVAMONT	Gian Tomaso Masala
NOVAMONT	Francesco Razza
NOVAMONT	Francesco Fedeli
NOVAMONT	Alessandro Pirocco
NOVAMONT	Michele Falce
NOVAMONT	Sebastià Gestí Garcia
SIP	Simon Lawford
SIP	Mike Peters
NOVAMONT	Flavia Vigoriti
SOLIQZ	Nicolaas Viets
SOLIQZ	Dirk Verdoes
UNIBO	Andrea Vassoï
UNIBO	Cristina Carretti
UNIBO	Stefania Solmi
UNIBO	Fabrizio Cavani

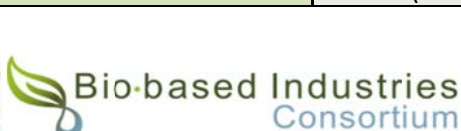
WP Plenary Session

<i>Subject</i>	<i>Presented Topics</i>	<i>Next steps (M7-M12)</i>
Presentation of the agenda	<ul style="list-style-type: none"> With the presentation of the agenda by Luigi Capuzzi (Novamont), the meeting starts at 9 a.m. (instead of 10 a.m. as previously planned) During the day some minor changes within the agenda have been occurred. 	
WP1 - Feedstock: oil crops Please refer to ppt: "F2R_WP1_M6final"	<ul style="list-style-type: none"> Michele Falce (Novamont) presents an overview on WP1 and the relative main and specific objectives Cultivation of <i>Cynara cardunculus L.</i> in the North-West of Sardinia (Italy) has been set up Cultivation protocols (e.g. soil preparation, sowing, weed control, fertilization, etc) and 	TASKS: <ul style="list-style-type: none"> T1.1 <ul style="list-style-type: none"> Application of agronomic protocol previously optimized Starting of the validation and optimization of



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	<p>machines used (for tillage, seedbed preparation, etc) are presented</p> <ul style="list-style-type: none"> • In favorable conditions (e.g. good rainfalls and sufficient soil depth) yields up to 15-17 t/ha/year can be obtained • The protocols for harvesting will be described more deeply within D1.3 (due at M12), which will include also considerations on the best harvesting period (i.e. from July to September) and on the improved machines (e.g. with a new flexible mower able to avoid rocks, thus preventing damages during harvesting operations) • The activities to be included within D1.4 (which will be submitted at M12) are still in progress: in this framework, block flow diagram of oil extraction process and preliminary mass balances (i.e. about 25 kg of oil starting from 150 kg of seeds) are presented • Regarding the cake derived from seed pressing and oil extraction, it will be characterized in terms of proteins, starch, energy, fibers and the possible presence of contaminants or nutritional counter indications • D1.1 was already submitted at M3 • Based on different criteria for selection of additional oil sources, after preliminary analysis involving different oil crops, sunflower (mainly located in Center Italy) and rapeseed (mainly located in North Italy) have been identified as interesting sources for additional oil to be exploited for the implementation of the project activities in the initial steps when cardoon fields are in starting phase and the productivity is still low • As regards the safflower, it shows good features for its application in bio-based sector and its cultivation in dry lands in Mediterranean regions, although it is not 	<p>harvesting, separation and storage protocols</p> <ul style="list-style-type: none"> • T1.2 <ul style="list-style-type: none"> ○ Optimization of milling processing conditions (reducing % of residual oil) ○ Evaluation of other oil extraction processes • Next Deliverables: <ul style="list-style-type: none"> ○ D1.3 Optimized protocols for harvesting, separation and storage (M12) ○ M12 - D1.4 Optimized system for oil extraction from cardoon seeds and quali-quantitative assessment of oil and cake (M12).

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	<p>so spread along Europe, also because of difficult agronomic protocols</p> <ul style="list-style-type: none"> ➤ Deliverables: <ul style="list-style-type: none"> - D1.1 Report on the availability on the territory of oil sources with high potential of application in the biobased sector(M3) - D1.2 Optimized protocols for cardoon crop cultivation and fields management (M6) ➤ PPT “F2R_WP1_M6final” 	
<p>WP2 - Chemical and biochemical conversions of vegetable oils into biodegradable esters</p> <p>Please refer to ppt: “F2R_WP2_M6final”</p>	<ul style="list-style-type: none"> • Giovanni Sanna (Matrica) presents an overview on WP2 and the relative main and specific objectives • Within the Subtask 2.1.1. , different reactors (i.e. autoclave, fixed bed, air-lift) and catalysts (i.e. Pt, Ni, Cu, Pd) have been tested for the selective hydrogenation of polyunsaturated fatty acids, obtaining the best results for the air-lift reactor and Palladium-based catalysts • Preliminary tests have been carried out with sunflower oil, obtaining satisfied results in terms of geometrical selectivity after the hydrogenation • Sanna highlights that further activities need to be focused on avoiding the leaching of catalysts, also because every trace of Palladium has to be removed from the products (i.e. no Pd in the next steps is allowed) • Dead zones in the reactors have been identified in the beginning and then removed, thus obtaining an optimal configuration of the reactor • Prof. Fabrizio Cavani from UniBo presents the activities related to the preparation of catalysts for oxidative cleavage reaction (Subtask 2.1.2) • A 100 mL autoclave has been used for the 	<ul style="list-style-type: none"> • T2.1 <ul style="list-style-type: none"> ○ Optimization of the Palladium based catalyst system. • T2.1.2 <ul style="list-style-type: none"> ○ Set up of the reaction apparatus for the testing of oil feed ○ Preparation and characterization of Fe oxide-based (+ W) catalysts for oxidative cleavage ○ Reactivity testing in oxidative cleavage of dihydroxymethylolate • T2.2 .1 <ul style="list-style-type: none"> ○ Hydrogenation tests on air-lift using high oleic sunflower oil as feedstock; ○ Hydrogenation tests on air-lift using cardoon oil as feedstock; • T2.3? • T2.2 (NEXT YEAR)



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	<p>experiments, whose main aim was to substitute the Co-based catalyst responsible of the final oxidation step from DSA (i.e. 9,10 - dihydroxystearic acid) to pelargonic and azelaic acids</p> <ul style="list-style-type: none"> • In particular, the studies have been focused on the reference system based on the oxidative cleavage of methyloleate to mainly obtain pelargonic acid and methylazelate (Novamont's patent) • Although gold will not be used for the oxidative cleavage in FIRST2RUN, Au-based catalysts have been tested to demonstrate as benchmark • Iron-based catalysts have been preliminarily identified as good alternatives to replace cobalt-based catalysts in the oxidative cleavage reaction • After preliminary tests with model reactants CHD for Fe-salts catalysts, no formation of azelaic acid has been observed in no one of these tests • Different possible interpretation of such results: no catalytic activity, different operational conditions required by the Fe and the Co, etc. • From literature it has been observed that probably the real active phase is a complex W/Co (W deriving from the first step of the reaction, i.e. from methyloleate to mainly methyldihydroxystearate) • According to this hypothesis, experiments will be carried out to test catalysts based on Fe oxides plus W <p>Giovanni Sanna (Matrica) presents the activities foreseen and objectives related to Task 2.2 showing some preliminary results about the optimization of the selective hydrogenation reactions of oils describing the process conditions used in the air lift reactor installed by Matrica</p>	<p>PLANNING)</p> <ul style="list-style-type: none"> ○ May/June 2016: First feasibility tests on purification of azelaic acid in SoliQz' 200 m2 ATEX pilot plant in Rotterdam (NL) ○ September/October 2016: First feasibility tests of purification technologies at Matrica's plant <p>Next Deliverables:</p> <ul style="list-style-type: none"> ○ D2.1 Report on the catalysts preparation (M9)



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	<ul style="list-style-type: none"> • Dirk Verdoes (SoliQz) presents SoliQz and the activities concerning separation and purification of azelaic acid (AA), carried out by means of melt crystallization coupled with an hydraulic wash column • Preliminary tests have been performed at small scale (100 mL double-walled crystallizer) to evaluate different parameters, also regarding morphology and size of AA crystals • New pilot plant in SoliQz is foreseen to be ready to start activities in the next months • Giovanni Sanna (Matrica) presents the activities foreseen and objectives related to Task 2.3 (which will start at M9) <p>➤ PPT “F2R_WP2_M6final”</p>	
WP3 - Scale up “F2R Wp3_m6final”	<ul style="list-style-type: none"> • Giovanni Sanna (Matrica) presents an overview on WP3 and the relative main and specific objectives • Different pictures of Matrica’s pilot plant are presented to show..... • In particular, distillation unit could be used to simulate and test the separation and purification processes of pelargonic and azelaic acids <p>➤ PPT “F2R Wp3_m6final”</p>	WP3 activities will start at Month 12
WP4 - Biobased products formulation and validation “F2R Wp4_final”	<ul style="list-style-type: none"> • Federica Carlomagno (Elementi srl) presents an overview on WP4 and the relative main and specific objectives • Luigi Capuzzi (Novamont) presents the activities foreseen and objectives related to Task 4.1 • Market opportunities for bioplastics, also associated to legislative aspects (e.g. Italian and French regulations concerning biodegradable bags), are presented • Mike Peters (SIP) presents the activities foreseen and objectives related to Task 4.2 • After a brief presentation of SIP’s core 	WP4 activities will start at Month 18



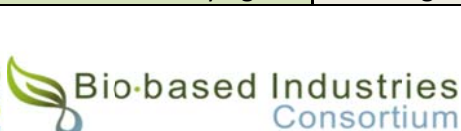
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	<p>business, an overview on main applications of esters in EU lubricants market is presented</p> <ul style="list-style-type: none"> • Preliminary tests have been performed, characterization tests will be carried out aiming to assess the features required for the lubricants used in specific target market sectors (i.e. the most relevant ones for Matrica’s esters) • Furthermore, SIP pointed that a legislative effort at EU level would be necessary to foster the use of biodegradable lubricants • Federica Carlomagno (Elementi srl) presents the activities foreseen and objectives related to Task 4.3 • After a brief presentation of Elementi’s business and know-how, an overview on Elementi’s activities within FIRST2RUN is presented (i.e. activities previously foreseen for BioPhil) • In addition, Mrs Carlomagno explains that among the aims of Elementi’s activities, there will not be e.g. simply to substitute palm oil-based esters within cosmetics formulation, but also to improve features of cosmetic products themselves • MRs. Carlomagno outline also that all main capabilities, engagement and commitment to the project will be preserved within the passage from Biophil to Elementi <p>➤ PPT “F2R Wp4 _final”</p>	
<p>WP5 - By- and co-products valorization and exploitation Please refer to: “F2R_WP5_m6final”</p>	<ul style="list-style-type: none"> • Piergiorgio Sedda (Matrica) presents an overview on WP5 and the relative main and specific objectives • Piergiorgio Sedda (Matrica) presents also the activities foreseen and objectives related to Task 5.1 • Characterization tests of the biomass residues have showed lower heating value and higher ash content compared to a traditional oil-based fuel, as well as high 	<p>TASKS:</p> <ul style="list-style-type: none"> • T5.1 <ul style="list-style-type: none"> ○ Purchase of long-term supply materials ○ Future activities will be focused on the definition of the different steps of the combustion process as well as of the



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	<p>sulphur and chloride contents</p> <ul style="list-style-type: none"> • All these challenges will have to be faced during the design of the best combustion plant's configuration • Among the different technologies analyzed, Mobile Grid technology has shown good characteristics for the purposes of the project (e.g. good monitoring on temperature profile and on CO formation during the combustion) • Preliminary material balances about combustion plant have been set up • Francesco Fedeli (Novamont) presents the activities foreseen and objectives related to Task 5.2 • First lab-scale tests have been performed in order to obtain a protein-rich panel to be used as animal feed, starting from the panel obtained by cardoon seeds after oil extraction step • During these experiments, proteins have been characterized, showing their suitability to use the seed panel as animal feed • In addition, a chemical purification protocol has been defined • Foreseeing future tests on sheep, 80 kg sample has been delivered to Prof. Cannas from University of Sassari <p>➤ PPT "F2R_WP5_m6final"</p>	<p>materials to be used for each component of the combustion chamber</p> <ul style="list-style-type: none"> • T5.2 <ul style="list-style-type: none"> ○ By mean of Animal New Tech srl (i.e. a spin-off of the University of Sassari), tests on sheep will be performed in Sardinia, in order to assess the opportunity to use the protein-rich seed panel as animal feed
<p>WP 6 - Sustainability and standardization Please refer to ppt: "WP6_final"</p>	<ul style="list-style-type: none"> • Francesco Razza (Novamont) presents an overview on WP6 and the relative main and specific objectives • In a preliminary phase, different sources of data (from EcoInvent, etc) have been consulted regarding oil production starting from different oil crops produced in different countries (functional unit: 1 kg of oil), • High impacts in term of CO₂ emissions observed have been associated to Land 	<ul style="list-style-type: none"> • T6.1 - End-users of biobased monomers will be reached in the next weeks in order to carry out the market analysis to be included within D6.1 <p>Next Deliverables:</p> <ul style="list-style-type: none"> ○ D 6.1 Market Analysis

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	<p>Use Change (highest emissions for rapeseed from Australia and soybean from Brazil)</p> <ul style="list-style-type: none"> • Different issues related to the databases used for consultations have been identified, thus a deeper interpretation and analysis of such data will be conducted • Also because of these reasons, Mr Razza explains that it would be worth to use primary data instead of secondary ones, in order to guarantee more robustness in the results • For further clarifications on methodologies which will be applied to perform WP6 activities, you can refer also to the presentation of the “Workshop on Sustainability Indicators” led by Francesco Razza (Novamont) during the first day of the present meeting <p>➤ PPT “WP6_final”</p>	<p>of biobased materials and products(M12)</p>
<p>WP 7 - Dissemination and exploitation Please refer to ppt: “WP7_200116_FINAL”</p>	<ul style="list-style-type: none"> • Flavia Vigoriti (Novamont) presents an overview on WP7 and the relative main and specific objectives • Two deliverables have been already submitted: D7.1 - Project website (due at M3) and D7.2 - Leaflet of the project (due at M6) • An overview on the project website as well as some pictures of the leaflet and of the roll-up of the project are presented • Along with a summary of the procedures required in the dissemination activities (e.g. regarding scientific publications, notifications, etc), Mrs Vigoriti shows a Dissemination Tracking chart aiming to collect continuously during the project inputs from partners regarding potential dissemination events in Europe • In this framework, a list with the most interesting events identified up to now is presented • Further dissemination activities have been 	<p>TASKS:</p> <ul style="list-style-type: none"> • T7.1 <ul style="list-style-type: none"> ○ Update of leaflets will be done in order to substitute BioPhil with Elementi ○ The first release of First2Run newsletter will follow early in order to communicate, every six months, the project progress to relevant stakeholders and the EC • T7.2 <ul style="list-style-type: none"> ○ Templates for collecting information will be distributed among partners responsible of the different KERs (before the next meeting, in

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	<p>carried out by means of different social networks</p> <ul style="list-style-type: none"> • The next plenary meeting will be in July 2016 in Porto Torres (Matrica), aligned with a BBI JU/BIC event • In view of defining an exploitation plan (e.g. by identifying and quantifying partners' interest in each Key Exploitable Result) the preliminary project's exploitable results are presented • In this framework, a two-days Exploitation Strategy Seminar will be carried out in view of finalizing the draft plan for use and dissemination of foreground at M12 in order to effectively collect feedbacks from partners about KERs. It will be evaluated to involve external experts leveraging on the service provided by EC for H2020 projects. • Mrs Vigoriti highlights that dissemination and exploitation activities are of strategic importance considering that FIRST2RUN is an industry driven project and the first flagship project funded under BBI JU <ul style="list-style-type: none"> ➤ PPT "WP7_200116_FINAL" 	<p>order to set up a preliminary characterization of the KERs)</p> <ul style="list-style-type: none"> ○ A dedicated Exploitation Strategy Seminar will be organized in order to consolidate the first assessment on KERs into the Plan for Use and Dissemination of foreground (D7.5) ○ In order to better perform such activities, the support of external experts will be asked ○ Further discussion with PO will be focused on the foreseeable duration required by the Seminar (1 day or 2 days) in order to set up the organization of such event (when and where it will be done, etc) <p>Next Deliverables:</p> <ul style="list-style-type: none"> • M12- D7.3 Draft Plan of communication and dissemination • M12 – D7.5 Draft plan for use and dissemination of foreground
<p>WP8 – Management Please refer to ppt: "F2R_WP8_final"</p>	<ul style="list-style-type: none"> • Cecilia Giardi (Novamont) invites partners to provide any other request of amendments (beyond the ones related to Elementi's involvement and SoliQz' s budget allocation), relating for example to the efforts needed in WPs for carrying out 	<p>TASKS:</p> <ul style="list-style-type: none"> • After the meeting, Novamont will circulate the Excel file on KPIs among the partners in



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	<p>the activities foreseen, WPs duration, etc</p> <ul style="list-style-type: none"> • Mrs Giardi presents the meeting between BBI JU and the Coordinators of funded projects which will take place on 2nd February • During such meeting, KPIs will be presented, on which the evaluation of the projects will be based on • An Excel file with some questions related to such KPIs has been distributed by BBI JU among Project Coordinators • Novamont will circulate this Excel file among partners in order to collect their feedbacks about such issues 	<p>order to collect their inputs and/or potential issues about these KPIs and their achievement within the projects</p> <ul style="list-style-type: none"> • Partners will have to return this Excel file with their feedbacks to Novamont within a few days, in order to allow the Coordinator to provide the Excel file filled in to BBI JU in within 27th January • The next plenary meeting will be in July 2016 in Porto Torres (Matrica), aligned with a BBI JU/BIC event • Information for the finalization of the amendment will be collected. Novamont will send to the consortium the request for new modifications and then consolidate the required modifications into a unique amendment that will be sent for comments to the PO.
<p>Conclusions</p>	<ul style="list-style-type: none"> • After this Plenary Meeting session, a guided tour in Novamont Laboratories is performed, as foreseen in the meeting agenda • The meeting is closed at 3.30 pm 	

