

URBIOFIN

THE PROJECT

The demonstration of an integrated innovative biorefinery for the transformation of Municipal Solid Waste into new biobased products

Each person in Europe generates an average of 500 kg of municipal solid waste (MSW) per year. Around 50 percent of this is **organic waste**, made up of carbohydrates, proteins and lipids, all of which represent useful **raw materials for creating valuable products**. However, until today this potential has not been fully exploited. Therefore, the URBIOFIN project will demonstrate the techno-economic and environmental viability of **converting the organic fraction of MSW into chemical building blocks, biopolymers and additives**.

The URBIOFIN Consortium is composed of 16 recognized key actors on the topics of municipal waste management, bioprocessing technologies, bioproducts and biomaterials, biofuels, industrial processes and integration.

The URBIOFIN project was kicked off in June 2017. Six months later, on 31st November and 1st December 2017, the consortium came together for the 2d general meeting to discuss the progress of the project.



URBIOFIN project partners attending the 2nd General Meeting at CIEMAT in Madrid

The 2nd General Meeting was hosted by the project partner CIEMAT, the Spanish Centre for Research on Energy, Environment and Technology. During two days the different URBIOFIN working groups presented their first results, exchanged knowledge and discussed ongoing and upcoming activities to properly prepare the next 6 months period. A site visit at CIEMAT facilities completed the inspiring project meeting.

OUR ACHIEVEMENTS DO FARE – FIRST RESULTS

To this end, a highly interdisciplinary work among the partners has been related to define the urban biorefinery design. In the frame of this activities, we successfully achieved our first milestone, the **characterization and selection of the best Organic Fraction of Municipal Solid Waste** that is the basis for further investigations in the project. For this the geographical origin or seasonality that can have an effect on the OFMSW composition were analysed and the results were based in a bibliographical analysis and a seasonal and geographical sampling plan. The so far tested samples fulfil the requirements for the URBIOFIN process needed for bioethanol and the anaerobic digestion process.

Next, a general layout of the biorefinery process was defined including a comprehensive concept of the downstream value-chain. After collecting data for the Life Cycle Assessment (LCA) analysis it was possible to obtain the global mass balance of the biorefinery, as well as a forecast for the expected volume of products that will be realised. Moreover, a preliminary cost analysis was performed. Several performance indicators were selected, which allow together with the LCA the evaluation of the environmental and socio-economic performance of the biorefinery process along the whole value-chain.

For the **conversion of OFMSW to bioethanol as building block for the production of bioethylene** a review of the current technology at the existing PERSEO Bioethanol plant was done. The objective was to define the adaption needs of the plant to comply with the new URBIOFIN biorefinery requirements. This work also resulted in plans to develop a new monitoring system.

In a next step the **conversion of OFMSW to VFAs for the production of PHA** will be demonstrated. The initial activities achieved in this field comprise the selection of an appropriate reactor unit to parametrize the different variables of the process. The first pilot plant is expected to be operative by summer 2018.

Besides the technical developments, all project partners started their communication activities towards various stakeholders. The project website has been launched in September 2017. A Twitter channel is alive since November 2017. Promotional material has been made available to the consortium to support the communication process. A central event for the URBIOFIN consortium was undoubtedly the participation at the BBJ JU Stakeholder Forum in Brussels.

BBI JU STAKEHOLDER FORUM IN BRUSSELS

URBIOFIN participated in the Bio-based Industries Joint Undertaking (BBI JU) Stakeholder Forum 2017 on 6th and 7th December 2017 in Brussels, Belgium. The event brought together the bio-based industries community and stakeholders from across every aspect of the bio-based economy in one venue to facilitate an open communication, encouraging cross-collaboration between them.



URBIOFIN Project Coordinator Caterina Coll (in the centre) together with representatives of some URBIOFIN Project Partners

Ideas and best practices were exchanged through inspiring keynotes, project exhibitions and networking sessions. The strategic direction of the BBI JU initiative and its achievements so far, the lessons learned and how future sector developments can be designed to address stakeholders concerns and views on the roadmap for a bio-based Europe were discussed during plenary sessions.

As one of 65 ongoing projects of the BBI JU initiative, URBIOFIN representatives presented their project to the bio-based industries community and other stakeholders. They explained how URBIOFIN will offer a new feasible and more sustainable scenario alternative to the current treatment of the OFMSW. We are fully dedicated to create chemical building blocks, biopolymers or additives using the biorefinery concept applied to MSW.

The next General Meeting has been proposed to be hosted by Wageningen University in June 2018.

MEET URBIOFIN

Are you interested to meet our partners? The next international events where to learn more about the project are:

SBFC - Symposium on Biotechnology for Fuels and Chemicals on 29 April – 2 May 2018, Clearwater Beach, FL|U.S., <http://www.simbhq.org/sbfc/>

EUBCE 2018 – 26th European Biomass Conference and Exhibition on 14 – 18 May 2018, Copenhagen| Denmark, <http://www.eubce.com/>

14th International Conference on Renewable Resources and Biorefineries on 30 May - 1 June 2018, Ghent| Belgium, <http://www.rrbconference.com/>

BIO World Congress on Industrial Biotechnology on 16 – 19 July 2018, Philadelphia| U.S., <https://www.bio.org/events/bio-world-congress>

Please feel free to contact the coordinator for more information: caterina@imecal.com

THE PARTNERS

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