

Contract No: **T2EDK-00189-Brew2Bio**

Title: **Production of sustainable biofuels and value-added products from municipal organic solid wastes of catering services**

Duration: **29/09/2020-28/09/2023**

**Abstract:**

Brew2Bio focused on the valorization of the organic fraction of municipal solid wastes (spent coffee grounds and orange peels generated after the extraction of orange juice in catering services) for the production of 2nd generation biofuels (e.g. green diesel) and bio-based materials for the production of sustainable adhesives suitable for wood-based panel applications. Brew2Bio aimed at developing a novel biorefinery starting with the fractionation of the waste streams into free sugars, antioxidant-rich extract, proteins, pectins and D-limonene. The remaining lignocellulosic biomass was thermochemically and enzymatically treated for the production of C5 and C6 rich hydrolysates. Mixtures of microbial lipids produced therefrom and lipids derived from spent coffee grounds were employed for the enzymatic production of biolubricants, while various technological approaches were evaluated for the production of 2nd generation biofuels based on combinations of hydrothermal liquefaction and catalytic hydrogenation. Proteins and pectins were utilized by CHIMAR for the production of bio-based adhesives. The said adhesives were evaluated in pilot scale production of wood-based panels.

The developed processes were evaluated via sustainability analysis including techno-economic evaluation and life cycle analysis.

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