

AgriForValor

On the 18th and 19th of October 2017, members of the Irish AgriForValor network participated in a biobased mission in Andalusia, Spain travelling to sites of interest across the region.

The trip was informative for visiting countries, including Irish AgriForValor members. A stand out factor from the trip, aside from the scale of olive production in Andalusia (Andalusia is the world's largest producer of olive oil) was the strength and size of agricultural and forestry cooperatives in the region. From speaking to biobased industries and cooperative members it was clear that this collaboration allows scale to be developed and enhances the negotiating power of the primary producers.

The trip began on the 18th of October with a visit to the GIESA Agroenergia Biogas Plant in Malaga. Commissioned in 2016 at a cost of €4 million, the plant has capacity to transform 65,000 metric tons per year of agricultural waste into 2,200,000 Nm³ of biogas, equivalent to 1,600 kW, and nearly 10,000 metric tons of compost. The business model is built on long term agreements of heat supply to nearby agri-food companies. The plant treats the waste generated in a number of farms and food industries in its immediate surroundings and the heat is piped to the consumers. The suppliers of the waste and

the consumers of the biogas are all located within a radius of 4 km from the anaerobic digestion plant.

Next the members visited the NATAC – Oleicola El Tejar near Cordoba, where olive mill residues are processed into value-added products and energy. At the site a cascading approach is applied with mechanical (centrifuge) and chemical (solvent) extractions used to extract remaining oil (about 1% from each extraction), and a solvent (hexane) extraction of polyphenols which are purified and sold to nutraceutical and functional food companies. After extraction, the residual biomass is combusted to generate electricity in a 25MW generator. The ash is returned to the olive grove sites as a nutrient source closing the loop.

Staying in Cordoba the group visited the Valoriza Energía plant which processes olive mill residues. The process extracts remaining residual oils for the food market with the residual biomass used for energy (elec-



James Gaffey and Noel Gavigan at the NATAC Biorefinery in Cordoba.

tricity and steam) production. The plant processes 75,000 tonnes of olive residues annually.

The next day, the partners visited a company called ENCE based in Huelva who have operated a 50MW biomass power generation plant since 2013 on a site previously used for pulp production. The plant was designed with capacity for 500,000 tonnes of forestry biomass but has since transitioned to cheaper agricultural sidestreams including straw, olive extracts and cotton shell. ENCE are currently expanding and adding an additional 40MW to the process.

The partners finally visited the Instituto de la Grasa Research Centre which was founded in 1947 with the aim of contributing to the improvement and development of the agri-food industrial sector. Since its founding, it has dedicated special attention to the olive sector, which is of great economic and social relevance in Andalusia. At the pilot plant a range of research activities in valorising biomass and residues are underway, including the production of protein isolates and hydrolysates with bioactivity, extraction of high value compounds from vegetable by-products through steam pre-treatment and purification and the production of biogas from residual materials.

The next AgriForValor Biobased Mission will be in the Netherlands on 14th-15th of February, and will include a visit to Wageningen University Biobased Innovation Centre. For more information contact james.gaffey@staff.ittralee.ie ■



The Biobased Innovation Centre at Wageningen University.