



Peeland Biobased Economy Park: Closing the loop locally

Development Plan Summary (Deurne, Netherlands)

Overview: Waste – including organic waste from households, foliage waste from horticulture, and animal manures – is sometimes transported hundreds of miles for processing, with waste streams often processed separately at different locations. Entrepreneurs in the town of Deurne in the South East of the Netherlands had a better idea. They plan to process all residual biomass from the region into raw materials and green energy by combining several waste processing techniques on a single site.

BBE Park is currently being developed by Energy Port Peeland (EPP), a cooperative aiming to make the Deurne region energy neutral and independent from fossil fuel. This idea revives a long tradition and industry of the Brabant Peel area for supplying biofuels (black peat) and green materials (grey peat as a straw substitute).

To limit transport and processing of local waste, Attero (a waste management company) is already composting the organic waste from households in the Deurne region at a local plant. EPP approached BioenNW partner SRE for assistance with this initiative. SRE works to connect projects and parties in the area of energy efficiency and renewable energy. Bringing all parties together and convincing suppliers to commit to supply for a few years has been a challenge.

A feasibility study, carried out by Ingenia (a local consultancy firm) showed that there would be sufficient local biowaste to benefit from economies of scale.

The BBE Park will initially start producing simple products (animal bedding, compost, dry fertilizer pellets and briquettes) with the view to produce more sophisticated products including building materials and bio-plastics.



Initially three technologies would be combined at the BBE Park: fermentation, drum screen separation and organic drying. Fermentation will be used to convert organic waste into biogas which once cleaned, will be further processed to produce green gas. This gas can in turn be either injected in the grid or more interestingly, compressed for use as fuel for road transport and inland shipping. The CO₂ produced can be used in greenhouses. The remaining digestate will be composted and separated to produce a fine fraction (to be used as animal bedding) and a coarse fraction (to be used as biofuel).

The heat released during the composting process can be used for organic drying as well as drying the non-organic fraction of household waste to enhance combustion efficiency. The heat will also be used to turn dry pig and cattle manure (30% water content) into fertilizer granules that can be easily transported over long distances, in France and Germany and thereby helping to dispose of surplus manure in the region more cost effectively. Fermentation of manure, which would need to be combined with or organic waste, will not take place at BBE Park as this does not help addressing the surplus manure problem. Using this method is not viable as after fermentation 90% of the input still remains and this costs €25-30 per tonne to dispose of.

It is anticipated that 100,000 tonnes of residues will be processed at BBE Park to be converted into products like compressed natural gas (CNG), clean CO₂, litter for stables and sties, compost, briquettes and fuel for the waste fed power plant. Some waste streams will be fully processed, including organic waste from households which will reduce the capacity to process all the manure produced in the region.

This project is not only economically feasible but will also provide a huge incentive for further sustainable development in the region and could save 8 million cubic metres of fossil natural gas per year. Transportation mileage will be reduced by 8,500 tonnes of CO₂ emissions and associated costs will be reduced. Future products will include chipboard for the construction industry, building blocks for the production of bio-plastics and chemicals – such as natural pesticide from the waste foliage of tomato and pepper plants. Potential partners are now being sought to invest approximately €20 million to enable the first stage of BBE Park to be built. Construction should start in 2015.



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