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Folketingets Energi-, Forsynings- og Klimaudvalg  
Comment on hearing on the organization of the waste sector  
Thursday, October 11, 2018, at. 13.00 - 16.00  
Landstingssalen at Christiansborg

## Input on the organization of the plastic waste policies and sector in Denmark

### Plastic waste handling

The waste industry in Denmark and Europe is undergoing a major change, where policy decisions driven by environmental considerations change the flow and treatment of waste within the EU and the world.

Published numbers from the waste management sector dictates that in 2016 Denmark produced 103 kmt of plastic waste per year<sup>1</sup> from both households and industry, with a net trade balance of – 18 kmt (import 18 kmt, export 31 kmt). Denmark currently recycles 33% of its plastic packaging, compared to 41% in Norway and in 49% Sweden<sup>2</sup>.

The higher recycling rates reported in Sweden and Norway indicate well performing Extended Producer Responsibility (EPR) schemes for plastic waste packaging, while in Denmark plastic packaging is managed directly by municipalities. The municipalities are responsible for organizing the collection and recycling of plastic packaging. Sorting facilities which automatically separate mixed plastic waste in different polymers and to some extent colors, exist in Norway and Sweden, but not in Denmark<sup>3</sup>. As a result, a lot more of the waste is sent to incineration than necessary, which yields a significantly lower energy recovery compared to alternatives such as Quantafuel.

### Quantafuel's plastic waste contribution

Quantafuel AS is a Norwegian technology company that develops, designs and operates production facilities to produce high-quality synthetic fuels and chemical products based on non-recyclable waste

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<sup>1</sup> <https://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-39-9.pdf>

<sup>2</sup> Plastics Europe, 2017. Plastics – the Facts 2016. An analysis of European plastics production, demand and waste data. PlasticsEurope – Association of Plastics Manufacturers.

<sup>3</sup> Leonidas Milios m. fl: «Plastic recycling in the Nordics: A value chain market analysis», tidsskriftet Waste Management, juni 2018.

plastics. Over the past ten years, the company has developed patented technology that transforms mixed plastic waste that today is incinerated, into low-carbon advanced fuel.

As a Scandinavian company, Quantafuel's ultimate goal is to establish multiple production facilities in Europe, at sites and in countries that adapt the tax incentives and waste policies to benefit environmental goals and form the basis for the introduction of new innovations to combat the growing waste plastic issues at hand. The Skive project is as such a window as to how more plastic waste can be diverted from incineration to a more efficient re-utilization, and by this contribute to create the conditions necessary to address the plastic pollution of Europe's land, air and sea.

### Denmark to lead the way of waste plastic innovation

A major industrial plant, the first of its kind, is now being constructed in Denmark (Skive) and will be completed in early 2019. The plant is based on technology developed by Quantafuel AS, which also is an owner of Quantafuel Skive ApS together with local investors in Skive. The plant has secured support and financing from Danske Grønne Investeringsfond and is located at Greenlab Skive, which is a municipal green-industry project leading the way for how to establish green industries with utilization of excess gas and heat.

The Skive plant will initially convert 60 tons of mixed plastic waste daily, which corresponds to approx. 20,000 tonnes of plastic waste per year. A capacity increase of 180 tonnes per day during the next three years is under consideration, ie approx. 60,000 tonnes of plastic waste per year, which i.e. equals about 60% of collected and recycled plastics in Norway. As Quantafuel has the ability to use contaminated mixed plastic waste, existing Danish sorting facilities will be able to sort out a significantly larger fraction for value added activity.

About. 75% of the plastic in Quantafuel's process is transformed into advanced fuel, which means the Skive plant will produce approx. 14,000 tons of advanced fuel per year at startup, and approx. 42,000 tonnes after the expansion, which by Norwegian example would represent 8% of the total biofuel's consumption in 2016.

The fuel produced at Quantafuel's plants reduces greenhouse gas emissions by 90 % (well to wheel), compared to virgin fossil fuels. This is far above what the EU has set as a target for greenhouse gas reduction in 2021 (-65 %), and significantly higher than today's biofuel producers are required to achieve (35-50 %). Quantafuel's plants in Denmark will, at start-up, save the environment more than 50,000 tonnes of CO<sub>2</sub> equivalents per year, which corresponds to annual emissions from more than 25,000 passenger cars.

### Status quo for waste plastics in the EU

In recent years, the European Commission has increased focus on plastics and material recycling. The new action plan that Denmark and the other EU countries must comply with stipulates, among other things, that 55% of all plastic packaging should be recycled by 2025 and 50% of all plastics will be recycled by 2040. In Norway it was reported that in 2016 as much as 41% of packaging material was recycled. At present there is no requirement for traceability of where the plastic waste gets lost, however, there are now steps taken to increase traceability of plastic trade, for instance the imminent

inclusion of plastic waste to Annex II in the Basel Convention<sup>4</sup>. About half of the collected plastic waste in Europe, which is marked material recycling, has been exported. Of which 87% of exports were previously shipped to China and Hong Kong.

Now that China has ceased to receive this waste, affecting Denmark as well as all other EU-members, several countries like Malaysia, Vietnam and Indonesia have started importing the waste. Still, it is reported internally in the industry about large amounts of plastic waste that remain underutilized, as these countries have no dimensioned capacity to handle large cargoes of waste.

An amendment proposed by the European Parliament in January further developed the proposal by adding waste "produced from solid waste stream" to the definition - in other words plastic waste.

This proposal has received significant interest in the EU Council of Ministers, with multiple members - Britain, Finland, the Netherlands and the Czech Republic - supporting the plan. This was further strengthened following China's decision to ban all imports of plastic and other recycled waste from Europe and other countries.

In its proposal for a revised Renewable Energy Directive, the European Commission has listed "waste-based fossil fuels" among the non-recyclable waste that can be transformed into energy, such as renewable electricity or transport fuels.

### Danish policy makers a step ahead

The recently published article "*Plastic recycling in the Nordic countries: A value chain market analysis*", highlights several of the obstacles that Nordic countries face when it comes to material recycling of plastic waste. In rough terms, it is primarily about economics and the quality of the sorted plastic waste fractions. It costs too much to accumulate large enough lots, as well as sort the plastic to the quality required for material recycling. Quantafuel's technology is robustly designed and dimensioned to relieve the waste industry's challenges of handling non-recyclable plastic fragments emitted from Norway or for combustion.

On the 1<sup>st</sup> of January 2017 Danish authorities paved the way for a solution that may have a significant impact on how harmful waste may be treated and handled in the coming years. "*The Decree on fees and subsidies for end-of-life tire recovery - Act on Environmental Protection, cf. Legislative Decree No. 1189 of 27 September 2016*", included pyrolysis technology as a treatment method on equal level as recovery in the waste hierarchy.

The decree on fees and subsidies for the pyrolysis technology as a measure of recycling for a problematic waste such as end-of-life tires has provided the market with an incentive to innovate and above all set a price on the waste. This will lead to new innovations within the waste management sector and, over time, a stable market with predictable prices and a high level of recycling.

It is Quantafuel's strong belief that the inclusion of state-of-the-art pyrolysis technology will enable large-scale conversion of waste plastics, given that the same status is provided for waste plastics not fit for recycling, as for end-of-life tires. The greenhouse gas reduction and direct effect of establishing a

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<sup>4</sup> <https://www.nrk.no/urix/plast-inn-i-konvensjon-om-farlig-avfall-1.14199416>



Quantafuel plant in a country where pyrolysis technologies are considered as recycling is significant in terms of major savings in CO<sub>2</sub> emissions and is proportionate to the reduction of plastic waste that goes into combustion or is considered lost.

Quantafuel request that Danish politicians promote and enable the establishment of high-tech production companies using environmentally friendly innovation that directly contribute to the reduction of harmful waste such as plastics. The company wishes to include its products in the synthetic / alternative fuel commodity list so that the foundation for establishment is present. By equilibrating the company's fuel products and the pyrolysis technology with other waste recycling technologies the platform to address waste plastic pollution is present on a large scale.

These measures will provide a sound basis for investments in large-scale production facilities, which in turn will contribute to new jobs, substantial Co<sub>2</sub> savings in road traffic and increase value creation in the waste industry, as well as provide incentive to increase collection and de-crease incineration of waste plastics in Denmark.

Sincerely,

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Quantafuel AS

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Plant Director  
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