THE POTENTIAL OF BIOWASTE FOR A CIRCULAR EUROPE

OPENING CONFERENCE OF THE BIOHEC-LIFE PROJECT

15 March 2017

European Economic and Social Committee (EESC), Brussels, Belgium

PROGRAM/SPEAKERS

14h00-14h00: Introduction

- **Marie Leprêtre**, POUR LA SOLIDARITÉ
- **Julien Dumont**, Cabinet of the Minister for the Environment, Energy and Housing of the Brussels-Capital region

14h30-16h00: The future of the circular economy in Europe: the case of bio-waste

Moderator: **Mathieu Rama,** RREUSE

- **Bernd Kuepker,** European Commission, DG ENERGY
- **Laura Buffet**, Transport & Environment
- **Jean-Benoît Bel,** ACR+
- **Vincent Jumeau**, Bruxelles-Propreté

16:00-17h30: BIOHEC-Life - The potential of used cooking oil for energy production

Moderator: **Marie Leprêtre,** POUR LA SOLIDARITÉ

- **Michel Millares,** Gecco
- **Julien Pilette,** Gecco
- **Angel Alberdi,** EWABA
- Q&A

17h20 - 17h30: Conclusion

- **Cillian Lohan**, Member of the EESC
- **Michal Len,** RREUSE

INTRODUCTION

- **Marie Leprêtre**, POUR LA SOLIDARITÉ

Petroleum products still account for 95% of the fuels used in road transport in Europe and for 21% of Europe's greenhouse gas (GHG) emissions. The volatility of oil prices also poses a growing threat to this sector, which justifies the use of renewable energies even more. It is in this context that the EU member states have adopted binding national targets to increase the share of renewable energies in their energy consumption by 2020, in accordance with the Renewable Energy Directive. The European Union hopes to reach its target of a 20% share of renewable energies overall and of a 10% share of renewable energies in the transport sector by 2020, which has enabled the development of biofuel sectors.

Used Cooking Oils (UCO) stemming from agro-food and catering waste play a major role in the emergence of biodiesel. However, less than 40% of UCO are currently collected and advanced biodiesel still generates negative environmental and climatic impacts.

After a few introductory words, Marie Leprêtre gives the floor to Julien Dumont, from the Cabinet of the Minister for the Environment, Energy and Housing of the Brussels-Capital Region

- **Julien Dumont**, Cabinet of the Minister for the Environment, Energy and Housing of the Brussels-Capital region

M Dumont reviewed the implementation of the regional circular economy program (PREC) in the Brussels-Capital Region.

The Brussels-Capital region wants to transform its urban metabolism by drawing upon the circular economy. The idea is to identify the most relevant flows in order to create new recycling channels, be it energy, water, wood, etc. Different actors intervene together to create a new economic dynamics within the capital. The objectives of the initiative are threefold: first, it aims at meeting environmental goals, and at creating economic opportunities. Also, it will implement an economy based on short circuits in Brussels, producing locally when possible. Finally, the initiative can only be called a success if it boosts employment.

In order to achieve these objectives, it will be necessary to develop a framework conducive to the development of the circular economy. Regional public and para-public organizations will consider social enterprises as key partners in the implementation of the PREC.

The approach is centered on specific sectors that are chosen according to their potential for job creation, their impact on greenhouse gas emissions and their importance for the main challenges that Brussels is confronted with: construction, resources and waste, logistics, trade and food (which is the subject of the “Good Food” strategy).

THE FUTURE OF THE CIRCULAR ECONOMY IN EUROPE: THE CASE OF BIO-WASTE

- **Bernd Kuepker,** European Commission, DG ENERGY

Biofuels have been an important subject of debate, especially because of their sustainability. However, the sustainability of first-generation biofuels, i.e. those produced from crops, is not always given. In the use of crops for biofuels it is necessary to keep an eye on harvesting and production, which must also occur in a sustainable way. Yet, a growing demand can lead to the development of agriculture in more sensitive areas. This debate on agricultural land change and land use is not to be minimized. And so the Commission makes a point of estimating the indirect emissions of these biofuels.

The indirect effects are impressive: emissions savings would be nullified completely by the growth of these first generation biofuels. Thus, biofuels from cereal products (such as rapeseed, sunflower) have considerable and expected negative effects. These biofuels therefore do not have a bright future in the European market, in particular because it is almost impossible to take full account of their environmental impact. It is therefore necessary to regulate them so that the emission of greenhouse gases resulting from their use decreases.

To date, the Indirect Land Used Change (ILUC) strategy is the following : in 2014 the Commission announced that first generation biofuels would no longer receive subsidies by 2020. The Commission therefore wishes to specify the biofuels that will benefit from its support in the transport sector. Biofuels come from different materials, different wastes (such as UCOs or animal fats), and a technological outlook is necessary to be able to assess the potential and the effectiveness of all these new types of biofuels. There are also other fuels that could contribute to the achievement of EU objectives, such as those deriving from inorganic origins or hydrogen. In 2015, the Commission has set a ceiling to limit the use of first-generation biofuels, but Bernd Kuepler appeals to the Commission for going further and for eliminating them completely as they go along. The Commission also considers that the Member States should distinguish between different types of biofuels through a legislation that takes their impact into account. The overall aim is to reduce the market share of polluting biofuels.

- **Laura Buffet**, Transport & Environment

For now, the EU's regulatory framework is based on a 10% renewable energy target in the transport sector. Biofuels are going to be very valuable in the European market due to the incentives of the regulatory framework. It is now necessary to quantify the impact of biofuel emissions and assess their quality.

Transport & Environment acts on the initiative of the GLOBIUM project, which studies the impact of emissions from different sources of fuel (rapeseed, palm oil etc.) on climate. One of the conclusions of this study is that the use of such crops for the production of biodiesel is on average 80% worse for climate than fossil fuel.

Biofuels produced from cereal crops, such as oilseeds, have grown strongly, in particular palm oil, which is largely imported and allocated to the transport sector. Its use has gradually stabilized but has an environmental cost that is still too high. The types of biofuels coming from waste and residues have a considerable potential in the transport sector. Above all, they can reduce greenhouse gas emissions in a concrete and much less debatable way than first-generation biofuels. However, other questions about their use remain. It is indeed important to ensure that these biofuels are produced under the criterion of sustainability - which can sometimes be difficult – and that it complies with the waste hierarchy (i.e. in the waste hierarchy, the reuse of UCO comes before its recovery for energy production).

The main fear of Transport & Environment concerning UCOs is the complexity of certifying the origin of these oils (really used / burnt). As a matter of fact, the risk of fraud is real in this sector and requires a stricter supervision of the UCOs market.

- **Jean-Benoît Bel,** ACR+

DECISIVE is a four-year project launched in France in September 2016 within the framework of the European Commission's Horizon 2020 programme. The idea is to close the organic loop in urban areas with the help of 14 partners, including universities, public authorities and SMEs. This diversity of actors in terms of experience, knowledge and expertise has proven to be an asset. The coordinator of this project is IRSTEA, a French research center specializing notably in bio-waste.

The growing attractiveness of cities leads to an increasing population, thus raising energy and food demands in urban areas. This makes urban waste management increasingly challenging, both in terms of logistics and environmental or health impacts. To decrease cities' environmental impacts and to contribute to a better resilience of urban areas towards energy or food supply crises, waste management systems have to be improved so as to further expand the recycling of resources and local recovery.

In this context, the DECISIVE project proposes to transform the present urban metabolism for organic matter (foods, plants, etc.), energy and bio-waste into a more circular economy and to assess the impacts of these changes on the whole waste management cycle. Thus, the challenge will be to choose an organization of intra- and peri-urban networks to enable circular local and decentralized bio-waste recovery through the generation of energy and bio-products.

The project will thus contribute to change the management of urban organic material fluxes from a linear to a circular paradigm.

- **Vincent Jumeau**, Managing Director of Bruxelles-Propreté

Vincent Jumeau, Managing Director of "Bruxelles-Propreté" shared his views about the imperatives and difficulties associated with the collection of orange bags (organic waste) used for energy recovery.

After a pilot project period of three years, the results of the collection for the first months of 2017 are encouraging, with a weekly collection equivalent to most monthly collections in 2016. In 2017, the collection of organic waste is still working on a voluntary basis – but in the whole Brussels-Capital region this time - and takes place in a public service framework without any tariff incentive. Citizens' participation to this separate collection for organic waste is a question is a question access to bags, awareness and receptiveness to change.

THE POTENTIAL OF USED COOKING OIL FOR ENERGY PRODUCTION

- **Michel Millares,** Gecco

Michel Millares, coordinator of the project, presented us the big lines of the BIOHEC-Life project.

BIOHEC-Life is coordinated by Gecco, a social cooperative whose activity consists mainly in the collection and valorisation of used cooking oils and fats (UCO) in the Hauts-de-France region, their conversion into biodiesel and their use in public transport. These loops of circular economy can be transposed in all territories, as waste and energy needs are present everywhere.

The BIOHEC-Life project has a €2.4 million budget, of which €1.4 million is allocated by the European Commission. Launched in December 2016, it aims at building a network on a European scale by looking for partners and promoters in several European countries. Technologies developed by the network can then be made accessible throughout Europe to set up local loops of circular economy. By increasing actions in favour of the energy and social transition, BIOHEC-Life will make it possible to deploy this economic, social and environmental model in Europe. It will also contribute to the achievement of the European objectives of reducing greenhouse gas emissions.

The project has various goals: firstly, to validate an eco-designed prototype that makes it possible to obtain an advanced biodiesel from Used Cooking Oils (UCO) and bioethanol. The next step will

consist in supplying fuel to the captive fleets of communities in a short circuit on a regional scale. The validation of the economic, social and environmental model of the sector, the replication of this model on European territory and the development of methods to increase the rate of recovery of the UCO deposit are further targets.

Gecco's partners on the project are :

• POUR LA SOLIDARITÉ, European think & do tank based in Brussels, aims at promoting a European social model. In the project, they are in charge of market research and communication.

• Neo-Eco: Neo-Eco designs, manufactures and operates waste sorting lines. Whilst specializing in the creation of loops of circular economy, it seeks to give a second life to waste in order to replace raw materials with secondary materials. In the project, Neo-Eco is responsible for the design and production of the prototype biodiesel production unit. It will also intervene in the technical and socio-economic validation of the project as well as in communication and dissemination activities.

• Institut Charles Violette (Université Lille 1): The Laboratory of the University of Lille 1 is involved in the fields of biotechnology and in the development of eco-designed processes for the sustainable transformation of agricultural resources. In the project, the Charles Violette institute will be in charge of carrying out process optimization actions: pilot feedback, adaptation for UCO acid and fat treatment, second generation bioethanol research and glycerol upgrading.

• RREUSE: European network of social enterprises representing national and regional networks of social enterprises involved in re-employment, repair and recycling. Within the framework of the project, RREUSE is responsible for market research - in collaboration with PLS - and for partnerships for replication.

Mc Cain, who was represented by Alexandre Testu during the conference, is also part of a project as a member of the advisory board of the project. As part of the Corporate Social Responsibility strategy, they have also been supporting Gecco by providing them with large amounts of used cooking oils since 2015.

- **Julien Pilette,** Gecco

Julien Pilette is the founder of GECCO. He outlined the aspects of BIOHEC-LIFE that make it an unprecedented project in Europe:
BIOHEC-LIFE is a unique project in terms of environmental, technological, social and economic considerations. It is the result of a collaboration between various partners. By working with the Institut Charles Violette of the University of Lille, the project was able to develop technologically. As a matter of fact, GECCO and the Institut succeeded in working out a procedure that transformed used cooking oils into biofuels. The biological and technological approach of these first steps was crucial as it revealed that it was the most efficient way to carry out such a transformation of oils into biofuels.
In the classic transformation procedure of UCOs, methanol occupies a central position and is one of the chemical components needed for the transformation of UCOs into biofuels. The only problem is

that methanol originates from fossil energy reserves, which makes it a petroleum product that is responsible for greenhouse gas emissions. That is why GECCO decided to turn its back on methanol and to replace it with ethanol. Ethanol is bio-based (i.e. obtained from renewable raw material derived from biomass) and can also be harvested from waste, which significantly reduces its ecological impact.
It has been scientifically proven that ethanol achieves better outcomes in terms of sustainability and ecological impact, but what about its legislative framework? Indeed, the legislation concerning the recovery of UCOs for the production of biodiesel – if it exists at all - regulates the procedure following the assumption that it involves the use methanol. The regulatory framework concerning the use of ethanol in this procedure is a lot vaguer and requires specific exemptions before allowing its use. Undertaking these steps is very time-consuming and could therefore slow the implementation of the project BIOHEC-LIFE across Europe. However, the - still low – recourse to ethanol in the classic treatment of UCOs represents a considerable competitive advantage for GECCO.

Julien Pilette highlights the omnipresence of waste in our countries and the importance of supporting local initiatives that value local waste instead of outsourcing it, which would mean losing a sense of local recycling.

The BIOHEC-LIFE project is therefore fundamentally different from other producers or collectors of UCOs: it incorporates an environmentally-friendly chemical procedure and a local waste pick-up – mostly by cargo bikes - that boosts employment at regional and local level.

- **Angel Alberdi,** EWABA

EWABA represents the interests of used cooking oil collectors and waste-based biofuel producers from EU members.

Once transformed into biofuel, the UCO are technically called UCOME (Used Cooking Oil Menthyl Esther) and thus represent a biofuel produced from methyl. The European regulation considers UCO as advanced biofuels, which leads to the fact that they can profit from specific benefits.

The EWABA group has contributed to the conception of the GREENEA study ‘Analysis of the current development of household UCO collection systems in the EU’. This study gives an overview over the collecting of UCO in European households. While the collection of UCO from the professional sector is relatively well coordinated at European level, the system is less effective with regard to the collection of oils from private households. Moreover, the study provides a platform of good practices that were implemented in European countries such as Austria, Belgium and the Netherlands, and analyses methods that have led to a gradual habituation from households to recycling used cooking oils. We owe these new habits to educational programs with simple, playful and with an accessible-to-all approach. One can thus conclude that recycling education programs are a key element for increasing awareness for the need for recycling among the general public. With this in mind, it is important not to forget that a number of challenges still lie ahead: in order to make this new approach work, solutions in terms of strategy and accessibility have to be found.
The collecting of UCO from private households is still in its infancy but promises a bright future for collectors interested in investing in the sector, particularly in European regions with high edible oil consumption.

As a further point, Mr. Alberdi presented the current status of the situation of UCO in Europe. Several measures of the European Union have fostered the use and production of advanced biofuels. For example the introduction of “double counting”, which allows for specific fuel types to count double in their use and thus to contribute twice as much to accomplishing the European climate and energy targets, which aim at a 10% share of renewables in the transport sector for 2020.
Indeed, UCO are now considered as meeting the criteria laid down for biofuels that ‘count double’ and are therefore highly sought-after in Europe. He concluded that Europe must ensure to be able to import used cooking oils, just as is the case with UCO from Saudi Arabia and the United States at the moment.

CONCLUSION

- **Cilian Lohan,** EESC

Cilian Lohan, expert of the European Economic and Social Committee (EESC) for Circular Economy, concluded that he appreciated the great initiatives that were presented during the event and especially congratulated the members of Gecco for the project BIOHEC-Life.

The Circular Economy is a model that keeps up with the times and that is being defined on the basis of various concepts that led to the emergence of numerous initiatives and projects. However, Mr. Lohan recalled the importance of this model to persist over time in order not to stay a merely temporary phenomenon.

Actions that are nowadays carried out under the label of Circular Economy have to continue developing and spreading to other sectors. In this sense, the European institutions have a crucial role to play in terms of responsibility in the promotion of this economic model.

Another issue that was highlighted by Mr. Lohan was the risk of the concept of Circular Economy falling victim to the adverse effects of greenwashing. Due to its success, the Circular Economy could indeed easily be subject to abuses. This is why each of us has the responsibility to promote the fundamental values held by the Circular Economy as far as its economic, social and environmental models are concerned.

#BiohecLife

With the support of the European Economic and Social Committee (EESC)