

One man's trash is another man's biofuel

How to move from a 7 billion to a 9.6 billion world population by 2050 without suffering from damaging consequences? 2.6 billion more people to feed and an increase in revenues will make agricultural production double, without leaving much feedstock for crop-based biofuels. In order to satisfy the growing fuel needs, we will have to rapidly turn to alternative feedstock, such as waste: Used Cooking Oil (UCO) or Animal Fat Cat 1 and 2 (not intended for consumption). Until today, the supply model adopted by the biofuel sector has been linear. Now it is time to make it circular: the biofuels industry should set an example by promoting the re-use of waste instead of competing with the food sector.

Recent ecological concerns, such as global warming, the decrease in oil resources, the uncertainty of energy supply as well as the negative energy trade balance of European countries, gave birth to the development of the biofuel sector. These issues at stake also pushed most of the countries to establish supporting policies for renewable energy sourcing. In 2008, the European Union voted a directive for all member states, pegging the objective of renewable resources integration into transports at 10% by 2020.

After the random establishment of supporting policies since 2012, such as the double counting system, aiming to promote waste-based biofuels throughout Europe, energy ministers of the EU reached an agreement in June 2014 to limit the production of crop-based fuel to 7%, announcing a progressive change towards second-generation biofuels. However, this commitment remains insufficient: 10% of the transport fuels have to be biofuels by 2020, but the limit on first generation biofuels is still high at 7%.

9.6 billion individuals to feed in 2050: urgent need for farmland reforms

Very soon we will have no choice but to turn

to waste-based biofuels production. By 2025, the world population will increase from 7.2 to 8.1 billion, to finally reach 9.6 billion in 2050, significantly increasing the food and energy needs. To support this 35% population growth, the agricultural production will have to double.

At the same time, the climate change acceleration may prove to be one of the major challenges. Mark Rosegrant, environment and production unit manager at the IFPRI (International Food Policy Research Institute), estimates an 11% corn yield decrease, as well as 8% decrease for wheat by 2050. These predictions call for a farmland-use reform, which will strengthen the agricultural commitment towards a productivist model exclusively dedicated to food. Thus, to meet the food security issues at stake in the years to come, waste-based biofuels should become the solution preferred over the first-generation biofuels.

Lack of competition with the food sector is, however, not the sole reason for the promotion of used cooking oil or animal fat-based biodiesel production. This sector shows the most considerable reduction of GHG emissions, varying between 83% and 90% while a classic rape-based biodiesel

reduces the GHG emission only by around 59%. So how to explain the reticence and hesitation on the part of the authorities, who keep slowing down the development of the sector whose advantages seem so obvious?

Europe: a "trashcan for the world"?

The recent lobbying against the wide-spreading promotion of the second-generation biofuels is quite well visible in Brussels. However, letting Europe become a "trashcan for the world" by supporting the use and import of waste such as UCO and Animal Fat for biodiesel production could have some assets.

Thanks to the weak ecological footprint of waste-based biofuels compared to biofuels made from soy and palm oils, Europe could produce fuel, non-competing with the food industry and, at the same time, decrease its GHG emission levels. Thus avoiding the criticism related to the negative impact of first-generation biofuels (deforestation, environmental and ecological degradation, increase in exchange rates, intensive farming under GMO), the development of the waste-based biofuels production would diminish the need for soy and palm oil that could be exclusively dedicated to the food sector.

Moreover, the job creation, be it direct, throughout the transformation of factories, or indirect, along the whole supply chain, should also not be overlooked. It is estimated that the introduction of double-counting and promotion of waste-based biofuels gave jobs to over 10,000 people in the EU. Not to mention the benefit of recycling the waste that would otherwise be dumped into the sewage system.

As the European waste-based biofuels sector is developing rapidly, the demand for feedstock surpasses the supply, forcing the biodiesel producers to look for new feedstock sources. Import is therefore necessary in order to run the factories at full capacity. However, due to the high



importance of feedstock sustainability, the certification industry will have to closely control the quality of the imported products to make sure it complies with the high European standards.

Future outlook

Although today waste raw materials seem limited in Europe, a lot of alternative waste sources could be explored and used in the future. For example, grease traps under the kitchen sinks in restaurants or at wastewater treatment plants, where the supply is still substantial and much easier to collect than

used cooking oil, as there is generally one water treatment plant for the whole city, while UCO has to be collected from numerous restaurants.

The still relatively high transformation costs remain the biggest inconvenience for the further popularization of waste-based biofuels due to their high acidity, impurity and water content. However, in sight of big recent projects and investments into new factories and technologies, it is predicted that the widespread use of second-generation biofuels is only a matter of time.

The circular economy should now be the major focus of the biofuels sector. The waste-based biodiesel production must become the subject of continuous support, assuring a long-term sustainability, because, besides the complexity and new technological investments, the line between sustainable and non-sustainable biofuels is thin as the production of first generation biodiesel directly competes with the agricultural market.

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