Waste-based feedstock and biofuels market in Europe

19 October 2016
Agenda

1 MARKET OVERVIEW
   Current situation on the waste-based feedstock and biofuel markets P. 3

2 PRICING
   Overview of UCO and UCOME prices P. 12

3 HVO
   Map of current and planned plants, capacity development P. 15

4 CONCLUSION
   Market trends, future opportunities and challenges P. 18

5 WHY GREENEA?
   Company introduction P. 20
Overview of the current market situation
European UCO resources are estimated at 806,000 MT per year.
European UCO market is already mature with limited growth possibilities

Source: GREENEA analysis
To secure enough feedstock waste-based biodiesel producers have to look for alternative sources

**Household collection**

- **Supply:** low quantities and difficult to collect
- **Interest:** low due to high collection costs

Not really a viable option due to high operational costs, relatively low quantities to gain and unsure quality.

**Imports from overseas**

- **Supply:** decreasing due to rising local demand
- **Interest:** high due to mature market in Europe

Requires some initial investment but allows more flexibility on quality and thus gives access to bigger volumes.

**High acidity feedstock**

- **Supply:** high availability
- **Interest:** still moderate due to processing difficulty

Interesting option, however, the quantities offered are decreasing and the competition is fierce.

Source: GREENEA analysis
Europe relies on UCO imports for biodiesel production but competition overseas is fierce

**Demand for UCO in Europe in 2016 (EST.)**

- UCO collected: 676,000 kT
- Import: 941,000 kT
- EU demand: 1,617,000 kT

58% - Percentage of European UCO demand covered by imports in 2016 (est.)

40% - Percentage of UCO imported to the EU that came from Asia

Due to investments in UCOME production in Asia, UCO quantities for export will be limited there

Source: GREENEA analysis
European biodiesel market is estimated at 14 million tons.
Germany, Italy and the UK are key players on the waste-based biodiesel market

WASTE-BASED BIODIESEL PRODUCTION AND CONSUMPTION IN 2016 (EST.)

- **Germany**: Production 634 kT, Consumption 580 kT
- **Spain**: Production 484 kT, Consumption 412 kT
- **UK**: Production 237 kT, Consumption 385 kT
- **Holland**: Production 199 kT, Consumption 640 kT
- **Italy**: Production 649 kT, Consumption 640 kT
- **France**: Production 147 kT, Consumption 150 kT

**Spain**
No local demand due to lack of DC scheme.

**Italy**
No cap of DC boosted the demand by nearly 50% compared to 2015.
The supply of waste-based biodiesel in Europe does not cover the local demand.

### WASTE-BASED BIODIESEL CONSUMPTION IN EUROPE

| Source: GREENEA analysis |

Asia is Europe’s main supplier of waste-based biodiesel.
The supply-demand structure might alter due to coming regulation changes

UK
Uncertainty of what will happen after Brexit.

Belgium
The issue with registering for DC in Belgium still persists.

France
Possible implementation of the Register of Biofuels Origination (RBO).

Spain
Possible introduction of DC in 2017 or 2018.

Holland
Legislation changes in 2018.

Poland
Possible implementation of DC rules.

Czech Rep.
Implementation of GHG emission savings rules.

Slovakia
Possible implementation of DC rules.

Romania
Possible implementation of DC rules.

Austria
Possible implementation of DC rules.

Italy
Possibility of changing DC rules regarding PFAD.
The margins for UCOME producers have been increasing since the beginning of the year.

Source: GREENEA analysis
In 2016, UCO and UCOME show again an upward price trend.

Source: GREENEA analysis
HVO: market development
In the last 5 years, HVO has been developing rapidly.
TOTAL and ENI plants will significantly increase the HVO production capacity in Europe

23%

The share of European biodiesel market that HVO might get by 2020

HVO INSTALLED CAPACITY

2016
2020

2,720
3,870

2,300
3,450

420
420

Pure HVO
Co-processing

+42%

Discussed projects in:
- Japan
- China
- Eastern Europe

Source: GREENEA analysis
Conclusion
HVO development and struggle for feedstock supply will dominate the market in the next 5 years

HVO
New investments in Europe and overseas increase the HVO capacity.

Asia
New investments in UCOME production for export to Europe.

UCO
Maturing market in Europe and increased local demand in Asia will put pressure on UCO supplies.

Law
New countries should implement DC scheme.

Technology
Investments to be able to process high acidity feedstock.
Why Greenea?
Why Greenea?

MARKET EXPERIENCE

GREENEA is an independent brokerage and consulting company founded in 2007. It specialises in waste-based raw materials and biofuels.

GREENEA offers its services to companies using raw materials in their production as well as to various other players from the oleo-chemical, animal feed, bioenergy and biofuels markets.

It was our conscious and strategic choice to position ourselves on the market of raw materials that do not compete with the food sector.

GREENEA OFFICES IN EUROPE

From our two offices in Paris and Prague we communicate with clients from all around the world thanks to our international and multilingual team.

We speak:
- English, Spanish,
- Portuguese, Polish, German
- French and Italian

WIDE INTERNATIONAL PRESENCE

Founded in 2007
Since 2011 our average annual growth is 18%