



## Consortium

The LIGNOFLAG Consortium, with Clariant as the coordinator, consists of seven companies and research institutions from Germany, Austria, Hungary and Romania. The expertise offered by the consortium meets the requirements of a complex flagship project with the focus on demonstrating the technological as well as the economic viability of cellulosic ethanol and its co-products.

### LIGNOFLAG Project Partners

- |  |   |
|--|---|
|    | <p>Clariant Produkte (Deutschland) GmbH, Germany</p> <p>Clariant Products Ro SRL, Romania</p> |
|    | <p>Bavarian Research Alliance GmbH, Germany</p>   |
|  | <p>Energy Institute at the Johannes Kepler University Linz, Austria</p>                       |
|  | <p>ExportHungary, Hungary</p>   |
|  | <p>Fliegl Agrartechnik GmbH, Germany</p>  |
|  | <p>Industrielle Biotechnologie Bayern Netzwerk GmbH, Germany</p>                              |

## Project Profile

### Project

LIGNOFLAG (Commercial flagship plant for bioethanol production involving a bio-based value chain built on lignocellulosic feedstock)

### Funding Programme

The LIGNOFLAG project receives funding from the Bio-Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 709606.

### Project Duration

June 2017 – May 2022

### EU Contribution

EUR 24.7 million

### Coordination

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## Commercial-Scale Flagship Plant for the Production of Cellulosic Ethanol



Picture credits: Clariant, Fotolia, iStock



## EU Project LIGNOFLAG: Sustainable Production of Cellulosic Ethanol

Clariant is building a new commercial-scale production plant for cellulosic ethanol made from agricultural residues, based on the sunliquid® technology. The plant with an annual capacity of 50,000 tons of cellulosic ethanol will be located in the southwestern part of Romania. The new facility will generate green jobs, business opportunities and economic growth in this rural area. With this new flagship plant, Clariant intends to demonstrate that the large-scale production of cellulosic ethanol on the basis of the sunliquid® process is technically mature and economically viable.

### Main Objectives of the Project

- Establishing an energy self-sufficient, highly sustainable production process for cellulosic ethanol by using co-products for renewable energy production and soil fertilization
- Optimizing and increasing efficiency of the production process to up to 60,000 tons of ethanol annually
- Elaborating a licencing model for the sunliquid® technology
- Developing a distribution and marketing strategy for cellulosic ethanol and the sunliquid® technology

### Cellulosic Ethanol

Cellulosic ethanol is an advanced, truly sustainable and climate-friendly biofuel. It is produced from agricultural residues such as cereal straw, which are sourced from local farmers. The production of cellulosic ethanol leads to a CO<sub>2</sub> reduction of up to 95 % compared with fossil fuels.

### Use of Co-Products

Lignin is a solid co-product of the sunliquid® process. It is used to produce electricity and steam, both of which are needed for an energy self-sufficient cellulosic ethanol pro-

duction. The liquid co-product, vinasse, can be used as a fertilizer and brought back to the field, thus providing a tangible example of a circular economy.

### Benefits for the European Society

- Reduction of greenhouse gas emissions
- Boost of local economies and creation of additional business opportunities
- Creation of a sustainable and competitive source of domestic renewable energy for the EU
- Support of the transformation from a fossil-based economy to a bio-based, circular economy

### Domestic Renewable Energy Source for Europe

With the decision to build a flagship plant based on the sunliquid® process, a new bio-based value chain for cellulosic ethanol production will be created. The project involves the establishment of new collaborations that connect economic actors along the whole value chain, and promotes strategic cooperation between sectors. As the cellulosic ethanol plant can use agricultural residues in the immediate vicinity, local fuel production will be promoted. This will reduce dependency from fossil fuels and secure a competitive source of domestic renewable energy for Europe.

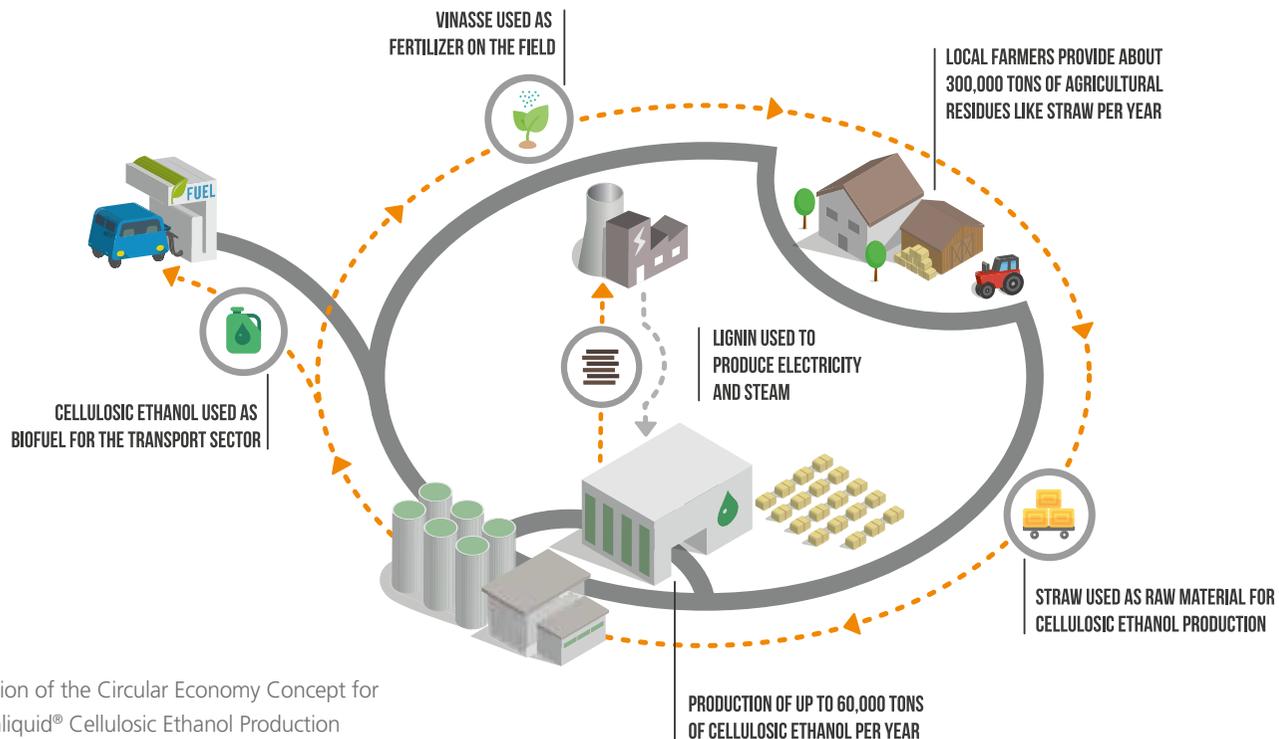


Illustration of the Circular Economy Concept for the sunliquid® Cellulosic Ethanol Production