

# EUBIONET

## Efficient trading of biomass


Bioenergy study tour in The Netherlands jointly organised by  
EUBIONET II in collaboration with IEA Bioenergy Task 40  
19-20 February 2007

### Summary of the study tour to

- Port of Rotterdam
- Amer power plant (Essent)

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**Introduction**

This study tour has been organised by CE, SenterNovem and the University of Utrecht in the framework of the EUBIONET project and IEA Task 40, with the support of the Port of Rotterdam and Essent. During a workshop on trading, legislation and biomass use (see further information and presentations available on [www.eubionet.net](http://www.eubionet.net)) a boat tour was organised in the harbour of Rotterdam. The next day a visit to the Amer power plant owned by Essent took place.

**Port of Rotterdam**

50 participants joined the tour through the port of Rotterdam on 19 February.

Rotterdam is Europe’s largest logistic and industrial hub with superlative statistics : 10 500 ha surface, 40 km long, 77 km quays, 370 millions tonnes (Mt) throughput. Situated directly on the North Sea the harbour offers access to the largest vessels (0,2 Mt). The European market is accessible from Rotterdam via multimodal possibilities : road, rail, inland shipping, coastal shipping and pipeline.

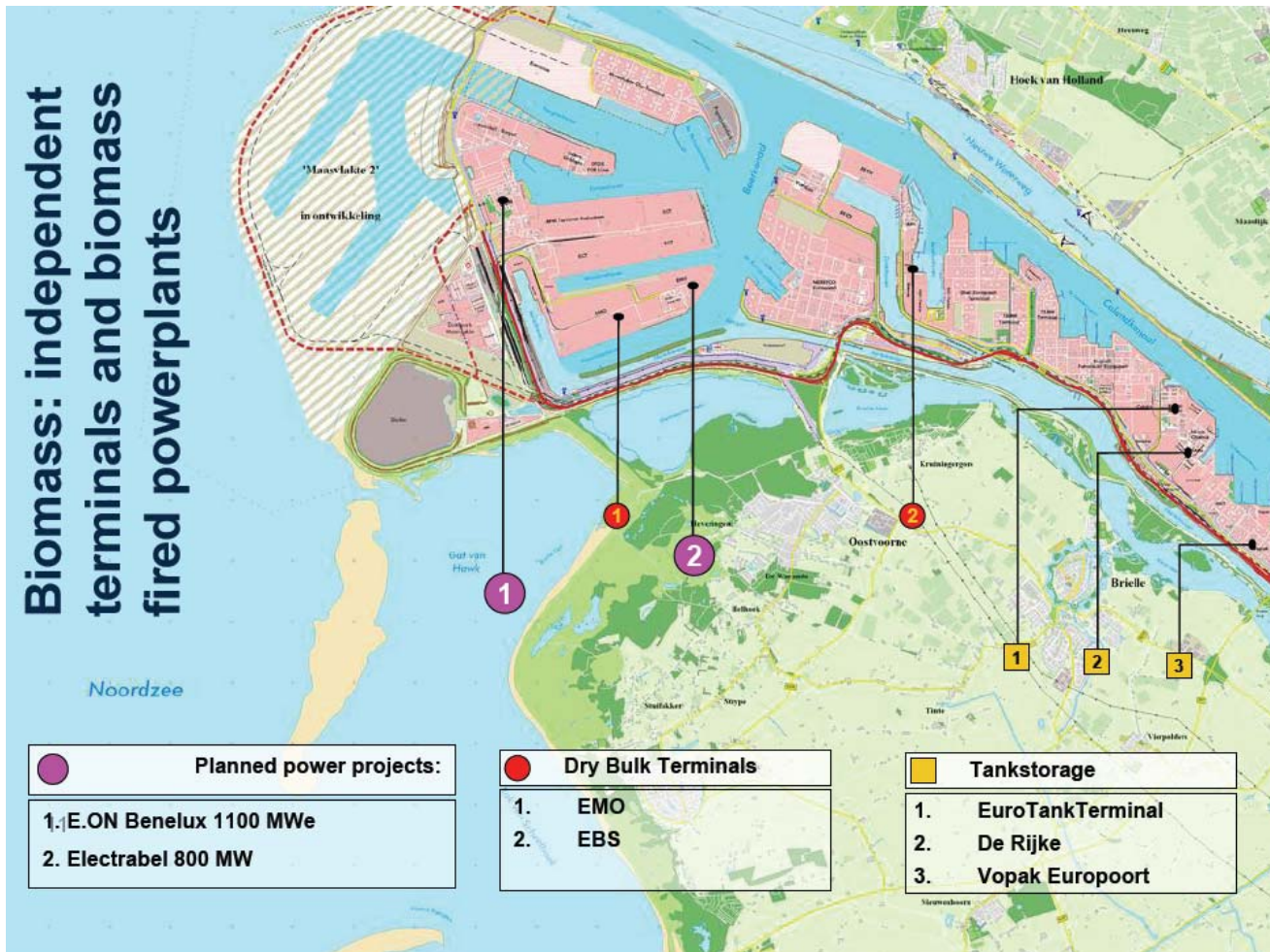


The port is aware about the enormous potential for biomass trade and stands as a main logistic place for the future bioenergy supply of Europe. The port handles already 10 Mt of agri-bulk, 0,3 Mt vegetable oils, 0,5 Mt woody biomass, 1 Mt ethanol and 0,17 Mt biodiesel. It is therefore not astonishing that 9 projects for liquid biofuels production for biodiesel and ethanol, including second generation technologies, are under study for a total capacity of roughly 2 and 1 Mt respectively.

*Map of the port showing transportation biofuels and power planned projects*



**Biomass: independent terminals and biomass fired powerplants**



source : presentation on 19 February by Pieter van Essen

*Aerial view of the port, showing storage capacities*



source : www.portofrotterdam.com

The port hosts a range of large companies for dry bulk (EMO, EBS, etc.) or tank storage (Vopak, Eurotank, etc.), as well as a number of service providers like laboratories, trading houses, and oil companies able to use transportation biofuels (Shell, Lyondell, etc.). And there is still room for new business activities !

Still biomass is at early stage of development. For more market transparency the Port of Rotterdam is proposing a price index for pellets, as a reference price for buyers.

More info : <http://www.portofrotterdam.com/>

## Amer power plant

45 participants joined the tour to the Amer Power Plant on 20 February.

Essent is a large company (6,4 G€ turnover, 10650 employees) and is the Netherlands' leading producer and supplier of renewable energy. In 2005, Essent contributed 45% of the total amount of electricity produced in the Netherlands, making use of two main sources : biomass (80%) and wind (20%).

The Amer power station, in Geertruidenberg, is one of Essent's larger generating facilities. The station consists of Unit 8 (in operation since 1980) and Unit 9 (in operation since 1993). The two units have a combined electricity generating capacity of 1245 MWe and a heat generating capacity of 600 MWth. The plant is using mainly coal but can switch to natural gas, oil or partly biomass. The plant is equipped with electrostatic precipitators, flue gas desulfurisation and deNOx units, allowing coping with the strict legislation in the Netherlands regarding emissions. The plant is connected to the district heating networks of Tilburg and Breda situated at 17 and 21 km.



The Amer plant produces 6% of the Dutch national consumption of electricity (20% for Essent). With the growing market for green electricity for private and industrial consumers, Essent has developed the use of biomass in the form of pellets and wood wastes.

Pellets are bought worldwide : Canada, USA, Eastern Europe, Germany and Scandinavia. This list of regions is still expanding. The Essent company is planning to start investing also in local storage, local preparation and local production in a few years time. Pellets are delivered by large vessels to the Rotterdam port. Barges of 1500 t are used to transport these pellets to the plant. A specific suction system is used to unload the barges. The pellets are stored in new dedicated facilities (coal can be stored outside but not pellets). They are then milled using both coal hammer mills and dedicated mills. The wood powder is injected directly in the main boilers up to 20% maximum of the total fuel. 400 000 tons (right figure) of pellets were used in 2006.

The plant is also equipped to use 150 000 t per year of wood waste (class B). A fluidised bed gasifier of 85 MWth produces gas that can be injected in the coal boiler. It took some time to run this innovative plant in a satisfying way. The performance of the plant is still being improved.

Until December of last year Essent also purchased palm oil (400.000 tons) to co-fire in one of its gas fired power plants (Claus). This purchase has temporarily been stopped because of sustainability questions raised by several Dutch NGOs, and also because of a significant reduction in electricity support (from 70 euro/MWh -before 1 July 2006- to 61 euro/MWh for wood based electricity and 25 euro/MWh for other types of bioelectricity).

To ensure sustainability of biomass a Green Gold Label has been implemented together with Control Union (formerly known as SKAL). This certification and monitoring programme is executed in cooperation with independent certifying companies. The biomass flow sources have to meet minimum conditions, coming from agriculture (criteria from GGLS2, Organic, EUREPGAP), or from forestry (criteria from FSC, PEFC, CSA, SFI).

The system does not yet include bio-oils, as "track and trace" is difficult in this bulk commodity market. Essent believes that sustainability can best be improved while you are in the business. NGO's called on Essent to stop using palm-oil, especially Friends of the Earth, citing reports that for palm-oil production tropical forest was cut, human rights were violated, and large emissions of CO<sub>2</sub> were caused.

In the light of these serious questions, on 11 December 2006 Essent stopped the palm oil purchase and commissioned an independent study lead by Professor Cornelis Blok to investigate how the sustainability of palm oil can be guaranteed. He will deliver the results in July 2007 and WWF will audit the process while others are invited to join this discussion. The discussion about sustainability of biomass will be continued.

More info : [www.essent.nl](http://www.essent.nl)

*Discharge of barge at Essent plant*



source : Essent, in IEA task 38 brochure