

This strength lies in the combination of 3 market segments: energy, heat and bio-refining:

- This creates large seaborne import volumes
- The economies of scale to reduce logistic costs
- Structural demand for (imported) biomass beyond 2020

This in turn gives confidence for both the port authority and stevedoring companies to invest in the necessary infrastructure and storage capacity. The port of Rotterdam, where biomass markets meet!

Commitment to sustainable developments

Rotterdam is Europe's number one energy port. At the same time, Rotterdam attaches great importance to the sustainable development of the port and city. For this reason port of Rotterdam is part of the Rotterdam Climate Initiative (www.rotterdamclimateinitiative).

Together with companies in the port area we develop projects, that contribute to the sustainability of the industrial complex, which have an important link to Rotterdam Bio Port:

- The development of a CO₂ hub: capture, transport, storage and re-use of greenhouse gases
- Usage of waste heat from- and by powerplants and industry
- Providing space for various wind-farm and solar projects.



Facts & Figures

Number of stevedores and their storage capacity

Europees Massagoed- Overslagbedrijf (EMO):	160 hectares
European Bulk Services (EBS):	400,000 m ³
Marcor stevedoring:	44,000 m ³
Rotterdam Bulk Terminal (RBT):	80,000 m ³
Zeehavenbedrijf Dordrecht (ZHD):	50,000 m ³
BSR Van Uden:	2,000 m ²

Ship size development in wood pellets trade

Year	Size range/ DWT
2000	750 - 10,000
2010	1,500 - 40,000
2012	45,000
2013 and further	50,000 - 80,000

Future power production with biomass co-firing in Rotterdam

E.ON MPP 1&2	1,000Mw
E.ON MPP 3	1,100Mw
GdF/Engie	800Mw
AVR-BEC (biomass only)	22Mw

European power plants with biomass co-firing or conversion

Dutch hinterland (RWE/Essent)
UK (RWE, Drax, E.ON, IPP's)
Belgium (GdF/Engie, German Pellets)
Denmark (Dong)

EUROPEAN HUB FOR BIOMASS

Port of Rotterdam Authority

The objective of the Port of Rotterdam Authority is to enhance the port's competitive position as a logistics hub and world-class industrial complex. Not only in terms of size, but also with regard to quality. The core tasks of the Port Authority are to develop, manage and exploit the port in a sustainable way and to render speedy and safe services for shipping.

More information

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**PLUG IN TO THE #1 BIOPORT.
OPEN A WORLD OF POSSIBILITIES.
MAKE IT HAPPEN.**

ROTTERDAM

EUROPEAN HUB FOR BIOMASS



Port of Rotterdam wants to secure new, clean sources of energy. Biomass is one of the leading exponents. An important way of generating clean electricity is the co-firing of biomass (wood pellets) in coal-fired power plants. Demand for this type of biomass will be increasing in the coming decades. It is mainly shipped from the United States, Canada and Baltics. For the future supply from other regions such as Brazil and Russia is also expected. To handle these trade volumes, there will be a limited number of hubs for biomass in Europe. Rotterdam is well positioned to be one of these, partly because some biomass is already being processed in the port and industrial complex to generate energy or for refining. The Port of Rotterdam aims to handle 8-10 million tonnes of biomass in 2020. It also is looking at 20% to 30% biomass co-firing in the power plants on the Maasvlakte. The power plants on the Maasvlakte will generate a large steady supply of biomass (wood pellets) for Rotterdam. The combination of this 'captive' cargo with distribution of biomass to power plants both in the nearness of Rotterdam as in the United Kingdom, Belgium and Scandinavia creates economies of scale.

Rotterdam Energy Port

The industrial cluster in the port of Rotterdam consists of more than 45 chemical companies, five oil refineries and three coal-fired power plants. This makes the port of Rotterdam one of the major oil, chemical and energy ports in the world and the largest industrial cluster in Europe. This no longer just concerns fossil fuels, such as coal and oil. Due to the increasing scarcity of fossil fuels and the need to reduce CO₂ emissions, the energy and fuel mix in Europe is changing radically. A transition to sustainable energy is therefore becoming increasingly important. The Port of Rotterdam Authority considers alternative sources of energy important in its endeavour to operate the port area as sustainable as possible. Its ambition, therefore, is to become the sustainable power house of Northwest Europe and a global hub for energy products and feedstock.

Use of biomass

The application of biomass is relevant for the port of Rotterdam in both the short and long term. This biomass is used primarily as feedstock for co-firing in a number of coal-fired power plants in the Netherlands. In a few years (from 2018), the new coal-

fired power plants on the Maasvlakte will start to co-fire biomass. In addition, several coal-fired power plants in the United Kingdom have been and will be converted to biomass plants. For the long term, biomass is also intended as a feedstock for the chemical and industrial cluster and the production of biofuels.

Incentive policies for biomass

The European Union has formulated a number of energy and climate objectives. For example, 20% of energy production in Europe must come from sustainable sources by 2020. In the Netherlands, government policy is to generate 16% of the country's energy needs from renewable sources, such as wind or biomass, by 2023. In Belgium and the United Kingdom other Renewable Energy incentive policies are in place. And although in Germany, Austria and Italy there are no plans yet for co-firing, wood pellets are used on a large scale for residential and commercial heating. The developments depend heavily on government policy in the individual member states of the EU, but demand for biomass is expected to increase

in the Netherlands, Belgium, the United Kingdom, Denmark, Germany, Austria and Italy. In Northwest Europe, demand is currently about 44 million tonnes (2015). In the most favourable scenario, this could increase to almost 100 million tonnes. As Europe will then no longer be self-sufficient, imports by sea will have to cover the growth in demand. The demand for biomass is also closely related to European legislation and regulations on CO₂ emissions.

European hub

The port of Rotterdam holds a unique position directly at sea, with excellent hinterland connections. The required storage and transshipment facilities are available, as is the security of feedstock. All necessary transport options and intermodal connections for incoming and outgoing biomass are present. In addition to this, various assistance programmes are available, in which the Port of Rotterdam offers cluster opportunities and encourages the exchange of raw materials, semi-manufactured and residual products. By using biomass for co-firing in existing and new coal-fired power plants, the CO₂ footprint of these power plants will be reduced. Biomass is not only a new opportunity for power production in the port of Rotterdam itself, but also for other coal-fired power plants in Europe.

Advantages of Rotterdam

The power plants on the Maasvlakte will generate a large steady supply of biomass (wood pellets) for Rotterdam. The combination of this 'captive' cargo with distribution of biomass to power plants both in the hinterland of Rotterdam as in the United Kingdom, Belgium and Scandinavia creates economies of scale. The central location of the port offers unique opportunities for pellet suppliers, power producers and/or biomass traders to build up storage capacity from where the Northwest European market can be supplied. The concentration of handling in a central location also offers the possibilities for increases in size of shipments. For instance by deploying Panamax ships. All these economies of scale will help to push down the delivered cost of biomass in Europe.

Rotterdam Bio Port

The future belongs to a clean, sustainable port. That's why the port of Rotterdam is striving to further expand its prominent role as sustainable European energy port. The port business community and the Port of Rotterdam Authority are front-runners when it comes to developing initiatives for making businesses as energy efficient as possible, making fossil energy 'cleaner', tapping into new sources of energy and drastically reducing emissions of CO₂. The Port Authority sees a great future for biofuels, bio-energy and biobased chemicals. That's why the Port Authority is providing space and facilities. For instance with Rotterdam Bio Port, in which all biobased activities are brought together. The Port of Rotterdam acknowledges the huge benefits biomass can have.

