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Voluntary Public

Date: 1/4/2013

GAIN Report Number: BE3001

Belgium [without Luxembourg]

Post: The Hague

The Market for Wood Pellets in the Benelux

Report Categories:

Biofuels

Climate Change/Global Warming/Food Security

Wood Products

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Report Highlights:

In 2012, the United States is expected to be the main supplier of wood pellets to the Benelux market with an export volume of about 1.25 MMT (US\$ 225 million). FAS The Hague estimates that the Benelux wood pellet consumption will more than double during 2012 – 2020 to a volume of 5.7 MMT (US\$ 1 billion). For the supply, the Benelux will depend for over 95% on imports. If trade flows remain consistent with current patterns, the United States has the potential to supply at least half of this import demand. However, wood pellets will need to comply with sustainability requirements.

Executive Summary:

The European Union's biomass market is regulated by the EU Climate and Energy Package (CEP) and the Renewable Energy Directive (RED). The CEP and the RED include an overall EU goal of 20% renewable energy consumption in 2020. In order to reach the individual Member States (MS) targets, the Dutch and Belgian governments imposed support programs for the energy sector. According to the Dutch and Belgian Renewable Energy Action Plans (NREAPs) a major part of the renewable energy will be produced from biomass. Based on the NREAPs, FAS The Hague estimates that the Benelux wood pellet consumption will more than double during 2012 – 2020 to a volume of 5.7 MMT, representing a value of about US\$ 1 billion. As domestic production is limited, the Benelux will mainly depend on imports, which are estimated to increase to about 5.5 MMT in 2020. Currently, the United States is the main supplier of wood pellets to the EU as well as to the Benelux market. In 2012, the United States is expected to export 1.25 MMT (US\$ 225 million) of wood pellets to the Benelux.

Buyers and traders of industrial wood pellets are calling for clear, consistent, harmonized and long term government regulations. However, the current imposed sustainability criteria differ between Member States and harmonized regulations are lacking. The Dutch government support program SDE+ is only granted if sustainability criteria are fulfilled. The Government of Belgium supports the production of renewable energy by granting Green Certificates which are only issued if the green house gas (GHG) balance of the biomass is quantified. Buyers of wood pellets are represented by the Wood Pellet Buyers Initiative (WPBI). The WPBI is developing harmonized sustainability criteria, including a certification scheme, based on existing standards and programs of the private sector. Early in 2013, the EC is expected to come forward with a proposal on harmonized sustainability criteria for biomass destined for the generation of energy.

On request FAS The Hague will deliver a list of U.S. wood pellet suppliers and a detailed overview of the power sector in the Benelux countries.

EU Policies on Biomass

The European Union's biomass market is regulated by the [EU Climate and Energy Package](#) (the CEP) and the [Renewable Energy Directive](#) (the RED, EC/2009/28). The CEP includes the “20/20/20” goals for 2020:

- A 20% reduction in green house gas (GHG) emissions compared to 1990.
- A 20% improvement in energy efficiency.
- A 20% share for renewable energy in the EU total energy mix.

The goal for 20% renewable energy in the total energy consumption is an overall EU goal. The RED sets different targets for different Member States (MS) within this overall target, based on each MS' capacity. The RED entered into force on June 25, 2009, and had to be transposed into MS national legislation by December 5, 2010. MS were also required to submit [National Renewable Energy Action Plans](#) by June 30, 2010. See for more information the [FAS EU Biofuels Annual](#) and the latest update of the FAS Report - *EU Member States Transposition of the RED*.

In the RED, sustainability criteria for liquid biofuels are laid out. These include minimum GHG emissions reductions, land use and environmental criteria as well as economic and social criteria. Sustainability requirements for biomass are not yet part of the RED, see for more information the Chapter “Quality Standards, Sustainability Criteria, and Certification”.

EU Member State Policies

In order to reach the individual Member States (MS) targets laid down in the RED, for the Netherlands 16%, and for Belgium 13% renewable energy in 2020, the Dutch and Belgian governments imposed support programs for the private sector. Government funds are crucial for investments of the energy sector in co-firing and dedicated biomass power plants and for the production of renewable energy. Beside government subsidies, other drivers for the use of biomass are fossil fuel prices and the costs of CO₂ production. In the Kyoto protocol, MS are subject to caps on GHG emissions.

The Netherlands

Government support for the use of biomass for the generation of energy has been in place since 2002. The current scheme, the [Support Sustainable Energy Production](#) (SDE) was implemented in 2006, and amended in July 2011 to the SDE+ program. The SDE+ subsidy is a maximum of 15 cent per kWh renewable electricity (about 31 Euro per MT of wood pellets) and 41.67 cent per GJ of renewable heat produced (about 2.45 Euro per MT). For SDE+ 2012 a budget of 1.7 billion Euro has been allocated. The subsidy budget will be paid by a levy on the electricity price charged to the end consumer. The SDE+ is targeted at medium and small sized power plants and is only granted if the Cramer sustainability requirements and the criteria of the Commission Corbey are fulfilled; see for more information the Chapter “Quality Standards, Sustainability Criteria, and Certification”. On October 3rd, 2011, the Government of the Netherlands and the Dutch energy sector signed a [Green Deal](#) in which the sector set a target of 10% co-firing of biomass between 2012 and 2015.

On November 5th, 2012, a new Dutch government was established. In the coalition paper, the Cabinet set an international goal of a fully sustainable energy supply in 2050, and increased the national goal of 14% to 16% in 2020. To accomplish this, the budget for SDE+ program will be increased. On December 10th, 2012, the new Dutch Minister of Economic Affairs sent a [letter](#) to the Dutch Parliament. As stated in the coalition paper the Minister plans to continue the SDE+ scheme, and will increase the budget to Euro 3 billion in 2013. The maximum of 15 cent per kWh renewable electricity will be maintained. The SDE+ subsidy is intended for all renewable energy practices; solar, wind, geo-thermal and energy produced from biomass. Program details for the support of the production of energy from biomass are not finalized yet. In the letter, Minister Kamp states that his Ministry will study how the government could best support the co-firing of biomass. The Minister will inform the Dutch Parliament about his plans in the spring of 2013.

Belgium

The Government of Belgium stimulates the production of renewable energy with the Green Certificate Scheme (GEC). One certificate represents 1 MWh and partly covers the extra costs in production compared with fossil fuel. The guaranteed value for the biomass was 80 Euro per certificate, and as of 2010 it has been increased to 90 Euro (about 19 Euro per MT of wood pellets). However, starting 2010, co-combustion plants will receive only 50% of the GEC subsidy they were given before. For dedicated plants the certificates issued remain at 100%.

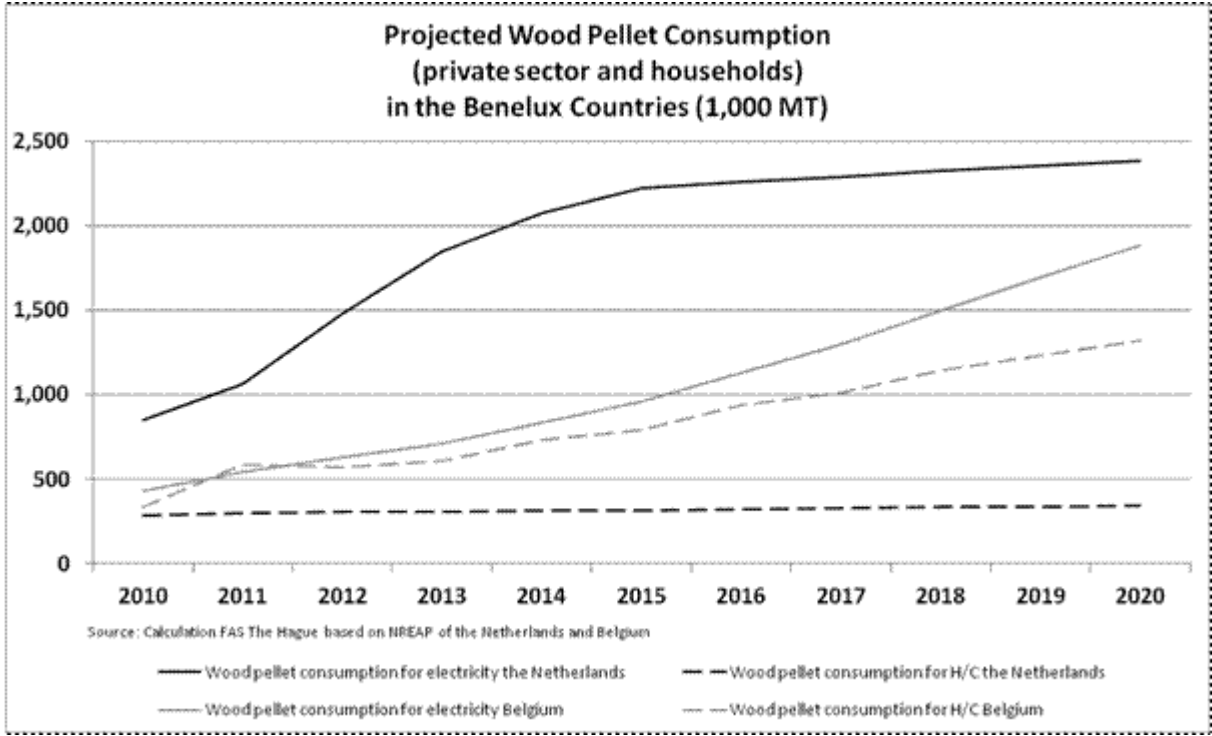
The Benelux Market for Wood Pellets

Differences in production and consumption characterize the European pellet market. The market can be divided

in three regions. The market around the Baltic Sea, with Sweden as major producer and consumer, and Russia as major supplier. The market in Central Europe, with Germany, Austria and Italy as both major producers and consumers. And thirdly, the North Sea region, with the Netherlands, Belgium and the UK as major consumers without any significant domestic production. The Dutch, Belgian and UK market are dominated by large-scale power plants, and mainly depend on imports from the United States and Canada. The ports of Rotterdam, Antwerp, Ghent and Delfzijl are anticipated to serve as a major logistical hub for the Benelux biomass market and potentially for other regions in the EU. To facilitate the trade in biomass, [Endex Wood Pellets](#), the world's first industrial wood pellet exchange was established in 2011, and is located in Amsterdam.

The market potential based on policy incentives

According to the Renewable Energy Action Plans (NREAPs) which were submitted by the Member States to the EC, a major part of the renewable energy will be produced from biomass. See for more information the chapter about the EU wood pellet sector in the [FAS EU Biofuels Annual](#). In the NREAPs of the Dutch and Belgian government, the targets for the use of biomass for electricity and heat are reported. Considering an energy content of 4.8 GW per MT of wood pellets and assuming the use of biomass other than wood pellets will stagnate, the Benelux wood pellet consumption in 2020 is calculated by FAS The Hague at about 2.7 MMT in the Netherlands and about 3.0 MMT in Belgium, see the graph below. Based on this scenario, nearly three quarters of the pellets are anticipated to be used for the generation of electricity, nearly a quarter for heating and cooling purposes by the private sector, and about 5% for heating purposes by households. In order to fulfill the Green Deal in which the Dutch sector set a target of 10% co-firing of biomass between 2012 and 2015, a volume of about 2.8 MMT of wood pellets is needed (based on a caloric value of 0.41 toe per MT of wood pellets).



The anticipated supply and demand in the Benelux countries until 2020

Since 2008, the demand for wood pellets has significantly outpaced domestic production in Europe. This has

resulted in increased imports from the United States. Currently, the United States is the main supplier of wood pellets to the EU as well as to the Benelux market. Other significant exporters of pellets to the EU are Canada and Russia. In 2012, U.S. wood pellets exports to the EU are forecast to be close to 2 MMT, which is approximately 40% of the EU import share, representing a value of US\$ 360 million. Industry sources expect this trade flow to increase to over 5 MMT in 2015. U.S. wood pellet exports to the Benelux market are forecast to be about 1.25 MMT in 2012 (US\$ 225 million).

Based on the Dutch and Belgian NREAPs, FAS The Hague made the following forecast for the production, supply and demand of wood pellets in the Benelux countries. This scenario is taking into account an energy content of 4.8 MWh per MT of wood pellets and the assumption that use of biomass other than wood pellets will remain constant. The trade in 2010 and 2011 is based on HS code 44013020, and on HS code 440131 beginning 2012. The tables also include the consumption of wood pellets based on the private sector's investment plans for the conversion and construction of power plants.

Netherlands	2010 Official	2011 Estimate	2012 Forecast	2013	2014	2015	2020
Production	110	110	110	110	110	110	110
Import	1,025	1,055	1,800	2,179	2,412	2,558	2,751
Import U.S.	346	423	700	-	-	-	-
Export	135	66	200	200	200	200	200
Consumption private sector							
-Forecast based on NREAP	913	1,285	1,709	2,079	2,312	2,458	2,651
-Based on private sector info	-	-	1,750	-	-	1,950	5,950
Consumption households	10	10	10	10	10	10	10

Belgium	2010 Official	2011 Estimate	2012 Forecast	2013	2014	2015	2020
Production	544	550	550	550	550	550	550
Import	316	514	800	818	1,073	1,254	2,704
Import U.S.	85	203	550	-	-	-	-
Export	38	71	30	50	50	50	50
Consumption private sector							
-Forecast based on NREAP	854	982	1,040	1,160	1,406	1,585	3,007
-Based on private sector info	-	-	1,320	-	-	2,970	3,720
Consumption households	98	149	158	159	167	169	198

Benelux	2010 Official	2011 Estimate	2012 Forecast	2013	2014	2015	2020
Production	654	660	660	660	660	660	660
Import	1,341	1,569	2,600	2,997	3,485	3,812	5,455
Import U.S.	431	626	1,250	-	-	-	-
Export	173	137	230	250	250	250	250
Consumption private sector							
-Forecast based on NREAP	1,767	2,268	2,748	3,238	3,718	4,043	5,657
-Based on private sector info	-	-	3,070	-	-	4,920	9,170
Consumption households	108	159	168	169	177	179	208

Estimates of the Dutch and Belgian government and sector organizations

In the Dutch NREAP, the Dutch government estimates the import demand of biomass for co-firing at 1.7 Mtoe in 2020, which is equal to a volume of about 4 MMT. The Dutch Ministry of Economic Affairs estimates the import of wood and agro pellets in 2020 at 5 MMT. The Flemish Biomass Association (ODE) estimates the non EU import of wood biomass for energy generation at 1.5 Mtoe in 2020, equal to a volume of 3.6 MMT. Based on these organizations data, the Benelux import of wood pellets in 2020 is estimated at about 8 MMT.

Quality Standards, Sustainability Criteria and Certification

According a [study](#) of Agency NL, a Dutch governmental advisory body, Dutch importers of industrial wood pellets call for clear, consistent, harmonized and long term government regulations. Also standardization of pellet quality is regarded as important for further development of the international wood pellet trade.

Despite the call for harmonized regulations by traders, the development of quality standards and sustainability criteria for wood pellets is conducted on five different levels; (1) the European Commission (EC) and the European Committee for Standardization (CEN); (2) individual Member State governments; (3) the European Biomass Association (AEBIOM) and European Pellet Council (EPC), representing the EU biomass sector; (4) the Wood Pellet Buyers Initiative (WPBI), representing primarily the buyers and end users of biomass; and (5) individual private companies. Despite the standards and criteria are developed through consultation between the levels, the multi-national and different private sector programs are a potential barrier for trade.

Quality Standards and Certification

In 2011, European pellet producers and users have been consulted by the CEN about a product standard for industrial wood pellets. This consultation is part of a project supported by the EC, the EUBioNetIII project. Results of these inquiries will be used for a CEN and an international ISO standard for wood pellets for industrial use (see for more info www.eubionet.net). The ISO fuel specification standards are planned to be published in 2013.

The European Pellet Council (EPC) is developing an ENplus certification scheme for industrial quality, the PellCert project. The European Biomass Association (AEBIOM) and ten EPC members are involved in the project: the biomass and pellet associations in Austria, Germany, Belgium, Sweden, Finland, France, Italy, Spain, Portugal and Hungary. The project is reportedly conducted in close cooperation with the EC. For more information see www.pellcert.eu.

Sustainability Criteria and Certification

Development of sustainability and certification programs in the Netherlands

The Dutch government support program SDE+ is only granted if the [Cramer sustainability requirements](#) are fulfilled. The Cramer sustainability criteria are translated in the NTA 8080, a standard developed by the Netherlands Standardization Institute (NEN). The NEN developed also a certification scheme to this standard, the NTA 8081. The NTA 8080 program is recognized by the EC to be compliant with the Renewable Energy Directive (RED). On October 11th, 2012, the government and the sector made a Green Deal in which the sector agreed to proof the biomass is also conform the sustainability criteria of the [Commission Corbey](#). These criteria are set up to prevent competition with the food market and to preserve biodiversity.

Also the Dutch private sector has developed a sustainability program. RWE Essent and Control Union

Certifications developed a voluntary program, the Green Gold Label. In the Dutch sector, sustainability criteria reportedly can also partly be certified on basis of FSC (Forest Stewardship Council) and PEFC (Program for the Endorsement of Forest Certification).

As the Netherlands lacks sufficient domestic biomass sources for reaching their renewable energy goals, the Dutch governmental body Agency NL studied the potential trade barriers for the import of sustainable biomass. In the [report](#), Agency NL recommends that the sustainability of in particular wood pellets made from plantation wood will have to be monitored. Agency NL is also developing a green house gas (GHG) savings calculation tool for solid and gaseous biomass ([Biograce II Project](#)), which goal is to harmonize the calculation methods in the various EU Member States. Agency NL has furthermore programs in place which support biomass suppliers in third countries to be compliment with the current and potential sustainability requirements.

Development of sustainability and certification programs in Belgium

The Government of Belgium grants Green Certificates based on the GHG balance of the supply chain and traceability through the supply chain. There are no minimum requirements for the GHG savings, but the savings will determine the CO₂ emission of the power plant. The certification program is developed by the engineering company Laborelec (part of GDF Suez) and SGS. Green Certificates are reportedly being granted for EU and Canadian pellets. Permission for the issuing of the certificates is given through the Public Waste Agency of Flanders (OVAM) and the Flemish Regulator of the Electricity and Gas market (VREG). In Belgium, Electrabel (owned by GDF Suez) relies on sustainability certification developed by Laborelec and SGS.

Development of sustainability and certification programs on a multinational level

The European Pellet Council (EPC) has the opinion that sustainability requirements are key for large scale investments in the biomass sector and wood pellet imports, and that the ENplus certification scheme could include such sustainability criteria. Also the World Bioenergy Association (WBA) introduced a voluntary sustainability program for solid biomass, the Sustainable Biomass Verification Scheme, which can be used for accrediting the sustainability of solid biomass applied for energy production.

Buyers of wood pellets are represented by the [Wood Pellet Buyers Initiative](#) (WPBI). The WPBI is developing harmonized quality and sustainability standards in line with the [position paper](#) of Eurelectric, the Union of the European Electricity Industry. The paper is a response to the [EC report](#) on sustainability requirements for the use of biomass, made public in February 2010, see further below. WPBI is developing the sustainability standards and related certification scheme based on the existing programs of RWE/Essent, Drax, Vattenfall, and the verification procedure of Laborelec and SGS.

Implementation of biomass sustainability criteria in the RED

In February 2010, the EC issued a [report](#) on sustainability requirements for the use of solid and gaseous biomass in the generation of electricity, heating and cooling. In the report, the EC recommends that Member States that have national sustainability schemes for biomass in place ensure that these correspond with the requirements laid down for liquid biofuels in the RED.

On October 17th, 2012, the EC made a [proposal](#) public in which they want to amend the sustainability requirements for liquid biofuels laid down in the RED. While the proposal does not cover biomass, similar regulations could be proposed for solid biofuels. To promote biofuels that achieve significant GHG emission cuts without directly competing with the food and feed markets the EC proposed the following weighting factors for liquid biofuels:

-To be counted *two* times: biofuels produced from dedicated energy crops, non-food cellulosic material, ligno-cellulosic material except saw logs and veneer logs.

-To be counted *four* times: biofuels produced from bark, branches, leaves, saw dust and cutter shavings. It is unclear under which category plantation wood would fall, but it is suspected that it would be counting only once.

Early 2013, the EC is expected to come forward with a proposal on sustainability criteria for biomass destined for the generation of power, heat and cooling. Benelux third country imports could be affected by addition of biomass sustainability requirements in the RED and the implementation of the RED by the individual Member State governments. Officially the Dutch power sector supports the addition of sustainability criteria for biomass in the RED and will pending the enforcement of such criteria commit itself to the current requirements for liquid biofuels in the RED. Benelux pellet traders are divided over the necessity of mandated sustainability requirements, and have generally the opinion that forest biomass that is destined for energy production should not be subject to different sustainability requirements than e.g. timber or pulp wood. The biomass sustainability criteria which could possibly be included in the RED are the Indirect Land Use Change (ILUC), the GHG reduction level, the carbon debt of the forest, the forest management certification, and the size of the power plant. As stated in the EC report of 2010 (see above), the EC is reportedly still planning to build on the current criteria for liquid biofuels in the RED and existing forest management initiatives.

Pellets based on saw dust are likely to be sustainable, except that they often are transported over a long distance which could affect their GHG savings balance. In the case of plantation wood, the product method needs to be taken in account. The sustainability determination of plantation wood is still under discussion and could have the largest impact on U.S. exports.

On the supply side: the United States

According a study of the [International Energy Agency Bioenergy \(IEA Task 40\)](#), the current U.S. capacity of wood pellet production is about 6 MMT. The predominant sources of wood pellets are reportedly saw mill residues, wood chips and round wood. Most of the produced saw residues are already been used for pellets, partly because the forest product industry is shrinking. The U.S. forestry sector sees opportunity in pellets production, as production forests need to be maintained and harvested, and because pellet production will bring new revenues to the sector. The [Renewable Energy and Energy Efficient Export Initiative \(RE41\)](#), subsequent to the National Export Initiative (NEI), targeted wood pellets as one of the most promising export markets and indicated that the USDA would expand its analysis of exporting wood pellets and chips in relevant countries.

Another export potential are pellets produced from agricultural wastes, such as crop residues. In the United States the availability of agricultural pellets is estimated at 157 MMT (source IEA Task 40).

Sustainability of U.S. wood pellets

U.S. federal laws such as enforced by the Environmental Protection Agency (EPA) protect the forest land. In addition, the U.S. forestry industry established Best Management Practices (BMPs). About 20% of the forests are certified in the United States. In Georgia, 50% of the wood pellets are produced from Sustainable Forestry Initiative (SFI) and the American Tree Farm System (ATFS) certified forests (source: Enviva). SFI and ATFS are national programs endorsed by the Program for the Endorsement of Forest Certification (PEFC). Wood pellet production in the United States generally has a positive GHG savings balance as wood resources and pellet production are situated close to ocean ports, and shipping is more efficient than road transportation.

U.S. Suppliers List and overview of the power sector in the Benelux countries

Please contact FAS The Hague, bob.flach@fas.usda, for a complete list of U.S. wood pellet suppliers and a detailed overview of the power sector in the Benelux countries.

Abbreviations

GJ	= Gigajoule = 1,000 MJ = Megajoule
MMT	= Million metric tons = 1,000 MT = Metric ton = 1,000 kg
MWh	= Mega Watt hours = 1,000 KWh = Kilo Watt hours
toe	= MT of oil equivalent = 41,868 MJ = 11.63 MWh

Caloric value of wood pellets:

1 MT of wood pellets = 4.8 MWh = 0.41 toe

For caloric values go to the website of the [Biomass Energy Centre](#)