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DEVELOPMENTS IN THE GLOBAL TRADE OF WOOD PELLETS

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ABSTRACT

The production and trade of wood pellets as a renewable energy source have increased significantly since 2008. The U.S. has become a major producer and exporter of wood pellets, primarily to the European Union (EU). Demand for wood pellets in the EU has been driven by policies to reduce emissions of greenhouse gases and increase the use of renewable energy. Many European power producers have converted, or are in the process of converting, coal-fired electric generating plants to biomass in the form of wood pellets to meet the EU's target of 20 percent renewable energy use by 2020. Wood pellet demand is also increasing in Korea and Japan as those countries also seek to increase use of renewable energy. This paper provides an overview of trends in the global demand for wood pellets and recent developments influencing wood pellets trade.

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Introduction

The consumption and trade of biomass energy in the form of wood pellets has increased significantly since 2008. Wood pellets are increasingly being utilized at an industrial scale for electric power generation, combined heat and power in industrial and commercial applications (CHP), and in other medium and large-scale thermal uses. The increase in demand has been primarily driven by policies in the European Union (EU) to increase the use of renewable energy, for which wood pellets qualify. Because local sourcing of wood pellets is insufficient to meet demand in many countries, wood pellets have become an increasingly traded commodity. Approximately half the global trade of wood pellets takes place within and among EU members. Major external exporters to the EU include the United States, Canada, and Russia. Prospective markets for wood pellets are emerging as well in parts of Asia, most notably in Japan and South Korea. Production capacity in the United States alone has increased from less than 3 million metric tons (Mt) in 2008 to over 12 million Mt in 2014, and wood pellets have become a significant segment of the forest products industry in the U.S. South. This article examines recent developments in demand and trade of wood pellets, including the policy environment that has led to increased demand for wood pellets, and the challenges related to new requirements for ensuring the sustainability of the feedstock used in pellet production.

Wood Pellets as Energy

Wood pellets are not a new energy product, but large manufacturing facilities serving industrial energy markets, most notably utilities in Europe, are a relatively new development. While wood pellets have long been used for residential and small commercial heating applications, major European utilities are increasingly co-firing wood pellets with coal or converting entirely to using wood pellets as the sole fuel source for generating electricity. Other large scale district heat and CHP installations have also been constructed in Europe to use wood pellets as the principal fuel. The manufacturing process to produce wood pellets is relatively straight-forward (box 1).

The advantages of wood pellets are in their increased consistency, bulk density, and energy efficiency compared to burning raw wood directly. Although approximately twice the cost of unprocessed wood,[2] the energy content of wood pellets is also double that of green wood.[3] Thus, a given shipment of wood pellets represents twice the energy content compared with the

[2] U.S. unit export values for wood pellets compared to wood chips are approximately double, $129/Mt versus $62/Mt. Drax also shows delivered fibre costs and processing to make wood pellets each represent one-third of wood pellet cost components (the remaining one-third are costs related to logistics). Drax, "Biomass Sourcing: Capital Markets Day," Slide 11.

[3] Wood pellets have an energy value of 8,400 BTUs per pound as compared with 4,200 BTUs per pound for green wood chips (assuming 50 percent moisture content).

Box 1: Manufacturing of wood pellets

The manufacturing process for wood pellets involves drying, grinding, and extruding wood fiber under high pressure and temperature into pellets of a specified size. The raw material may consist of sawdust, shavings, and other residues produced from wood products or furniture manufacturing and, increasingly, from chips and whole logs sold and delivered to wood pellet manufacturers. Wood fiber naturally contains lignin that serves to bind wood particles together when subjected to high temperature and pressure.[a] Both softwood and hardwood wood species are utilized for making wood pellets. For industrial pellets, bark is typically not utilized because it creates wood pellets with high levels of ash content that has detrimental effects on boilers and greater pollutant emissions when burned. In some pellet manufacturing processes, additional binders are added for durability or to augment the energy density of the pellets.[b] Pellets are typically sized approximately one-half inch in diameter (6–12 mm) and three-quarters to one inch in length (12–25 mm).

[a] Jones et al, "Wood Pellets: An Introduction to their Production and Use," 2–4.
[b] Industry representative, telephone interview by Commission staff, September 13, 2013.

same volume of green wood material. Processing wood into pellets increases the feasibility of transporting the wood material long distances to end users, making it a more easily tradable commodity.

Using wood for energy is generally regarded as having a much smaller carbon footprint than coal and other fossil fuels.[4] The disadvantages of wood pellets are that they are not as energy dense as coal and, unlike coal, must be kept dry during storage and shipment.[5] Special equipment and facilities such as covered railcars, enclosed conveyor belts, and weather-protected storage buildings are necessary. Wood pellet handling facilities need to also have equipment to minimize dust and risk of fire. To that end, a number of U.S. and EU ports have constructed buildings and installed equipment designed specifically for handling and shipping wood pellets. As an alternative to coal, wood pellets remain more expensive, exceeding the U.S. export value of coal on an energy equivalent basis by over $2.00 per million BTUs.[6]

Reportedly, some firms have developed technologies for producing water resistant or waterproof wood pellets.[7] Another emerging technology is torrefied wood pellets. In this process, the wood is preheated (essentially charred) to change its chemical composition, thus

[4] Life cycle analysis (LCA) is used to measure carbon emissions from the production and use of different energy sources. While there is some controversy regarding how carbon emissions from burning wood pellets should be analyzed and treated, LCA has generally shown wood biomass sourced from sustainable forests to be carbon neutral and is considered such in the EU. For an analysis of different LCA approaches to wood energy, see Sedjo, "Comparative Life Cycle Assessments: Carbon Neutrality and Wood Biomass Energy."
[5] Wood pellets have about 85 percent of the energy content of coal. According to the Energy Information Administration, the average heat content of coal consumed in the United States in 2012 was 19.51 million Btu per short ton or, on average, 9,755 BTUs per pound (http://www.eia.gov/tools/faqs/faq.cfm?id=72&t=2).
[6] In 2013, U.S. coal exports averaged $4.89 per million BTUs compared with wood pellets at $6.96 per million BTUs. However, the total value of U.S. coal exports was $11.3 billion compared with $371 million for wood pellets.
[7] Zilkha Biomass Fuels, http://www.zilkha.com/our-waterproof-pellet/; Southwest Renewable Resources, http://swrenewable.com/Products.html.

increasing its bulk density by as much as 40 percent and making it more water resistant.[8] To date, only small volumes of water resistant or torrefied pellets are being produced and traded.

Global Demand and Trade of Wood Pellets

While wood pellets can be used for animal bedding or other non-energy purposes, most wood pellet production is for the energy market. The pellet market is generally differentiated between residential/commercial heating applications and large, industrial uses. The segment representing the largest share of new installed capacity, as well as the substantial growth in production and trade, is the industrial wood pellet market.

Estimates of global wood pellet consumption vary, but are currently on the order of 22–25 million metric tons (Mt) annually[9] and are projected to rise to between 50 and 80 million Mt by 2020.[10] At 19 million Mt in 2013, the EU accounts for 85 percent of global consumption of wood pellets. A burgeoning trade in wood pellets has developed because many consuming countries have insufficient wood resources and/or pellet capacity to meet growing demand, which has become easier to track with updates to international trade statistics classifications (box 2). Approximately 35 percent of global production was traded in 2013 and that percentage has been growing. The volume of wood pellets traded globally in 2013 totaled 12.0 million Mt and was valued at $2.4 billion, including intra-European trade (figure 1). During the first half of 2014, the value and volume of world trade in wood pellets increased 18 and 12 percent, respectively, compared to the same period in 2013.

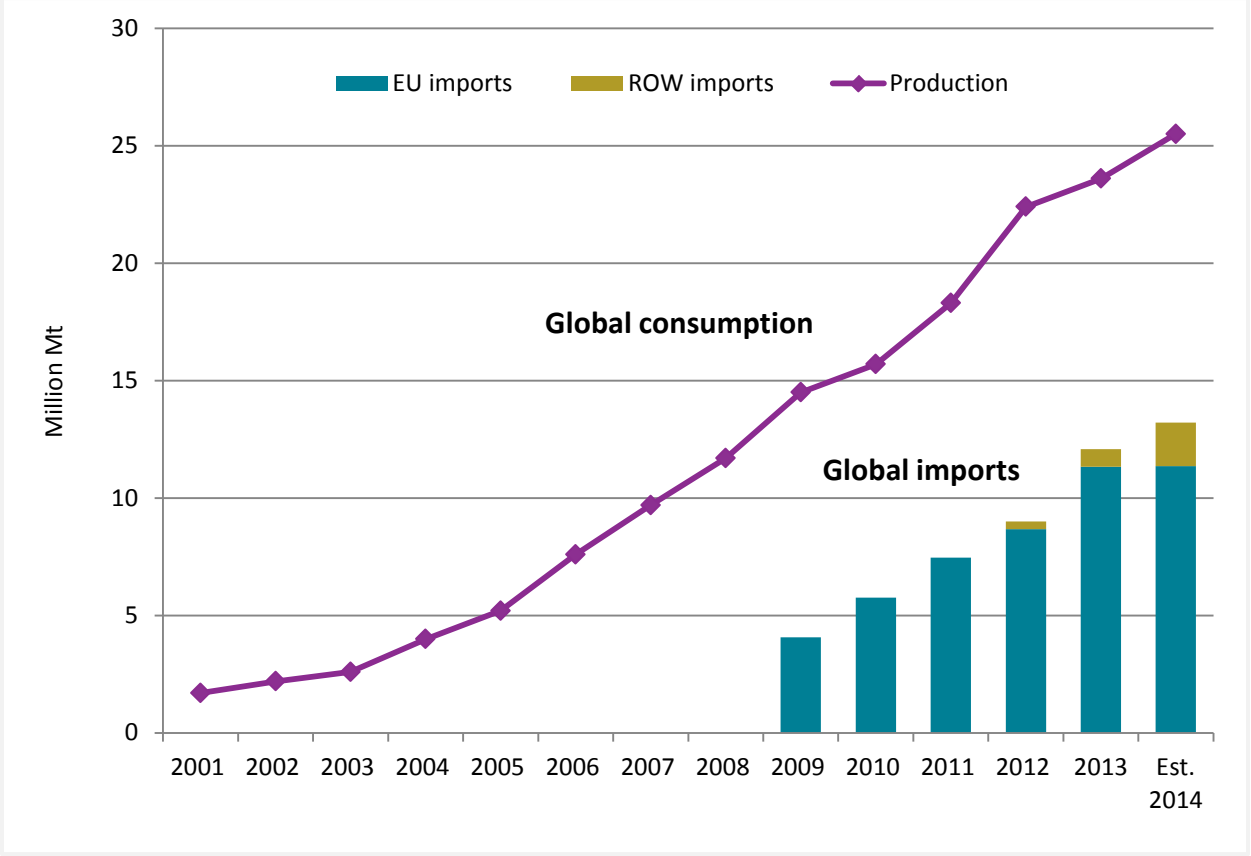
Box 2: Pellets as a traded renewable energy commodity

Tracking trade in wood pellets has become easier during the past few years as the trade has grown and become more significant. Starting in 2009, the EU provided an 8-digit CN classification category to track its wood pellets trade (4401.3020). For all other countries, until 2012, wood pellets were included in HS 4401.30, a broad basket that also included sawdust, fire logs, and similar products. However, a separate six digit HS code–4401.31–was adopted by the World Customs Organization (WCO) and implemented beginning in January, 2012. Thus, data on wood pellets trade with the EU and among its members are well recorded since 2009 and globally since the beginning of 2012. In the three year period from 2009—2012, EU imports of wood pellets from outside of the trading bloc increased from less than 1.8 million Mt to 4.5 million Mt and are likely to exceed 6 million Mt in 2013 based on year-to-date data (figure 2).[a]

[a] Eurostat as reported by GTIS with 2013 EU imports annualized based on the first eight months.

[8] IEA Bioenergy, Task 40. "Low Cost, Long Distance Biomass Energy Supply Chains," 7 and 11.
[9] The FAO reported 2013 global wood pellets production of 21.6 million Mt (FAO, FAOSTAT); Hawkins Wright as reported by the Wood Pellet Association of Canada estimates 25.5 million Mt ("International Pellet Markets…", slide 3).
[10] USDA Foreign Agricultural Service, "EU-27 Biofuels Annual 2013," 29.

Figure 1: Wood pellet global consumption and trade, 2001–14



Source: Hawkins Wright, Wood Pellet Association of Canada, and Global Trade Information Service, GTA (accessed November 15, 2014).

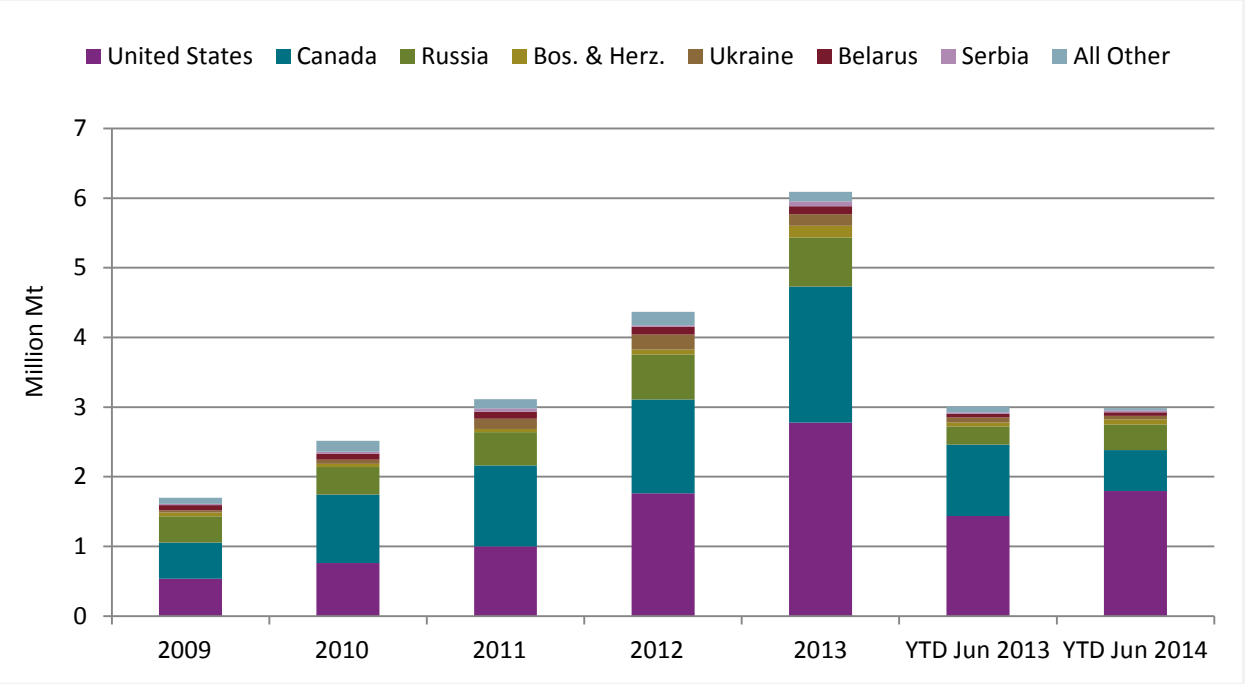
Renewable sources represent about 24 percent of all power generation in the EU and nearly half (48 percent) of EU wood pellet consumption in 2013 was for power generation.[11] Wood pellet demand in the UK, Belgium, Netherlands, and Denmark—the largest importers of wood pellets–is primarily for power generation.

About half of the global trade of wood pellets is within the EU, with Germany, Austria, and Latvia the major exporters to other EU member states. However, external EU trade is increasing rapidly, with the United States and Canada as the two largest suppliers, followed by Russia. Considering EU external trade only, EU imports of wood pellets from non-EU countries totaled $1.1 billion in 2013, of which the United States accounted for $505 million or nearly 45 percent.

[11] European Biomass Association, "European Bioenergy Outlook," 73 and Wood Pellet Association of Canada, "International Pellet Markets and Canadian Pellet Industry Update," (slide 8). Much of the solid biomass used for electric generation in the EU is co-fired in coal plants. Biomass contributes the largest shares of total electric generation in Hungary (69 percent), Estonia (66 percent), Netherlands (57 percent), and Poland (54 percent). [Note, however, that according to Eurostat, shares of electricity from renewable sources in 2012 were: hydropower (54.1 percent), wind (30.4 percent), biomass (4.1 percent), and solar (10.5 percent). Geothermal, wave, tidal, and ocean power represented the balance (less than 1 percent). Eurostat, Renewable energy statistics, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics (accessed October 20, 2014).

Canada and the Russian Federation accounted for $383 million (34 percent) and $123 million (11 percent), respectively.[12] Figure 2 shows EU wood pellet imports by supplying countries.

Figure 2: EU wood pellet imports by supplying countries (external trade)



Source: Global Trade Information Service, GTA (accessed November 15, 2014).

The UK has become the largest importer of wood pellets, importing mainly from the United States and Canada. At least five major UK utilities have incorporated wood pellets into their power generation mix. The largest power producer in the UK, Drax Power Limited, has converted all six of its coal-fired boilers to co-fire with wood pellets and is in the process of converting three to burn only wood pellets.[13] Other European power producers are making similar refurbishments. The next four largest European importers of wood pellets are Denmark (mostly from Russia and the Balkans), Italy (sourced mainly from Austria and Germany), Belgium (from the United States and Canada), and Sweden (also mainly from Russia and the Balkans).

While Europe is by far the largest consumer and destination for traded wood pellets, both Korea and Japan are increasing their use of renewable energy, including wood pellets. Korea has set a target of 10 percent of power generation from renewable sources by 2022, and Japan has been accelerating its renewable energy portfolio in the aftermath of the tsunami tragedy at

[12] Wood pellet production in the Russian Federation was estimated at 1.5 million Mt in 2013, but is likely to be higher in 2014 because of certain curtailments in 2013 due to legal disputes. Over 85 percent of Russian production is exported to Europe. UNECE/FAO Forest Products Annual Market Review, 2013-2014, chapter on wood energy markets, 5.

[13] When completed, Drax Power will produce 2,000 megawatts of electric power from 7 million tons of wood pellets annually (approximately 2.3 million tons per boiler).

Fukushima. Japan has set a renewable energy target of between 25 percent and 35 percent of total power generation by 2030. Both Korea and Japan are increasing imports of wood pellets from Canada, Southeast Asia, and to a lesser extent the United States, primarily to use in co-firing with coal.[14] Korea has also reportedly entered into agreements with concessioners in Indonesia to produce wood pellets for export.[15] Wood pellet imports into Korea during the first six months of 2014 totaled $120 million, a six-fold increase over the same period a year earlier. Table 1 details global wood pellet imports by major importer.

Table 1: Wood pellet imports by major importing country and the EU, 2012–13, January–June 2013, and January–June, 2014

Destination	2012	2013	2013 percent	Jan. – Jun. 2013	Jan. – Jun. 2014	Jan. – Jun. percent change
			Value ($)			
United Kingdom	294,655,322	639,456,971	26.7	378,217,298	260,006,880	-5.1
Italy	281,038,551	452,611,445	18.9	172,661,944	184,615,820	33.0
Denmark	350,242,855	426,760,939	17.8	202,288,899	211,275,645	17.5
Belgium	180,075,214	169,124,914	7.1	74,570,516	59,856,467	-9.1
Sweden	86,681,546	116,699,585	4.9	62,976,975	41,898,677	-27.6
Germany	65,416,348	115,095,933	4.8	41,266,820	30,699,610	-7.6
Netherlands	197,613,630	103,274,996	4.3	39,878,092	40,865,742	21.2
Austria	56,608,528	92,382,408	3.9	3,8943,258	35,621,044	13.9
South Korea	18,285,219	77,361,555	3.2	18,778,403	94,694,427	539.5
United States	17,631,676	30,261,514	1.3	10,470,427	16,005,455	76.5
All other	119,159,227	169,078,960	7.1	68,836,343	94,693,005	37.6
Total	**1,667,408,115**	**2,392,109,216**	**100.0**	**922,907,933**	**1,056,555,743**	**17.6**
EU-28 external	**809,990,530**	**1,133,865,040**	**47.4**	**553,704,518**	**565,116,123**	**2.1**
			Volume (mt)			
United Kingdom	1,486,899	3,432,434	28.5	2,057,516	1,914,370	-16.9
Italy	1,193,699	1,748,732	14.5	683,190	864,443	26.9
Denmark	2,000,240	2,320,250	19.3	1,103,709	1,238,686	15.7
Belgium	970,470	896,074	7.4	399,214	353,566	-2.9
Sweden	493,039	712,648	5.9	377,483	285,515	-25.3
Germany	347,466	526,625	4.4	201,866	158,821	-23.3

[14] In 2013, Korea imported 485,000 tons of wood pellets, quadruple the amount that was imported in 2012. The four largest suppliers in 2013 were Vietnam, Canada, Malaysia, and Russia.
[15] The Jakarta Post, September 6, 2013, http://www.thejakartapost.com/news/2013/09/06/korean-delegates-see-wood-pellet-potential-ri.html.

Destination	2012	2013	2013 percent	Jan. – Jun. 2013	Jan. – Jun. 2014	Jan. – Jun. percent change
Netherlands	1,032,550	542,858	4.5	187,613	245,617	44.8
Austria	272,173	385,457	3.2	172,603	179,482	1.5
South Korea	122,447	484,668	4.0	125,772	670,518	422.6
United States	86,736	152,441	1.3	51,001	88,442	73.6
All other	668,990	827,962	6.9	363,691	423,726	16.5
Total	**8,674,710**	**12,030,150**	**100.0**	**5,723,658**	**6,423,187**	**12.2**
EU-28 external	**4,367,433**	**6,088,274**	**50.6**	**3,008,064**	**2,983,568**	**-0.8**
			Unit Value ($/mt)			
United Kingdom	198.17	186.30		183.82	187.45	2.0%
Italy	235.44	258.82		252.73	265.69	5.1%
Denmark	175.10	183.93		183.28	191.92	4.7%
Belgium	185.55	188.74		186.79	191.67	2.6%
Sweden	175.81	163.75		166.83	159.78	-4.2%
Germany	188.27	218.55		204.43	239.99	17.4%
Netherlands	191.38	190.24		212.56	196.74	-7.4%
Austria	207.99	239.67		225.62	247.15	9.5%
South Korea	149.33	159.62		149.31	179.10	20.0%
United States	203.28	198.51		205.30	209.00	1.8%
All other	178.12	204.21		189.27	223.48	18.1
Total	**192.21**	**198.84**		**193.74**	**202.97**	**4.8**
EU-28 external	**185.46**	**186.24**		**184.07**	**189.41**	**2.9**

Source: Global Trade Information Service, GTA (accessed November 15, 2014).

U.S. Wood Pellet Demand and Trade

Demand for U.S.-produced wood pellets is partially domestic, but is being increasingly driven by the export market. U.S. domestic demand is mainly for residential heating with some commercial heat and CHP applications. Wood accounts for just one percent of net electricity generation in the United States.[16] While some U.S. power plants are using wood pellets to co-fire with coal, the majority of wood-using electric power plants in the United States utilize chips and other raw wood instead of wood pellets. In general, because of the relatively short distances between wood supply areas and the facilities using the material, and the additional

[16] U.S. Department of Energy, Monthly Energy Review, September 2014, Table 7.2a, 95.

costs of manufacturing wood pellets, wood chips and residues are more commonly utilized than pellets in wood-fueled power plants in the United States.

According to Biomass Magazine, 123 wood pellet manufacturing plants were operating in the United States in 2013 with a total capacity of 8.7 million Mt.[17] Published estimates of actual production are less, on the order of 5.5 million Mt in 2013, with about half exported. Pellet manufacturing is concentrated in the southern United States where over three-quarters of U.S. wood pellet capacity is located, and from where over 98 percent of wood pellet exports are shipped. Wood pellets have become the third largest wood products export from the U.S. South, behind softwood and hardwood lumber. Georgia, Florida, Alabama, and Virginia currently account for nearly all U.S. wood pellet exports.[18] In 2013, 2.9 million Mt of wood pellets were shipped from southern ports, 99 percent of which went to the EU. By way of comparison, 2013 wood chip exports from southern ports—primarily pulp chips for papermaking—totaled 0.8 million tons, with the lion's share going to Turkey. The average unit value of chip exports from the southern U.S. ports to the EU was $100.26/Mt (oven-dried basis) compared with $126.97/Mt for wood pellets.

In 2013, U.S. wood pellet exports to the EU exceeded $358 million and 2.8 million Mt, up from just $88 million and 0.5 million Mt in 2009.[19] As noted earlier, EU reported imports from the United States in 2013 were $505 million. The 40 percent (+/-) difference in the value of reported U.S. exports and the value of reported EU imports reflects the difference in valuation practices.[20] The four largest destinations for U.S. wood pellet exports in 2013 were the UK (accounting for 59 percent), Belgium (15 percent), Denmark (8 percent), and the Netherlands (6 percent). U.S. exports to South Korea have also been growing along with that country's imports from other sources.[21] Table 2 details U.S. wood pellet exports by major destination.

U.S. exports are reported as "free alongside ship" (FAS), while EU imports are reported as including "cost, insurance and freight" (CIF). The EU import unit value for wood pellets averaged just over $189/Mt during the first half of 2014 for both the U.S. and world suppliers, while U.S. export prices to the EU averaged $130/Mt.

[17] Biomass Magazine database of wood pellet plants (accessed January 14, 2014).
[18] GTIS, World Trade Atlas (accessed November 15, 2014).
[19] U.S exports in 2009 are based on reported EU imports of wood pellets (CN 44013020) from the United States.
[20] Approximately 40 percent of the value of imports is represented by the costs of shipping, insurance, and other transaction costs. The difference in reported quantities in the trade data is minimal and likely reflects time lags and other miscellaneous factors.
[21] The largest suppliers of wood pellets to South Korea during the first half of 2014 were Vietnam, Canada, Russia, Malaysia, and the United States.

Table 2: U.S. wood pellet exports by major destination country and the EU, 2012-2013, January–June 2013, and January–June, 2014

Destination	2012	2013	2013 percent	Jan. – June 2013	Jan. – June 2014	Jan. - June percent change
			Value ($)			
United Kingdom	108,816,312	219,688,190	59.2	122,651,855	169,498,363	38.2
Belgium	54,306,616	54,746,037	14.8	30,515,367	2,4256,146	-20.5
Denmark	4,086,425	28,400,915	7.7	2,862,952	6,852,382	139.3
Netherlands	6,3424,789	21,482,471	5.8	8,635	22,432,696	∞
Italy	2,632,640	23,912,245	6.4	6,545,109	8,787,777	34.3
Germany	34,305	7,805,175	2.1	3,968,225	36,626	-99.1
Korea, South	19,202	6,047,228	1.6	532,466	7,728,557	1351.5
Canada	8,741,635	4,947,671	1.3	2,046,753	2,001,744	-2.2
Sweden	5,415,767	2,458,782	0.7	1,468,782	1,476,800	0.1
Austria	6,264	280,412	0.1	0	31,938	n/a
All other	10,750,325	1,211,715	0.3	872,861	358,437	-0.6
Total	**258,234,280**	**370,980,841**	**100.0**	**171,473,005**	**243,461,466**	**42.0**
EU-28	**238,729,378**	**358,834,492**	**96.7**	**168,032,432**	**233,458,738**	**38.9**
			Volume (mt)			
United Kingdom	672,977	1,682,243	58.4	879,822	1,238,304	40.7
Belgium	495,552	534,668	18.6	292,876	247,672	-15.4
Denmark	29,201	195,589	6.8	23,575	60,661	157.3
Netherlands	499,162	178,413	6.2	16	172,963	nm
Italy	13,580	150,319	5.2	30,396	52,611	73.1
Germany	59	59,796	2.1	33,045	80	-99.8
Korea, South	26	33,600	1.2	1,773	40,518	2,184.7
Sweden	45,932	22,352	0.8	13,352	14,768	10.6
Canada	32,705	21,668	0.8	10,097	8,286	-17.9
Austria	8	1,134	0.1	0	128	n/a
All other	108,924	2,734	0.9	1,779	1,049	-0.4
Total	**1,898,125**	**2,882,517**	**100.0**	**1,286,732**	**1,837,040**	**42.8**
EU-28	**1,756,504**	**2,824,835**	**98.0**	**1,273,148**	**1,787,635**	**40.4**

Destination	2012	2013	2013 percent	Jan. – June 2013	Jan. – June 2014	Jan. - June percent change
			Unit Value ($/mt)			
United Kingdom	161.69	130.59		139.41	136.88	-1.8
Belgium	109.59	102.39		104.19	97.94	-6.0
Denmark	139.94	145.21		121.44	112.96	-7.0
Italy	127.06	120.41		528.81	129.70	-75.5
Netherlands	193.87	159.08		215.33	167.03	-22.4
Germany	582.44	130.53		120.09	459.26	282.4
Korea South	749.67	179.98		300.25	190.74	-36.5
Canada	190.32	221.35		153.29	135.55	-11.6
Sweden	165.59	113.47		145.47	178.22	22.5
Austria	767.18	247.27		nm	250.49	nm
All other	98.70	443.28		490.71	341.65	-30.4
Total	**136.05**	**128.70**		**133.26**	**132.53**	**0.6**
EU-28	**135.91**	**127.03**		**131.98**	**130.60**	**-1.0**

Source: Global Trade Information Service, GTA (accessed November 15, 2014).

Renewable Energy Policy as Driver of Wood Pellet Demand

Global demand for wood pellets is heavily driven by policies to increase use of renewable energy. The basic policy driver in the EU is the Renewable Energy Directive (RED) adopted by the European Parliament on April 23, 2009. RED set specific targets for a 20 percent reduction in GHG emissions, a 20 percent use of renewable energy, and a 20 percent improvement in energy efficiency.[22] To implement RED, each EU member state was required to develop a plan setting out a program to accomplish its national RED goals.[23] The individual member state RED goals vary depending on existing and prospective capacities for various forms of renewable energy, but the plans call for biomass and biofuels to provide half of the EU-wide 20 percent target for renewable energy. Biomass is projected to account for up to 80 percent of renewable energy used for heating and cooling, and nearly 20 percent of the electric power generated

[22] Part of the energy mix is a 10 percent minimum target for renewable fuels used in transport.

[23] Each EU member state drafted a National Renewable Energy Action Plan (NREAP) detailing its renewable energy targets by source and sector. Some EU member states must exceed the EU-wide 20 percent threshold, while others have lower targets. The renewable energy targets set for Germany, France, UK, and Italy–the four largest economies–are 18, 23, 15, and 17 percent, respectively. Sweden has the highest renewable energy 2020 target at 49 percent, while Malta has the lowest at 10 percent. AEBIOM, "European Bioenergy Outlook 2013," 12.

from renewable sources.[24] Since the goals for each EU member differ, the emphasis each places on the various energy sectors and renewable sources also differs. The UK, for example, is committed to producing 30 percent of its electric power through renewable energy. According to UK government estimates, that means that between 9.0 and 16.0 million tons of solid biomass will be required annually for that purpose.[25] For the UK's utilities, wood pellets have become the biomass–and hence, renewable energy– form of choice. Wood pellets also figure prominently in meeting renewable energy goals in other EU member states.

Policies to support the use of renewable energy take several forms. Even before RED, the EU established the EU Emissions Trading System (EU-ETS) in 2005 to encourage reductions in carbon dioxide emissions from utilities and industries (box 3). The EU-ETS is a cap and trade program that set a cap on total emissions for the affected sectors and created a market for trading emission allowances. Carbon emissions from biomass sources are considered to be carbon-neutral under the EU-ETS, and the program may have encouraged some increased use of biomass energy in some industries. However, since the tradable carbon price has been low in recent years, the overall success of the EU-ETS in terms of reducing carbon emissions has been mixed. Instead, individual EU member states have implemented generous financial support programs to incentivize renewable energy projects, particularly in the power sector.

Box 3: The EU emissions trading system (EU-ETS)

In 2005, the EU Emissions Trading System (EU-ETS) was established to encourage reductions in carbon dioxide emissions from utilities and industries. The EU-ETS set a cap on total emissions for the affected sectors and created a market for trading emission allowances. Emission allowances were at first allocated, but have more recently been auctioned off. Emitting facilities must purchase sufficient allowances to cover their carbon dioxide emissions and can sell any surplus allowances to others that have insufficient allowances to cover their emissions. The result in terms of reducing overall EU carbon emissions has been mixed. The carbon price has turned out to be relatively low so that buying needed allowances has been more economical than reducing emissions. The EU is in the process of changing the system by setting and gradually raising the floor for emission allowances. For further information, see the European Commission website (http://ec.europa.eu/clima/policies/ets/index_en.htm).

One of the approaches to encourage renewable energy takes the form of tradable energy certificates that, until recently, has been the main support scheme in the UK driving conversion of coal-fired power plants to wood pellets. Under this type of program, a regulating authority issues "green certificates" to utilities based on the type and amount of renewable-based power they generate. In turn, electric power distributors purchase certificates from the utilities in order to meet a mandated requirement that a certain percentage or amount of power they supply is from renewable sources (similar to a Renewable Portfolio Standard). Power

[24] Beurskens and Hekkenberg, "Renewable Energy Projections as Published in the National Renewable Energy Action Plans of the European Member States, February 2011, 239.
[25] Stephenson and MacKay, "Life Cycle Impacts of Biomass Electricity in 2020," July 2014, 5.

distributors that fail to supply their customers with the required amount of renewable-based electric power pay a penalty. The certificates can be sold or traded. Their market value is a function of the amount of renewable energy mandated by the government and the amount produced as represented by the certificates. The utility sells both the power it generates and the certificates it is granted. During 2013, Renewable Obligation (RO) certificates in the UK were trading at an average of approximately $43.00 per Mwh, equivalent to $206 per Mt of wood pellets.[26]

A second approach to support renewable energy that has increased demand for wood pellets is *Feed-in Tariffs (FiTs)*. Feed-in tariffs (FiTs) are payments made to a power producer for electricity generated from renewable sources. In this case, there are no tradable or marketable certificates. Instead, the power distributor is required to pay the power generator a supplemental fee for power generated from renewable sources, including wood pellets. The power distributor passes those charges along to its customers, although, in some cases, the government pays the fees instead. In several EU countries, FiTs are available for combined heat and power (CHP) installations as well as for electricity generation. The Netherlands, Germany, Denmark, and the Czech Republic are among the EU member states that have FiT programs for electric power. The UK has a FiT program for small power producers and thermal energy uses. As an example, large power plants in Denmark are supported by a feed-in tariff of 20 Euros per MWh, equivalent to $130 per Mt of wood pellets.[27]

In addition to tradable certificate and FiT programs, other types of direct payments in the form of grants, tax credits, or tax exemptions have been implemented by various EU member states. Most EU countries have some form of either direct payment or tax program to encourage use of renewable energy by industries and/or consumers. In addition, taxes or regulated limits on carbon dioxide emissions with an exemption for biomass energy also serve as an indirect incentive for using wood pellets. Several EU member states have imposed taxes on carbon emissions with emissions from burning biomass typically exempted. In Sweden, a large shift to biomass energy sources is attributed to higher taxes on fossil fuels imposed in the 1990s.[28] Other EU countries that impose carbon-based taxes are the UK, Germany, Finland, Denmark,

[26] UK Department of Energy and Climate Change, "Renewable Obligation Annual Report 2011-12," 39. In the UK, green certificates are called Renewable Obligations (ROs). The RO program has undergone changes since it was originally introduced in 2002. Beginning in 2009, the UK differentiated levels of support based upon the type of energy being generated through biomass. The number of Renewable Obligation Certificates (ROC) that is issued depends on the technology being employed. Biomass electric generation with combined heat and power receives 2 ROCs, electric generation by itself receives 1.5 ROCs, and co-firing receives 0.5 ROCs. Thus, converting a co-firing facility to 100 percent biomass results in much more generous incentives, an incentive for power plants to convert boilers entirely to wood pellets. However, the RO program will close to new generators in 2017 (existing installations will continue to be issued RO certificates until 2037).

[27] USDA, FAS, "The Market for Wood Pellets in Denmark," November 5, 2013, [3].

[28] IEA Bioenergy, Task 40. "Global Wood Pellet Industry Market and Trade Study." December 2011, 17.

Slovenia, and the Netherlands.[29] In the UK, an existing tax on fossil fuels was extended to power generators in April 2013. Known as the carbon price floor (CPF), it sets a required payment per ton of emitted CO2, a tax that is scheduled to rise over time.

Changing EU Policy Landscape

EU renewable energy policies continue to be adjusted in response to changing political and economic conditions in the EU member countries, often leaving utilities and other renewable energy investors with uncertain prospects for what they can expect from government policy and support. Some of the changes are a reaction to higher energy prices stemming from support programs. For example, FiT payments in Germany will be cut by one-third beginning in 2015 due to cost concerns.[30] Some changes are designed to promote certain kinds of renewable energy, wind or solar, for example, over others. In 2014, a green certificate program that had been operating in Belgium was terminated because of the potential diversion of wood biomass away from competing uses in manufacturing paper and wood products.[31] In both the UK and the Netherlands, renewable energy support mechanisms have been modified to provide greater support for wind and solar as compared with biomass, and greater financial support for installations that use biomass exclusively as compared with facilities that co-fire with coal.

In the UK, the RO program is scheduled to end by 2017 with certificates continuing to be issued for eligible facilities only through 2037. The UK plans to replace the RO program with a Contract for Difference (CfD) scheme beginning next year. The CfD program is a major change and conceptually very different. The CfD scheme sets a "strike price" for power generated by renewable sources and the buyer pays the generator the difference between the current market price and the strike price. Alternately, if the strike price is lower than the market price, the generator pays the buyer. The strike prices set by the government will favor new dedicated biomass generators and CHP projects, but proposed projects must meet certain financial and other criteria.

EU Sustainability Requirements

Unique to bioenergy (biofuels and biomass), and of particular importance in the acceptance and use of wood pellets, is the issue of sustainable supply. The environmental effects of utilizing increasing volumes of biomass for energy, and the sustainability of wood pellets specifically, have been questioned and challenged by some NGOs, academics, and government regulators. Concerns have been raised about the net greenhouse gas (GHG) emission reductions of using biomass energy sources, its land use impacts, and the sustainability of

[29] Andersen, "Europe's experience with carbon-energy taxation," December 20, 2010, 2.
[30] Sohn, "German cabinet agrees [to] renewable energy reform." ENDS Europe, April 8, 2014, 1.
[31] USDA, FAS, "EU Biofuels Annual 2014," July 3, 2014, [34].

agricultural and forest practices in supply regions. Numerous initiatives have been launched to address the sustainability of bioenergy. One researcher has identified as many as 67 ongoing certification initiatives designed to assure sustainability of bioenergy.[32]

A basic premise of the EU renewable energy approach is that biomass energy is treated as a neutral emitter of carbon. The carbon neutrality thesis is rooted in the proposition that the carbon emitted by burning wood is replenished by new timber growth and that, over wide landscapes, and over time, timber growth exceeds removals, at least in the United States. Another underlying assumption is that the use of wood for energy displaces an equivalent use of fossil fuels and thus further reduces carbon emissions. Thus, proponents argue that wood energy should be treated differently than fossil fuels. They also note that increased demand for bioenergy spurs forest investments to increase wood biomass production and hence increase the stock of carbon. The opposite view is that the carbon emitted is not replaced in the same spatial or temporal scale from where it was removed and, from a regulatory standpoint, emitted carbon is emitted carbon irrespective of the fuel source. Moreover, some contend that increased biomass energy demand has adverse indirect land use impacts by raising prices which results in accelerated harvesting and deforestation, the consequences of which are further carbon emissions.[33]

The EU has taken a largely prescriptive approach to addressing sustainability of biomass energy and biofuels. For liquid biofuels, the RED set out obligatory sustainability criteria (box 4).[34]

However, criteria for solid biomass were deferred pending further study by the European Commission. Documenting compliance with sustainability criteria will be a major challenge for wood pellet producers, particularly those in the United States that depend upon manufacturing residues and small family-owned forests for the majority of their raw material. Proposed sustainability criteria establish a minimum threshold of greenhouse gas savings and precludes using raw material from certain kinds of land including forests of "high biodiversity value."[35]

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[32] Van Dam, Junginger, and Faaj, "From the global efforts on certification of bioenergy towards and integrated approach based on sustainable land use planning," 2010, 1.

[33] The literature presents opposing views on the effect of bioenergy on food prices and net carbon emissions. One thesis, put forward by Searchinger et al, is that increased demand to use corn for ethanol raises world corn prices and thus encourages land conversion, ostensibly from forest use, and particularly in developing countries. The conversion of forest land to agricultural commodities, whether corn or another farm crop, itself causes carbon emissions as forests are net sequesters of carbon. Similarly, a shifting of wood use to energy may cause timber commodity prices to rise and have a similar result of inducing carbon-emitting land use changes. Sedjo and others have argued that increased demand for bioenergy will spur forest investments to increase the wood biomass production and hence the stock of carbon. See Sedjo, RFF Discussion paper, November 2013.

[34] European Union, Directive 2009/28/EC, Articles 17, 18 and 19.

[35] EC "Proposal for a Directive of the European Parliament and of the Council on sustainability criteria for solid and gaseous biomass used in electricity and/or beating and cooling and biomethane injected into the natural gas network." Available at: www.endseurope.com/docs/130819a.pdf.

Box 4: RED biofuels sustainability criteria

The biofuels criteria in the RED prescribe minimum GHG reductions that tighten over time, address land use and environmental impacts, and require adherence to economic and social standards including ILO standards. Under the RED sustainability criteria, biofuels must reduce GHG emissions by 35 percent initially, at least 50 percent compared to conventional fuels in existing plants from 2017 forward, and by at least 60 percent in new installations. The EC criteria prohibit the use of biomass from primary forests or forest with no significant ecological disturbance, protected areas, high biodiverse grasslands, wetlands, or forest lands with high carbon stocks such as wetlands, peatlands or continuously forested areas. The Commission detailed specific methodologies and default values for calculating GHG emissions from different kinds of feedstocks, including biofuels made from cellulosic materials such as wood (sets out how to calculate the savings as the sum of emissions from (1) extraction and cultivation of raw materials, (2) land use change, (3) processing, and (4) transport and distribution). Wastes are exempted from the sustainability criteria. These sustainability criteria apply to all biofuels consumed in the EU whether produced in the EU or imported. The EU is currently also reviewing a proposal on indirect land use change (ILUC) that would require ILUC factors to be incorporated into the GHG calculations for eligibility to meet biofuels targets. The EU Commission issued a report on sustainability requirements for biomass energy in February, 2010. To date, the EU Commission has not taken any further definitive action on sustainability criteria as they may apply to biomass energy.

Absent an obligatory set of EU-wide guidelines for biomass, several member states have recognized third-party certification schemes, or have drafted sustainability criteria of their own that are being used as qualifying preconditions for biomass energy, and thus wood pellet, support schemes.[36] In addition, several separate efforts to harmonize sustainability criteria for biomass, and particularly for wood pellets, are being undertaken by utilities and producer groups. Some of these efforts are in combination with developing uniform technical standards for wood pellets (i.e., size, ash content, moisture tolerances, etc.). For example, the European Biomass Association (AEBIOM), has organized PellCert, a consortium of biomass associations, that has issued technical standards for industrial pellets called ENPlus.[37] In addition, both the European Standards Institute (CEN) and ISO (through ISO 13065) are developing standards for biomass energy applications and sustainable bioenergy production, respectively.[38]

Several major European utilities have formed the Sustainable Biomass Partnership (SBP) that has drafted sustainability standards for the buyers of industrial wood pellets. The standards are an attempt to both harmonize RED-compliant sustainability criteria for application throughout the EU and to meet the various EU member-specific criteria that have emerged, particularly requirements of the "Timber Standard" issued by the UK government in August, 2013 for

[36] At least four biomass energy sustainability schemes are currently recognized by various EU member governments: Green Gold Label, NTA 8080 certification, Laborelec-SGS Solid Biomass Sustainability Scheme, and the Drax Biomass Sustainability Implementation Process.
[37] See http://www.enplus-pellets.eu/pellcert/.
[38] The ISO standard was proposed by Germany and Brazil and was distributed for initial comments earlier this year. The target publication date is mid-2015.

implementation in 2015. SPB expects to begin requiring wood pellet producers to apply SPB standards by the end of 2014.[39]

Meeting the sustainability requirements issued by the UK's Department of Energy and Climate Change (DECC), referred to as the "Timber Standard," will be necessary to receive financial support for wood pellet energy projects under the UK's government's financial support schemes for renewable energy.[40] The "Timber Standard" conforms to the proposed EC guidelines and also mandates that suppliers meet the requirements of the UK Timber Procurement Policy as set out by the UK's Central Point of Expertise on Timber, otherwise known as CPET. CPET was created several years ago to regulate government wood purchases. CPET requires evidence of legal and sustainable sourcing that can either be in the form of certification by an approved forest certification scheme (including FSC, PEFC, and SFI) or by evidence that meets other rigorous criteria (so-called Category B evidence in the policy). In either case, at least 70 percent of the wood raw material must be shown to have originated on legal and sustainably managed forests with traceability to the original forest source a key element.

The UK's sustainability requirements may be problematic for U.S. industry since the majority of wood supplied to wood pellet producers is from family forest owners who are not typically certified to one of the accepted schemes and may also not meet requirements under Category B. Forest ownership in other supplying countries, such as Canada, is characterized by a high degree of government ownership, which makes traceability somewhat less challenging than in the United States.

WTO and Wood Pellets

Also hovering in the background on wood pellet trade (and biomass energy more generally) are questions about whether sustainability criteria are consistent with WTO commitments. Some argue that the EU's RED is inconsistent with WTO rules because it discriminates against bioenergy imports from certain countries based on how the bioenergy is produced and/or by applying discriminatory standards, such as the sustainability criteria, in violation of the WTO Technical Barriers to Trade agreement (TBT).[41] Others suggest that, given the attention to climate change, preserving biodiversity, and other environmental issues, these types of criteria

[39] E-mail communication with industry representative, October 14, 2014.
[40] To take effect in 2015, the sustainability policy will apply to electricity generators under the Renewable Obligations program and providers under UK's Renewable Heat Incentive, "Timber Standard for Heat & Electricity: Woodfuel used under the Renewable Heat Incentive and Renewables Obligation," 4.
[41] Mitchell and Tran, "The Consistency of the European Union Renewable Energy Directive with World Trade Organization Agreements: The Case of Biofuels," 34.

should be viewed differently.[42] They contend that as long as sustainability criteria are crafted in accordance with international standards they will not run afoul of the TBT agreement since the TBT agreement allows a WTO member to establish technical regulations and voluntary standards for certain purposes.[43]

In terms of WTO rules, the concept of sustainability criteria falls within the grey area of whether traded goods can be distinguished by how they are made, referred to as process and production methods (PPM), and not merely by their conventional physical attributes. Restrictions on PPM are discussed in the literature and, while they have been the subject of a few WTO disputes, the applicability of WTO rules to products differentiated by PPM remains largely unresolved.[44] For wood pellets trade with the EU, the fundamental question is whether the EU can restrict trade in wood pellets that are in all other aspects identical, but differ only in terms of meeting a sustainability certification. Moreover, can governments require compliance to privately developed standards that may discriminate against one or more supplying countries?

WTO rules generally disallow countries from imposing restrictions on imports that favor one country or group of countries over another, or policies favoring domestic producers over imports. However, under GATT/WTO Article XX, the WTO allows certain exceptions for measures that are "necessary to protect human, animal or plant life or health" and/or relate "to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption." At least one author has noted that the drafters of the EU Renewable Energy Directive were careful to use the phrasing "environmental sustainability criteria" for the required criteria for the use of biofuels to enable the environmental protection exception.[45]

Whether or not discriminating against a foreign producer based on sustainability criteria is allowed because of health (i.e., climate change) considerations or conservation of natural resources has not been tested at the WTO. Requiring absolute traceability in the supply chain for wood materials (as may be required) would likely be problematic for some U.S. pellet producers sourcing from multiple small landowners in the U.S. South. Producers in countries with tropical forests will find it equally difficult, if not prohibitive, to meet the proposed sustainability criteria.

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[42] Burrell, Gay, and Kavallari. "The Compatibility of EU Biofuel Policies with Global Sustainability and the WTO," 786.

[43] Ackrill and Kay, "EU Biofuels Sustainability Standards and Certification Systems – How to Seek WTO-Compatibility," 551–564.

[44] Questions related to PPM were at issue in WTO cases involving dolphin-safe tuna and shrimp fished without using turtle-exclusion devices, among others. See discussion in Mitchell and Tran," The Consistency of the European Union Renewable Energy Directive with World Trade Organization Agreements: The Case of Biofuels."

[45] UNCTAD, "Making Certification Work for Sustainable Development: The Case of Biofuels," 2008, 4.

Under Article XX, environmental or human health exceptions are permitted as long as they are the "least trade restrictive measure" available for protecting human, animal, and plant health and/or conserving exhaustible natural resources. A measure may be deemed "necessary" for purposes of the exceptions only if less restrictive measures that are GATT/WTO consistent are not sufficient for the same intended purpose(s).[46] With respect to wood pellets, do sustainability criteria embodied in the varied schemes being referenced by the EU and EU member states all meet that test?[47]

Wood Pellets and Renewable Energy Policies in the United States

U.S. policies supporting biofuels and biomass energy are not as robust as in the EU. The only mandatory national target for renewable energy is for biofuels, enacted as part of the 2007 Energy Independence and Security Act (EISA). EISA requires an increase in the use of biofuels in transportation from 4.7 billion gallons in 2007 to 36 billion gallons in 2022.[48] In 2014, the U.S. Environmental Protection Agency (EPA) proposed a "Clean Power Plan" aimed at reducing carbon dioxide emissions in 2030 by 30 percent compared to 2005. If promulgated as proposed, states will be required to develop plans to meet the proposed goal. Biomass, including wood pellets, would potentially have a role in replacing coal for electric power generation.

Other federal policies promoting the development of renewable energy take the form of direct payments and tax incentives. Producers and users of wood pellets have taken advantage of some of these programs. One example is the Biomass Crop Assistance Program (BCAP). BCAP is the largest federal program that provides payments to eligible biomass producers. Grants of up to 75 percent of establishment costs for new biomass crops are provided and payments of up to $45 per ton are made to eligible suppliers. Investment tax credits and a residential energy renewable tax credit are also available for qualified projects and installations, although according to advocates, biomass is less favored as a renewable energy source in terms of tax policy than other renewable energy sources.[49] A renewable electricity production tax credit that provided up to 2.2 cents per Kwh for closed-loop biomass projects (i.e., the biomass is grown specifically for the energy purpose) and 1.1 cents per Kwh for open-loop biomass projects using waste and residual biomass sources (i.e., the biomass is procured from available "waste" sources) expired on January 1, 2014. The recently enacted 2014 omnibus budget

[46] UNCTAD, "Making Certification Work for Sustainable Development: The Case of Biofuels," 2008, 37.
[47] Sustainability criteria are similar to certification in this regard. UNCTAD, "Making Certification Work for Sustainable Development: The Case of Biofuels," 2008, 38.
[48] EISA places a cap of 15 billion gallons on corn ethanol in 2015 with the balance to be made from advanced biofuels including 16 billion gallons from cellulosic fuels. The RFS is implemented and enforced by EPA through a system of renewable identification numbers (RINs) assigned to production that are verified, tracked, and traded among refineries.
[49] Biomass Power Association, http://www.usabiomass.org/pages/gov_BCAP.php.

included approximately $2 billion in funds for renewable energy research and development, a slight increase over previous spending.

Some states support renewable energy, including biomass or wood pellets, through various state tax and incentive programs. For example, approximately thirty states have renewable portfolio standards (RPSs), most of which include biomass energy in the mix of energy sources to be included. Policies are inconsistent, however, and some states have recently modified their RPSs in light of less expensive natural gas alternatives.[50] In general, policy in the United States has been tempered by the need to balance wood use for energy with wood use for conventional product purposes. Over the longer term, renewable portfolio standards and the Clean Power Plan may encourage greater use of wood energy as states move to increase the renewable share of their energy portfolios.[51] However, as previously noted, the economics of most large-scale wood-using energy projects in the United States favors raw wood utilized in direct combustion over manufactured wood pellets.

An important regulatory issue affecting biomass energy in the United States is how greenhouse gas emissions (GHG) from biomass energy sources are viewed under Clean Air Act (CAA) provisions. In November, 2014, EPA issued a revised framework for how biogenic emissions from stationary sources should be evaluated under CAA requirements. In an accompanying memo, EPA recognized that waste-derived and certain sustainably produced forest-derived feedstocks can comply with CAA's Prevention of Significant Discharge (PSD) provisions and state CO2 accounting under the Clean Power Plan.[52]

Wood energy is contentious within the U.S. forest products industry. Logs sold to wood pellet producers are typically of lower value than those suitable for use in lumber or plywood. However, in some locations, wood pellet producers compete with manufacturers of pulp and paper, oriented strand board (OSB), particleboard, medium density fiberboard (MDF), and other composite panels for some of the same raw materials. Hence, the users of wood fiber for paper and wood products oppose government support targeted at wood energy. On the other hand, for forest landowners growing and selling timber products, the wood pellet market creates an additional income stream for thinnings, logging residues, and other low quality timber that previously had no market value.

[50] UNECE/FAO Forest Products Annual Market Review, 2012–2013, 97.
[51] In June, 2014, the EPA proposed a plan to reduce greenhouse gas emissions from power plants. Under the plan, each state will need to devise emission targets based on its energy mix and opportunities for energy sourcing.
[52] Prior to the EPA announcement in November, 2014, the EPA was considering treating burning wood-based fuels the same as emissions from fossil fuels for purposes of compliance with the CAA's Prevention of Significant Discharge (PSD) provisions and requirements for using Best Available Control Technology (BACT) in new facilities. EPA's revised framework also recognizes the role that biomass energy may play in the Clean Power Program to reduce CO_2 emissions.

Conclusion/Outlook

Global demand for wood pellets is increasing and is driven in large part by policies in the EU that provide financial incentives for the use of renewable energy and avoiding costs of carbon emissions. This is not expected to change in the near term. Most of the government incentives in the UK and elsewhere are guaranteed for periods of up to fifteen years. The fastest growing European market for imports of wood pellets from the United States is currently the United Kingdom, where conversion of coal-fired electric power plants to biomass in the form of wood pellets is accelerating rapidly. Imports are also increasing in other EU countries where large-scale conversions to dedicated biomass use and/or co-firing boilers with coal in electric utilities and CHP installations are taking place. Wood pellet demand is also growing in the United States, but at a much slower rate than in the EU.

The major issues affecting wood pellet demand and trade flows, beyond production costs, transport, and infrastructure for export, are the changing nature of the support programs for utilities and other users, and requirements related to ensuring sustainability of wood sourcing. "Sustainability criteria" has emerged as a major issue for wood pellet producers, and U.S. suppliers in particular. They are also a challenge for EU buyers as the criteria must be met in order for projects to qualify for financial support and to be counted toward RED targets. Support policies and supply chain requirements that vary by country make long-term investments and supply agreements more complicated for producers. That support policies continue to change and evolve also contributes to investment uncertainty.[53] The development and implementation of a consolidated set of sustainability standards by a consortium of European wood pellet buyers through the Sustainable Biomass Partnership (SBP) will make it easier for EU pellet purchasers to demonstrate compliance with regulations, but rigorous criteria on sourcing of wood raw material will be challenging for wood pellet producers. Some proposals, including the proposed sustainability rules in the UK, favor wood material obtained from forests certified under a recognized forest certification program. This poses a potential problem for U.S. producers since most of the wood used in U.S. pellet manufacturing derives from family forest owners that do not participate in a certification program. Ultimately, the various requirements related to the sustainability of wood resources may affect the competitiveness of different wood pellet suppliers and their access to EU or other markets. Concerns about the carbon neutrality of using wood energy may also shape future policies that affect biomass energy and wood pellet demand.

[53] In August, 2013, RWE, a major power producer in the UK that had converted a generating plant from coal to biomass, ceased operations. RWE attributed the closure of its Tilbury B power plant to not being eligible under the UK's new CfD support program. See Macalsiter, "Tilbury power station mothballed after investment burns out," August 16, 2013, 1.

An emerging area in WTO discussions relates to the conformance of sustainability policies with WTO commitments. To date, there have been no formal WTO challenges to the existing biofuels sustainability mandates in RED, or to member state requirements on sustainability of wood raw materials used for biomass energy. The only filing has been a 2013 consultation request from Argentina questioning the arbitrary nature of the 35 percent GHG reduction threshold for biodiesel to qualify towards the RED. No additional information pursuant to that request is available. The literature on the compatibility of RED-related sustainability criteria with WTO suggests a number of potentially problematic issues given existing case law and lack of clarity in the GATT/WTO with respect to how sustainability requirements for trade are addressed. The application of sustainability standards to wood pellets production could affect trade and market access for some producers to the exclusion of others and, potentially, could be tested within the WTO.

Notwithstanding unresolved and evolving policy issues, the demand for wood pellets is trending upward. The wood pellet market in the EU and prospectively elsewhere represents new opportunities for U.S. industry and for forest landowners growing and selling timber. Both Korea and Japan are beginning to increase their imports of wood pellets as well. Wood pellets are one of the most rapidly growing biomass energy commodities being traded internationally and one of the important renewable energy sources replacing fossil fuels to reduce greenhouse gas emissions. Developments in wood pellets trade will likely influence and shape a significant segment of the renewable energy market over the next decade and perhaps beyond.

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