

## SHIFTS IN U.S. WIND TURBINE EQUIPMENT TRADE IN 2010

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U.S. wind turbine imports decreased significantly from 2009 to 2010 due to a decline in the size of the U.S. market, lower wind turbine prices, several foreign producers' installations decreasing faster than the market, and the opening of several new U.S. manufacturing plants. U.S. exports rose in 2010 as U.S. producers took advantage of growing markets in Canada and Mexico, but exports remain limited in comparison to imports.

### Key Terms

- Wind-powered generating sets (HS 8502.31) are nacelles and components imported with the nacelle.
- The nacelle houses the main components of the wind turbine, such as the gearbox and generator.

### DECLINING U.S. IMPORTS

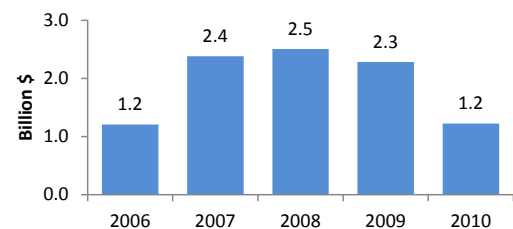
U.S. imports of wind-powered generating sets<sup>1</sup> declined from \$2.3 billion in 2009 to \$1.2 billion in 2010 (a 46% decrease).<sup>2</sup> Factors contributing to the decrease included:

1. **Smaller market:** U.S. utility-scale (or large)<sup>3</sup> wind turbine installations decreased from 9,922 megawatts (MW) in 2009 to 5,115 MW in 2010 due to a period of lower energy demand, low natural gas prices (a competing energy source), transmission constraints, and the impact of the recession and financial crisis on project financing.<sup>4</sup>
2. **Decreasing prices:** Wind turbine prices significantly declined from 2009 to 2010 due to "increasing scale, improved efficiency, and over-capacity."<sup>5</sup>
3. **Several foreign producers' installations declined faster than the market:** Installations of turbines from all major firms declined. However, several major firms without U.S. nacelle plants open at the start of 2010 lost market share, while several firms with U.S. plants gained market share.<sup>6</sup>
4. **Several European companies opened their first U.S. manufacturing plants:** Several Europe-based companies opened their first nacelle plants in the United States in 2010. Production at these plants, particularly those opened the earliest in 2010, contributed to fewer imports. Vestas opened a plant in July, Nordex opened one in October, and Siemens opened one in December.

The decline in U.S. imports reflects a drop in imports from the EU-27 and Japan. Notable import trends included:

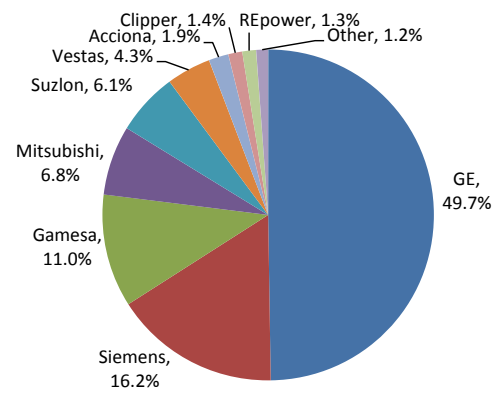
1. **Decrease from EU-27 and Japan:** European companies are the leading foreign suppliers to the U.S. market and the factors noted above led to the decline in imports from Europe. Imports from Japan fell due to a decline in Mitsubishi installations, a decrease in new orders, and imports and installations occurring in different years.
2. **Slight increase from India:** India-based Suzlon is the primary supplier of wind turbines from India and was fifth in U.S. market share in 2009 and 2010.
3. **Market entry of Chinese and Korean producers:** Imports from Korea in 2010 and China during 2008–10 reflect the U.S. market entry of Korean and Chinese producers. However, overall imports from China and Korea remain low.<sup>7</sup>

U.S. imports of wind-powered generating sets, 2006–10



Source: USITC DataWeb/USDOC.

U.S. wind turbine market share, 2010



Total installations: 5,115 MW

Source: AWEA, AWEA U.S. Wind Industry Annual Market Report Year Ending 2010, 2011.

Notes: GE, Gamesa, Acciona, Clipper, DeWind ("other" category), and Nordic ("other" category) had plants open at the start of 2010. Numbers may not add due to rounding.

U.S. imports of wind-powered generating sets, select countries, 2006–10, million dollars

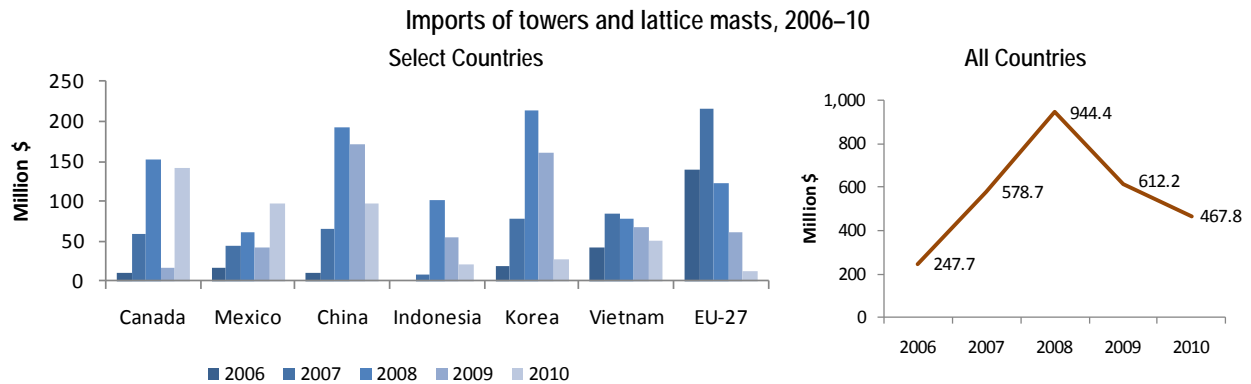
	2006	2007	2008	2009	2010
EU-27	885.3	1,731.8	1,929.4	1,428.4	922.1
Denmark	630.8	966.1	706.9	785.8	698.9
Germany	56.5	210.7	297.2	203.9	51.5
Spain	157.5	423.5	669.1	303.0	83.2
India	216.6	253.5	178.6	244.5	260.2
Japan	97.2	307.5	377.8	581.3	12.3
Korea	0.0	0.3	0.1	0.1	8.0
China	8.0	85.2	14.3	6.5	6.9
Other	1.6	1.6	3.1	19.2	12.3
Total	1,208.7	2,379.9	2,503.3	2,280.0	1,221.8

Source: USITC DataWeb/USDOC.

Note: Numbers may not add due to rounding.

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U.S. imports of towers and lattice masts (HS 7308.20) declined by 24 percent from 2009 to 2010 and shifted from Asia to Canada and Mexico (wind turbine towers account for most imports in HS 7308.20). The decrease in the U.S. wind market size and lower tower prices contributed to the decline in imports. There was also a rise in U.S. tower production capacity from 2008–10, but data on U.S. producers’ market share are not available.



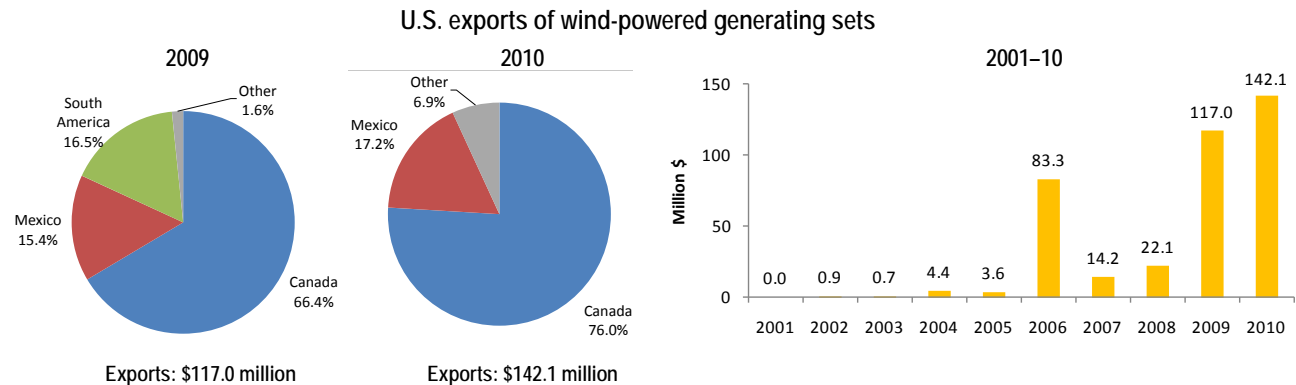
Source: USITC DataWeb/USDOC.

Note: Imports in HS 7308.20, towers and lattice masts. HS 7308.20 is not specific to wind turbine towers, but imports were primarily wind towers during 2006–10.

### RISING U.S. EXPORTS

U.S. exports of wind-powered generating sets rose from \$117.0 million in 2009 to \$142.1 million in 2010 (a 21% increase) and have risen every year since 2007 (though they remain less than 10 percent of global exports). The factors contributing to export growth include:

- Growing nearby markets:** The wind turbine markets in Canada, Mexico, and South America, which offer export opportunities for U.S. producers, are growing due to policies encouraging wind installations.
- Increase in U.S. producers:** Approximately 10 firms currently produce nacelles in the United States, up from one prior to 2006. At least four companies have exported utility-scale wind generating sets since 2006.



Source: USITC DataWeb/USDOC.

Notes: All 2006 exports were to Canada. Numbers may not add due to rounding.

<sup>1</sup> HS 8502.31 includes small and utility-scale wind turbines, but small turbines generally represent a low share of trade.

<sup>2</sup> All trade data are from U.S. International Trade Commission (USITC) DataWeb/U.S. Department of Commerce (USDOC).

<sup>3</sup> This paper focuses on utility-scale (or large) wind turbines, which are defined here as turbines with a generating capacity of more than 100 kW. Northern Power Systems makes a 100 kilowatt (kW) turbine that is included in both small and utility-scale wind turbine data by the American Wind Energy Association (AWEA), but is not included with utility-scale production here as the focus is on larger turbines. Northern Power Systems also produces a 2.3 MW turbine that is included with utility-scale turbines.

<sup>4</sup> Installation data do not exactly correlate with imports as turbines can be imported and installed in different years. AWEA, *U.S. Wind Industry Year-End 2010 Market Report*, January 2011; AWEA, *AWEA Year End 2009 Market Report*, January 2010.

<sup>5</sup> Bloomberg New Energy Finance, “Wind Turbine Prices Fall to their Lowest in Recent Years,” February 7, 2011; Michael Liebreich, “The Global Clean Energy Race,” PowerPoint slides, September 22, 2010, 17.

<sup>6</sup> AWEA, *AWEA U.S. Wind Industry Annual Market Report Year Ending 2010*, 2011; AWEA, *U.S. Wind Industry Annual Market Report, Year Ending 2009*, 2010.

<sup>7</sup> In December 2010, the United States requested consultations with China under the WTO’s dispute settlement provisions regarding China’s “Provisional Measures on Administration of Special Fund for Industrialization of Wind Power Equipment.”

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