



Renewable Energy in the European Union

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Summary

One of the major components of the EU's Climate and Energy Package is to raise the share of EU energy consumption produced from renewable energy sources to 20% by 2020. Renewable energy sources (RES) help to reduce greenhouse gas emissions while diversifying the EU's energy supply and reducing dependence on oil and gas. Some of the key challenges of EU energy policy being discussed today include: tackling climate change, ensuring security of supply, reducing import dependence, lowering energy cost and contributing to Europe's industrial innovation and technological leadership.

EU climate and energy policies drive demand for innovative renewable energy technologies, products, and services that will help Member States achieve their ambitious climate change and energy objectives. This report explains how EU policies may affect U.S. exporters and their ability to penetrate the EU market.

Introduction

In March 2007, the European Council launched the so-called "Europe 20-20-20" strategy, which proposed:

- Reducing CO2 emissions by 20% from 1990 levels;
- Increasing renewable energy consumption by 20%;
- Improving energy efficiency savings by 20%.

In March 2013, a report by the EC showed that the EU is on its way to meeting the first two targets, which are legally binding, but not the non-binding energy efficiency goal. The report underscored that the share of RES has reached 13% of the average EU energy mix, but that six EU Member States are set to miss their target if they do not improve their national policies. In 2014, the EC is expected to publish a package of energy measures and table a set of binding targets aimed at increasing energy efficiency savings by 2030. The EU also has put forward an "EU Roadmap for 2050", highlighting additional goals to be achieved.

State intervention in renewable energy

Nineteen EU Member States offer government subsidies to boost the development of renewable energy technologies. The European Commission (EC) views this support as a market distorting instrument. The EC has proposed to streamline the way all EU Member States support renewable energy based on similar principles that support the completion of the EU electricity market.

In its Communication on Renewable Energy in May 2013¹, the EC underlined the need to reform public intervention in order to stimulate innovation, prevent overcompensation, increase exposure of renewables to market prices and ultimately end financial support for renewables.

In November 2013, the EC unveiled its long-awaited Communication² on the reform of Member States' support schemes for renewable energy, setting out principles for state intervention in two areas:

1) National support schemes for renewable energy, mostly solar and wind: The EC suggests phasing out feed-in tariffs for mature technologies and replacing them with feed-in premia or other support instruments which are intended to provide incentives to producers to respond to market developments. Experts predict this may signal the end of today's gold mine of government subsidies for renewable energy manufacturers.

2) The organization and financing of back-up capacities for renewable energy, mostly fossil fuels like coal and gas fired power plants which are flexible enough to be turned on when wind and solar plants do not produce electricity: The EC suggests developing regional back-up mechanisms gathering clusters of Member States who should take into account a "European perspective" when designing national redundancy planning. The EC outlines the need to remove distortions that prevent the market from delivering the right incentives for investment, such as regulated prices and high subsidies for renewable energy. However, looking into risks for investors, the EC insists that "governments must avoid unannounced or retroactive scheme change. Investors' legitimate expectations concerning the returns on existing investments must be respected".

The EC guidelines will apply when the EC assesses Member States' government interventions relating to renewable support schemes or the enforcement of EU state aid rules. The EC indicates that it will consider whether to propose a legal instrument to enforce the principles outlined in the November Communication. For more on this topic:

http://ec.europa.eu/energy/gas_electricity/internal_market_en.htm

EU Renewable Energy and Energy Efficiency Legislation

Renewable Energy Directive (RED)

The Renewable Energy Directive ("RED" [2009/28/EC](#)), approved in April 2009, provides the framework for the promotion of energy from renewable sources. The Directive defines RES as "non-fossil sources, namely wind (both onshore and offshore), solar (thermal, photovoltaic and concentrated), aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass (including biofuels and bioliquids), landfill gas, sewage treatment plant gas and biogases".

The RED sets out clear renewable energy targets to be achieved by each EU Member State by 2020 (a concrete percentage figure for each country), and gives EU Member States the freedom to decide how to reach those targets. For this reason, variations exist in the subsidies and support schemes for the renewable energy sector throughout the EU.

¹ "Renewable Energy: A Major Player in the European Energy Market" (COM2012) 271

² "Delivering the Internal Electricity Market and Making the Most of Public Intervention" November 5, 2013

The EC has developed a database on its website, which provides information on national legislation related to support schemes, grid issues, national action plans and policies for energy derived from renewable sources covering all three energy sectors (electricity, heating & cooling and transport). The scope of this database covers all the EU 28 Member States, the EFTA Countries and some EU Accession Countries. The database, "RES LEGAL Europe," allows visitors to gather, analyze and compare information on renewable energy policies and subsidies. The website offers links to relevant original legislation and is free of charge: <http://www.res-legal.eu/>

The RED is also in the process of being amended by a legislative proposal³ currently under discussion in the European Parliament and the Council of Ministers; the discussion concerns the quality of petrol and diesel fuels (biofuels and the so-called "Indirect Land Use Change" or ILUC Proposal).

More information on the EU energy policy is available at:

http://ec.europa.eu/energy/renewables/targets_en.htm

The EU Energy Portal contains information on prices, market trends and industry reports listed for all EU member States: <http://www.energy.eu/publications/a07>

Energy Efficiency Directive (EED)

The 2012 Energy Efficiency Directive ([2012/27/EU](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0027)) is a framework Directive which provides common measures for the promotion of energy efficiency in order to achieve the 2020 targets mentioned above and pave the way for further energy efficiency improvements beyond 2020. The EED contains a legal obligation to establish national energy efficiency schemes and includes minimum requirements for energy efficiency, the use of European and international standards and energy audit procedures. It provides legally binding measures to step up Member State's efforts to use energy more efficiently at all stages of the energy chain. In this process, Member States are required to work closely with the European Commission to create National Reform Programs with regards to energy efficiency and outline how they intend to achieve their proposed targets. The Directive obliges public authorities to purchase only energy efficient products and services and to renovate 3% of all public building each year.

More information is available at:

http://ec.europa.eu/energy/efficiency/eed/eed_en.htm

Energy Performance of Buildings Directive (EPBD)

Buildings represent approximately 40% of the EU's total energy consumption. The revised EPBD ([2010/31/EU](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0031)), adopted in 2010, serves as one of the EU's more important pieces of green legislation developed to help meet 20-20-20 targets. It provides for the application of minimum energy efficiency standards for buildings in every country in the EU and the creation of a certificate to inform buyers or tenants of their energy performance. EU member states have the right to establish their own energy performance certificate and to impose additional national requirements. The Directive complements the Energy Efficiency Directive by foreseeing that all newly constructed buildings should be zero-energy by 2020. EU Member States must make publicly available an "inventory" of all relevant

³ Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending directive 2009/28/EC on the promotion of the use of energy from renewable sources: Com/2012/0595 final - 2012/0288

central government buildings, which could be used as a tool for vendors of energy efficient technologies.

More information is available at: http://ec.europa.eu/energy/efficiency/buildings/buildings_en.htm

Eco-design of Energy Using and Energy Related Products (EUP and ERP)

Products which use sources of energy, such as televisions, computers, fans, lighting, are subject to EU energy efficiency requirements (EUP). The EUP covers all energy efficiency standards pertaining to Energy Using Products. The scope is very broad, covering essentially all power using devices outside of transportation. Products which indirectly impact energy consumption, such as windows and faucets among others, are also relevant for purposes of efficiency (ERP).

General information about Eco-Design, EUP, and ERP can be found on the CSEU website: <http://export.gov/europeanunion/energyrelatedproducts/index.asp>

Wind Energy

There has been a rapid development of wind power generation over the past two decades in the EU. Annual wind power installations in the EU have increased steadily over the past 12 years from 3.2 GW in 2000 to 11.9 GW in 2012, a compound annual growth rate of over 11%. Improvements in turbine efficiency and higher fuel prices have strengthened the economic competitiveness of wind power with conventional forms of power production.⁴ These factors along with the desire to reduce climate change, lower prices for consumers and ensure security of supply, make the EU market an attractive one for U.S. exporters in this industry.

In February 2013, the European Wind Energy Association published a report entitled, "Wind in Power: 2012 European Statistics",⁵

- Wind power accounted for 26.5% of total 2012 power capacity installations;
- 11.9 GW of wind power capacity was installed in the EU during 2012 which was worth between \$16.5bn and \$22.2bn;
- Of the 11,895 MW installed in the EU, 10,729 MW was onshore and 1,166 MW offshore;
- Overall the EU is lagging by 1.6 GW (-1.5%) behind its 27 National Renewable Energy Action Plan (NREAP) forecasts;
- Eighteen Member States are falling behind on their wind power capacity trajectories, most notably Slovakia, Greece, Czech Republic, Hungary, France and Portugal;
- In terms of annual installations, Germany was the largest market in 2012, installing 2,415 MW of new capacity, 80 MW of which (3.3%) was offshore. The UK came in second with 1,897 MW, 854 MW of which (45%) was offshore, followed by Italy with 1,273 MW, Spain (1,122 MW), Romania (923 MW), Poland (880 MW), Sweden (845 MW) and France (757 MW);
- Among the emerging markets of Central and Eastern Europe, Romania and Poland both had record years - installing approximately 7.5% of the EU's total annual capacity. Both markets are now consistently among the top ten in the EU for annual installations.

⁴ Wind Energy – The Facts, "The Economics of Wind Power."

<http://www.wind-energy-the-facts.org/en/part-3-economics-of-wind-power/>

⁵ http://www.ewea.org/fileadmin/files/library/publications/statistics/Wind_in_power_annual_statistics_2012.pdf

For more information on Wind Energy in the EU go to:

The European Environment Agency 2009 report on onshore and offshore wind energy potential:

http://ec.europa.eu/energy/renewables/studies/wind_energy_en.htm

<http://www.ewea.org/about-us/>

<http://www.wind-energy-the-facts.org/>

<http://www.windplatform.eu/>

The European Renewable Energy Council: <http://www.erec.org/>

Photovoltaic Energy

According to the European Photovoltaic Industry Association, Europe has developed from an annual (PV) market of less than 1 GW in 2003 to a market of 22.4 GW in 2011. "Europe remains the world's leading region in terms of cumulative installed capacity, with more than 70 GW installed as of 2012. This represents 70% of the world's cumulative PV capacity. " The report also concludes that⁶:

- Germany is the world's top PV market, with 7.6 GW of newly connected systems;
- Germany and Italy are, by far, the leading markets for PV energy in the EU followed by France, Belgium, Greece, the UK and Bulgaria;
- Spain, after a large PV boom in 2008, has fallen behind due to the financial crisis;

For more information on Solar Energy in the EU go to:

http://ec.europa.eu/energy/renewables/studies/photovoltaics_en.htm

<http://www.epia.org/home/>

EU Financing and Public Procurement

The Cohesion Fund

The EC provides grants for economic development in the less developed areas of the EU. Grants from the Cohesion Fund are based on national development plans agreed upon by the EC every 7-years and focus on the financing of large environment and transport projects, as well as those related to renewable energy (wind, solar and biomass) as long as they contribute to the EU's climate and environment policy goals. During the 2014-2020 financing period, it is believed that diminishing national subsidies could be partly compensated with EU funds. The national development plans for the 2014-2020 will offer public authorities funding mechanisms to help them reach their climate change policy targets.

Details of these plans will be regularly published on the website of the Regional Development Directorate-General:

http://ec.europa.eu/regional_policy/thefunds/cohesion/index_en.cfm

⁶ "Global Market Outlook for Photovoltaics 2013-2017". European Photovoltaic Industry Association, 2013. Available at: <http://www.epia.org/home/> under the heading "EPIA Report" at the bottom of the page.

The European Investment Bank (EIB)

As an EU financial institution, the EIB finances the development of infrastructure, including renewable energy projects. The EIB finances mature renewable technology projects such as onshore wind farms, hydropower, geothermal and solid biomass. However, it has also expanded its financing to new and emerging technologies such as offshore wind, photovoltaic, concentrated solar power and second-generation biofuels. It requires that the best available technology be used in the projects that it finances. According to an EIB factsheet, lending for renewable energy has more than doubled from \$3.2 billion in 2008 to \$7.6 billion in 2011.⁷ Projects should have a total investment cost that exceeds around \$30 million. For smaller sized projects, the EIB has agreements with commercial banks in all EU Member States.

For more information on the European Investment Bank go to:

<http://www.eib.org/index.htm>

http://www.eib.org/attachments/strategies/eib_energy_lending_criteria_en.pdf

The Marguerite Fund

The 2020 European Fund for Energy, Climate Change and Infrastructure is an investment fund sponsored by major European financial institutions, the EIB and the EC and offers investors in mature renewable technologies support in debt financing. The “Marguerite” Fund was established to make capital-intensive infrastructure investments and will target attractive long-term and stable risk-adjusted returns. Each of the six core sponsors has committed €100 million to the Fund. Three additional investors (including the EC) have committed an incremental €110 million to the Fund, bringing current commitments to €710 million.

<http://www.margueritefund.eu/>

The European Energy Efficiency Fund

The European Energy Efficiency Fund (EEEF) is an innovative public-private partnership dedicated to mitigating climate change through energy efficiency measures and the use of renewable energy in the EU Member States. It focuses on financing energy efficiency, small-scale renewable energy, and clean urban transport projects (at market rates) targeting municipal, local and regional authorities and public and private entities acting on behalf of those authorities with technical assistance financing. Technical assistance, covering up to 90% of eligible project costs, can be provided in relation to feasibility and market studies, project structuring, business plans, energy audits, preparation of tendering procedures and contractual arrangements, financial structuring and funding preparation/documentation.

<http://www.eeef.eu/>

⁷ “The European Investment Bank: Supporting Renewable Energy”

Available at : http://www.eib.org/attachments/thematic/renewable_energy_en.pdf

The Connecting Europe Facility (CEF)

EU Funds for Trans-European Networks (TENs) projects in the energy, environment and telecom sectors are available during the 2014-2020 period. Out of the €33 billion available under the CEF program, €5.8 billion were earmarked for the energy sector. Competitive calls for proposals will be published regularly to develop the so-called "EU corridors" in all three sectors. For more information on the CEF, go to:

http://ec.europa.eu/energy/mff/facility/connecting_europe_en.htm

Government Contracts

EU Member States receiving EU regional development funds to build energy projects have to apply EU Public Procurement Directives to contracting procedures. While the purchase of goods is covered by the WTO-Government Procurement Agreement, there are a number of restrictions that apply to the Utilities sector. Please see our report on this subject:

http://www.buyusainfo.net/docs/x_6742025.pdf

For more information about the EU legislation on public procurement, go to:

http://ec.europa.eu/internal_market/publicprocurement/index_en.htm

http://europa.eu/legislation_summaries/energy/internal_energy_market/l22010_en.htm

EU Research Funds

1) *Horizon 2020: The EU Framework Program for Research and Innovation 2014-2020*

The EU supports research and technological development in a wide range of RES sectors. The program Horizon 2020 is designed to foster research and innovation with the hopes of bringing the best ideas to the market. It replaces the previous FP-7 program that allocated funds from 2007-2013. Additional priorities in the Horizon 2020 program include excellent science (which includes future and emerging technologies), industrial leadership and societal challenges (which includes RES and energy efficiency). The goal is to bring together research and innovation under one umbrella and simplify the participation of companies, universities and other institutes in the EU and beyond. U.S. firms may participate in projects receiving EU funding, but the granting of financial aid often depends upon the existence of a subsidiary located in the EU or partnering with European entities. U.S. subsidiaries, legally registered in any of the 28 Member States, are considered "European firms" and are in principle eligible to participate and receive funding.

For more information about the Horizon 2020 program, go to:

http://ec.europa.eu/research/horizon2020/index_en.cfm

2) *EU SET-Plan*

The Strategic Energy Technology Plan intends to finance demonstration projects in the following sectors: wind, solar, electricity networks, Carbon Capture Storage, nuclear, bioenergy, fuel cells and hydrogen, and energy efficiency.

http://ec.europa.eu/research/energy/eu/index_en.cfm?pg=policy-set-plan

http://ec.europa.eu/energy/technology/set_plan/set_plan_en.htm

3) NER300

The NER300 program also finances demonstration projects with the aim of developing 12 Carbon Capture and Storage operational plants by 2015. This fund will co-finance up to 50% of the projects and additional funding may be obtained from the EU Structural and Cohesion Funds, as well as other funds from the European Energy Program for Recovery (EEPR). The second batch of calls for proposals should be published in 2014.

<http://ec.europa.eu/clima/policies/lowcarbon/ner300/>

Standards

Standardization is important in the EU's regulatory environment. The EC typically mandates the development of standards, be it for performance testing of specific products or interoperability of software/equipment. While there are many EU-wide voluntary industry standards developed by one of the three European standards organizations (CEN, Cenelec and ETSI), only the mandated EN standards are referenced in the Official Journal (EU equivalent of the U.S. Federal Register). Their use provides "presumption of conformity" with EU regulatory requirements. While compliance with EU law is mandatory, use of EN standards is voluntary.

For more details, please go to our website: www.export.gov/europeanunion.

For more information

The U.S. Commercial Service at the U.S. Mission to the European Union is located at Boulevard du Regent 27, Brussels BE-1000, Belgium, and can be contacted via e-mail at: brussels.ec.office.box@trade.gov; or by visiting the website: <http://export.gov/europeanunion/>. For questions about this market report, contact Ms. Isabelle Maelcamp at Isabelle.Maelcamp@trade.gov or Ms. Sylvia Mohr at Sylvia.Mohr@trade.gov. Special thanks to Louis Fredricks for his research, writing and contribution to this report.

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