Renewable Energy in the European Union

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Summary

The European Union has been focusing on the use of renewable energies for two main reasons; on the one hand it intends to ensure that carbon emission is reduced to pre-1990 levels and on the other hand it aims to diversify its energy resources and thus cut down on its dependence on fossil fuels. The 2009 Renewable Energy Directive set a binding EU-level target requiring that 20% of final energy consumption comes from renewable sources by 2020. Targets for 2030 include a 40% cut in greenhouse gas emissions compared to 1990 levels and at least a 27% share of renewable energy consumption. In order to achieve these targets, Member States drafted their individual renewable energy action plans detailing their key policy measures.

February 2015 saw the introduction of the Energy Union initiative (A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy), which acknowledges the strong role that access to a diverse energy portfolio plays in economic and social development and confirms the Commission`s commitment to provide citizens and businesses with uninterrupted access to affordable and sustainable energy resources. Some of the key challenges of EU energy policy 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 Members 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 February 2015, the European Commission updated its energy strategy with new targets for 2030. The baseline for this was the "Europe 20-20-20" strategy of 2009, which proposed the following targets:

- 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 was 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 renewable energy systems (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.

Consequently, the newly proposed measures aim to achieve by 2030 a greenhouse gas emission cut of at least 40%, renewable energy boost of at least 27%, and energy efficiency improvements of at least 27%. The Energy Union initiative, introduced in February 2015, frames these practical targets in a policy context and lists five key objectives:

1. Energy security, solidarity and trust;
2. A fully integrated European energy market;
3. Energy efficiency contributing to moderation of demand;
4. Decarbonizing the economy; and
5. Research, Innovation and Competitiveness

Within each of these five policy areas, the Commission has devised a list of intended actions requiring political commitment from actors on the national as well as the European level.

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 2013[1], 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 Communication[2] 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

[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*

"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

Energy union
Increasing the use of renewable energies is one of the core principles of the Energy Union. The EU is on track to meet its 2020 target of 20% renewable energy in its energy mix, and foresees that achieving the 2030 target of at least 27% would require developments and reforms both in national infrastructure as well as policies. The Energy Union serves as a wider policy initiative guiding longer-term strategies and is supported by a number of Directives.

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 overall aim of the RED is to ensure a 20% overall share of renewable energy in the EU and a 10% share for renewable energy in the transport sector by 2020. Additionally, an amendment to Directive 98/70/EC[2] ("the Fuel Quality Directive") introduced a requirement for a 6% reduction in the greenhouse gas intensity of fuels used in road transport and non-road mobile machinery. The RED sets out clear renewable energy targets for each EU Member State but gives them the freedom to decide how to reach those targets. For this reason, variations of subsidies and support schemes exist for the renewable energy sector throughout the EU. Furthermore, all EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020.

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 includes sustainability criteria to ensure that the use of biofuels and bioliquids is done in such a way as to protect biodiversity. Indirect Land Use Change – the practice which sees grasslands and forests that have a typically high level of CO2 absorption replaced by biofuel yielding crops can negatively impact GHG emissions. The EC has therefore published Regulation No 1307/2014 to define the criteria and geographic ranges of highly biodiverse grassland that could be used for petrol and diesel fuels. Furthermore in order to reduce ILUC practices the EC has recently adopted amendments to the Renewable Energy Directive and the Fuel Quality Directive to ensure that emissions from ILUC

practices are reported to the EC and that biofuels will emit at least 60% less greenhouse gases than fossil fuels. From 2020 only second and third generation biofuel crops would receive financial support from the EC. 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) 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), 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 central government buildings, which could be used as a tool for vendors of energy efficient technologies.

In March 2012 the European Commission (delegated act 244/2012) established a comparative methodology framework for calculating cost-optimal levels for buildings and building elements. Member States are required to use this framework to calculate the cost-optimal levels of minimum energy performance requirements using reference buildings to represent the typical and average building stock in that country. Member States are required to compare the results of these calculations with the minimum energy performance requirements currently in force.
The results of the calculations and all input data and assumptions used must be submitted in a report to the European Commission every five years.
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.[3] 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.

According to the statistics of the European Wind Energy Association in 2014:

- There was 128.8 GW wind energy capacity in the EU: this is a 9.7% increase in cumulative capacity compared to 2013
- Approximately 120.6 GW onshore and just over 8 GW offshore capacity.
- Offshore wind saw almost 1.5 GW installed in 2014, 5.3% less than 2013.
- The EU`s total installed power capacity increased by 14.8 GW net in 2014 to 910.1 GW, with wind power increasing by 11.4 GW net and reaching a share of total installed generation capacity of 14.1%.
- Germany remains the EU country with the largest installed capacity followed by Spain, the UK and France. There are 15 EU countries with gigawatt-level wind power capacities installed, including two relatively new EU countries (Poland and Romania), and eight EU countries each have more than 4 GW of installed capacity.
- A number of previously large markets such as Denmark, Spain and Italy saw their rates of wind energy installations decrease significantly in 2014, by 90.4%, 84.3% and 75.4% respectively.

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
http://www.windplatform.eu/
The European Renewable Energy Council: http://www.erec.org/

[3] Wind Energy – The Facts, "The Economics of Wind Power."
http://www.wind-energy-the-facts.org/en/part-3-economics-of-wind-power/

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 that[4]:

- 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;

While solar energy output is increasing, the industry has suffered from a cut of subsidies and surcharges particularly in Germany, Italy and Spain. For more information on Solar Energy in the EU go to:
http://www.eupvplatform.org/
http://www.epia.org/home/
http://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-photovoltaics

EU Financing and Public Procurement

There are various funding mechanisms accessible within the EU infrastructure development, education, research and innovation etc. These funds are most often aimed at European companies *only*, including U.S. subsidiaries in the EU. An American firm legally established and registered in a Member State of the European Union is considered as a European company for this purpose. The right to bid on contracts in any EU Member State derives from the European public procurement directives, which aim to boost cross-border bidding across the European Union.

The Cohesion Fund

The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the EU average. These countries currently are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. The Fund aims to reduce economic and social disparities and to promote sustainable development through various national level programs. 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. The national development plans for 2014-2020 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

[4] "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 reached $3.3 billion in 2012 and 30% all energy lending funds went to renewable energy projects.

For more information on the European Investment Bank go to:
http://www.eib.org/attachments/thematic/renewable_energy_en.pdf
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/

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

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