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Investing in renewable energy projects in Europe

Dentons' Guide 2018

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RECHARGE

Foreword

2018 promises to be another year of reckoning in the European renewables market. Wind and solar have continued their rightful ascendancy in the continent's energy system, adding some 14 GW and 7 GW of installed capacity to the grid last year respectively – and staying on a trajectory to reach a combined fleet size of more than 400 GW by 2020. Offshore wind was again a standout, with a further 3 GW now turning in the northern seas, including the quintet of turbines making up the world's first floating array, the UK's Hywind Scotland.

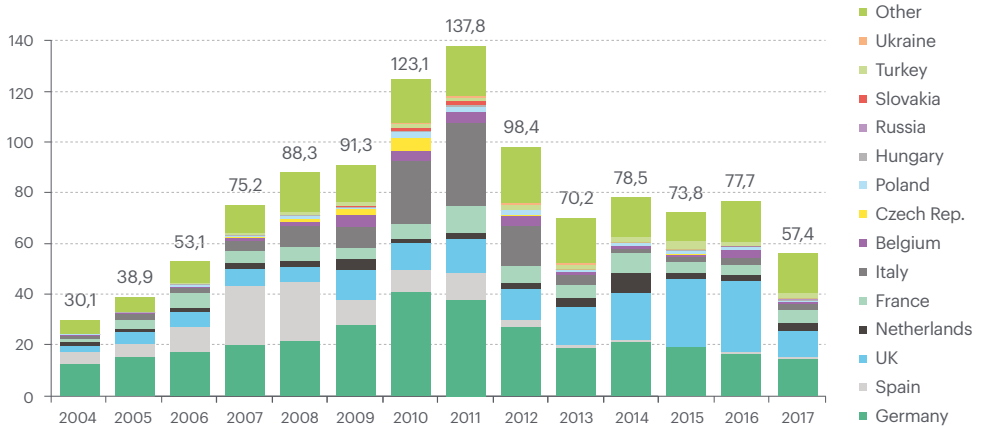
Despite this success, uncertainty still hangs over the main platform for stable wind and solar power expansion in the European Union (EU) post-2020 – the Clean Energy Package, which will define much of how the EU advances renewables through to the end of the next decade.

This January, the European Parliament retrenched on its

ambitious 2017 renewable energy target of 35 percent, a figure widely backed by business leaders and environmental groups, after EU energy ministers late last year backtracked to status quo proposals for a bloc-wide target of 27 percent of power coming from renewables by 2030. Difficult negotiations lie ahead.

However discussions pan out in Brussels in the coming months, the version of the CEP starting 2018 on the table is nonetheless patently progressive, not least for the fact that member states for the first time agreed on three interim benchmarks to track progress towards an EU-wide 2030 installed capacity goal for renewables at both EU and national levels, so the overall optics for investment should be improved.

More practically, the package will require every state's national energy plan (NEP) to include a yearly target for new renewable energy capacity through to 2030, as well as for managing output to this



New clean energy investment in Europe, (excluding hydro exceeding 50 MW), in billion US\$
Source: Bloomberg New Energy Finance, January 2018

point in the future from projects already producing to the grid. And the industry is to be given further market “visibility” by the now built-in requirement that all NEPs provide a rolling three-year framework on timing and size of upcoming tenders – with retroactive changes to support schemes much harder to effect.

The growing importance of Europe’s corporate renewable energy business is reflected in the CEP, too, in the obligation that national governments remove all regulatory barriers to corporate power purchase agreements (PPA). This should supercharge a regional market that has historically been a distant second to the US, but that

last year saw a record-setting wind corporate PPA in aluminum giant Norsk Hydro's deal for Sweden's 650 MW Markbygden project and a landmark agreement by Google to power its Dutch data centers with the Netherlands' biggest PV farm.

While the European wind and solar sectors have together collapsed time and cost to evolve the two technologies at a speed that has brought them from being marginal energy sources to mainstream plant-scale power inside a decade, it nevertheless remains the broad consensus that storage will be the linchpin for the energy transition, in the EU as elsewhere around the globe.

Energy storage has suddenly bounded forward as a sector in its own right and will likely make another leap in 2018, with analysts widely forecasting a US\$100 billion "solar sector-scale" boom through 2030, as storage mushrooms from current single-digit gigawatts of installed capacity to somewhere in the region of 125 GW globally, with a first-tier market in Europe.

'Near-term caution, long-term optimism' might best describe Europe's renewable energy market outlook – and we shouldn't lose sight of the big picture either; included in the CEP is the new Coal Regions in Transition platform, designed to usher in a socially-equitable transition for regions as Europe shifts away from being a bloc driven by fossil fuels.

Darius Snieckus

Editor in Chief, *RECHARGE*

Introduction

This guide provides snapshots of the renewable energy sources (RES) sector in the 20 jurisdictions in Europe and Central Asia where Dentons has offices. We look at the potential for RES development, the factors which have driven and continue to drive the industry, and the constraints and risks faced by investors.

European Union policy

For those countries which are member states of the European Union or parties to the Energy Community Treaty, which extends some of the EU's energy policies to neighboring countries, Directive 2009/28/EC of the European

Parliament and of the Council of April 23, 2009 on the promotion of the use of energy from renewable sources (the Renewable Energy Directive) and EU policy on state aid have had a significant influence in shaping their approach to RES.

The Renewable Energy Directive forms part of an overall EU energy policy framework that includes the goal of sourcing 20 percent of final energy consumption from RES by 2020 (and 10 percent of fuel in the transport sector from RES).

The development of RES in the EU was first stimulated through the implementation of national support schemes for RES electricity in the



form of either “green certificate” schemes (in which wholesale purchasers of electricity must meet a certain quota of RES electricity, evidenced by tradable certificates issued to RES power producers), or “feed-in tariff” (FIT) schemes (in which RES producers are paid a sector-specific price that replaces wholesale power market prices or supplements them by a fixed amount regardless of how they may fluctuate).

However, the application of these forms of subsidy, which were awarded automatically to all qualifying projects without any overall budgetary limit, has been cut back in various ways or replaced altogether by forms of support based on competitive auction processes, often involving competition between different RES technologies. The European Commission’s State Aid Guidelines on Environmental Protection and Energy 2014-2020 (the Guidelines) have played a major part in this change. Change has also been driven by government and consumer concerns about the rising cost of RES subsidies (for electricity bill payers or taxpayers) and facilitated by falling technology costs in the wind and solar sectors.

In November 2016, as part of its “Energy Union” project, the European

Commission issued a package of legislative proposals, including amendments to the Renewable Energy Directive, which, if adopted, will have a significant impact on future RES projects, particularly post 2020. It is expected that 2018 will be marked by tough negotiations to hammer out the final compromise between various takes on the ambitions to fight climate change through these proposals.

The proposals touch, in one way or another, on all the “hot topics” of the RES sector and include:

- Member states must retain their binding target of RES by and beyond 2020. If they fall below the 2020 baseline, member states will have to take additional measures to cover the gap.
- The EU-level RES target of 27 percent of energy from RES across the EU by 2030 will not be supported by legally binding targets for individual member states.
- Each member state is to produce an integrated national energy and climate plan covering a period of 10 years. Amongst other things, these plans must take into account the need to contribute towards EU-level targets. Progress reports will be required every two years.

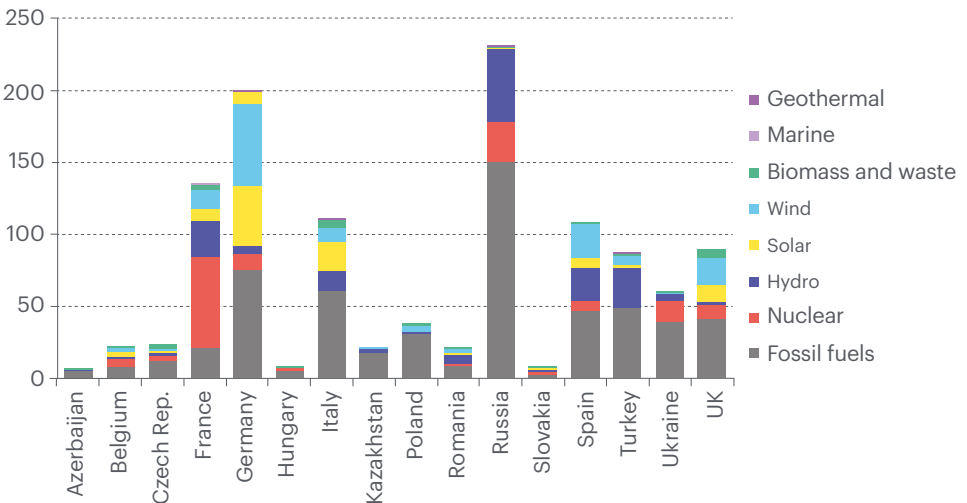
- Progress milestones are set for 2023, 2025 and 2027. If it becomes clear that the 2030 EU-level RES target is not going to be met, the Commission will be able to react to the gap.
- Member states must consult on and publish a long-term schedule in relation to the expected allocation for RES support, looking at least three years ahead.
- In keeping with the Guidelines, competitive auctions are to be the norm for RES support, with traditional feed-in tariffs limited to small projects.
- Quotas will be set for the proportion of capacity tendered in RES subsidy auctions, which each member state must open up to projects from other member states.
- Retrospective reductions in support for RES are prohibited, unless they are required as a result of a state aid investigation by the European Commission.
- Public support for new installations with a capacity of 20 MW or more converting biomass into electricity is prohibited unless they apply high efficiency CHP.
- Member states must “remove administrative barriers to corporate long-term power purchase agreements to finance renewables and facilitate their uptake.”
- The process of applying for permits to build and operate new RES projects, and for repowering existing projects, is to be streamlined.
- The existing rules on priority dispatch for RES generators are to be abolished, with some “grandfathering” of priority dispatch for existing RES generators.
- Market rules must avoid restrictions on cross-border trading and promote the participation of smaller players (including individuals and communities that both generate and consume RES power) and new technologies such as energy storage.
- Long-term transmission rights or equivalent measures are to be put in place to enable, for example, RES generators to hedge price risks across bidding zone borders.
- Consideration is to be given to standardizing transmission and distribution tariff methodologies, including with regard to locational signals (i.e. whether generators should pay if they are located a long way from where the power they generate is used).

- RES is to be “mainstreamed” in heating and cooling and in the transport sector.
- The sustainability criteria applicable to biomass are to be tightened.
- National capacity mechanisms, which distort the power market and tend naturally to favor non-RES generators, are to be curbed and standardized in various ways.

national authorities will continue to seek to address many of the same issues tackled by the European Commission—such as how to facilitate energy storage or how to grow the renewable heat market—with their own measures. Increasingly, the promotion of RES is not just about subsidies but also about dealing with the consequences of extensive RES deployment on the wider energy system. Operators will need to be alert to the potential impacts of new proposals and ensure that they are fully understood by governments and regulators.

Other policy considerations

The Energy Union reforms will take some time to negotiate and implement. In the meantime,



Power-generating capacity mix by country, GW
 Source: Bloomberg New Energy Finance, January 2018

Azerbaijan

Azerbaijan is a major hydrocarbon producer. The oil and gas sector accounts for approximately 40 percent of GDP. Although it is estimated that the country has 15 GW of wind and 8 GW of solar potential, to date the renewable energy sector in Azerbaijan has been fairly modest. However, there are signs this could change: Solar farms totaling 2,065 MW and wind farms with an energy capacity of 1,512.5 MW are planned. Moreover, the Strategic Road Map on the Development of the Economy of Azerbaijan, published in 2017, states that the volume of generation from alternative and renewable sources of energy is planned to increase up to 15 percent by 2020. Still, there have been no recent developments in terms of new regulations or investment projects during the past year.

Share of renewable energy in gross final energy consumption in 2016 – 8 percent*

Azerbaijan national target by 2020 – 20 percent

Drivers

On January 18, 2016, the President of Azerbaijan adopted a decree which offers holders of Investment

Promotion Certificates (IPCs) investment incentives in the form of tax exemptions (e.g. profit tax at 50 percent of the standard rate,

0 percent VAT, assets tax and land tax exemptions and exemption from customs duties for the import of certain equipment) for a period of seven years. IPCs are issued by the Ministry of Economy to qualifying investors, where:

- The investment is in certain industrial sectors, including production of renewable energy, and
- The investor plans to make an investment of a minimum agreed amount, set on a region-by-region basis (e.g. AZN 5 million for Baku city, AZN 3 million for Sumgait and Ganja).

A Bill on Alternative and Renewable Energy (the Draft Law) is currently being reviewed by the Cabinet of Ministers of Azerbaijan. It prioritizes the renewable energy sector over other forms of electricity generation and provides for the priority connection of alternative and renewable energy installations to the grid system. Under the Draft Law, the state is to subsidize the difference between the established tariff and the expenses of the producer, though the mechanism has not been specified. The Draft

Law includes provisions on a feed-in tariff (FIT) and guarantees that energy will be purchased at the tariff for a period of 10 years. It is not known when the Draft Law will proceed to the national parliament for discussion.

Constraints and risk factors

Despite the existence of legislation that provides protection for foreign investors and companies with foreign investment in Azerbaijan, and a number of bilateral investment treaties, the power sector (unlike the oil and gas sector) remains primarily under state ownership and control, and has so far been fairly closed to foreign investment.

It is likely that the renewables sector will remain small, as the country is concentrating on developing its substantial oil and gas reserves.

*According to Mr. Javid Malikov, Deputy Chairman of the State Agency on Alternative and Renewable Energy of Azerbaijan

Belgium

Belgium is a federal state. The Regions (Flanders, Brussels-Capital and Wallonia) have the competence to decide on a number of key renewables issues (with the exception of offshore wind and hydro power). Belgium's energy system is currently in full transition, and the country is still very much on track to reach its 2020 target of 13 percent. In fact, Belgium has been one of the leading countries for the development of offshore (wind) energy production in Europe.

Share of renewable energy in gross final energy consumption in 2016 – 8.7 percent

Belgium national target by 2020 – 13 percent
(Wallonia – 13 percent; Flanders – 10.5 percent; Brussels – 3.8 percent)

Drivers

The Belgian renewable energy market continues to be driven by the increase in renewable electricity capacity and the mandatory integration of biofuels in the distribution of road fuel.

Belgium has historically been one of the leading countries in the development of offshore wind energy

production in Europe. In 2017, the Belgian government announced support for more than 700 MW of new offshore wind capacity represented by the Northwester 2, Mermaid and Seastar projects, at a notably lower price than was agreed for earlier projects (€79/MWh, payable for 16 years, with a potential one-year extension in the event of poor wind conditions).

At the federal level, measures drive investment in renewable energy by promoting the development, installation and use of renewable energy installations through indirect fiscal mechanisms. The electrical grid prioritizes as a rule electricity generated by RES, and several tax deductions have been adopted, such as a tax deduction for companies promoting renewable heating and cooling. Nevertheless, the main fiscal driver of renewable energy promotion continues to be the regional system of green certificates, providing for a fixed monetary amount for energy generated from RES.

Accordingly, the bulk of the renewable energy legal framework continues to be set at the level of the three Belgian Regions. Regional decrees and ordinances, hierarchically equal to federal laws, determine the access to renewable energy and provide for the fiscal framework to support the development of the renewable energy market.

Constraints and risk factors

In order to reach its 2020 target, Belgium will require significant investment, while consumers and industry need certainty about the reliability and affordability of their

energy supply. These needs require greater advancement in the field of short-term storage and demand response management services. As Belgium is set to move to a nuclear exit by 2025, renewables will have to be complemented by gas-fired plants to ensure reliability of supply.

Legal uncertainty probably remains the most significant risk associated with renewable energy projects, as legislation relating to RES is continuously evolving. These changes can lead to financial uncertainty (for example due to fluctuations in tax rates), and may harm the necessary investments in renewable projects in years to come. Moreover, government regulation is often perceived as a hindrance.

Finally, the social and economic impact in seeking to balance the country's energy supply via renewable energy projects needs to be considered, as transition may give rise to risks associated with European and Belgian competition and state aid rules.

Czech Republic

The RES market has developed gradually since the first modern incentive programs were introduced in 2005, particularly with respect to combustion of biomass in the heating industry. Currently, market consolidation is taking place through robust M&A activity, with bigger players buying up smaller ones. Nonetheless, the RES market has been hampered by insecurity.

Share of renewable energy in gross final energy consumption in 2016 – 14.9 percent

Czech Republic national target by 2020 – 13 percent

An earlier boom in photovoltaic energy led to overcompensation, which is now to be examined. In previous years, the government introduced measures—including tax—that effectively partially abolished support mechanisms for RES. Finally, there have been long,

protracted issues relating to state aid notifications to the European Commission. However, it may well turn out that these shortcomings will be mitigated in the short term, following the introduction of more transparent rules and recent decisions on approval of subsidies.

Drivers

The promotion of electricity production from RES in the Czech Republic is governed by the Promoted Energy Sources Act No. 165/2012 Coll. State aid for RES was approved by the European Commission with respect to installations commissioned after January 1, 2013 as well as between January 1, 2006 and December 31, 2012 – in 2014 and 2016 respectively.

The incentive scheme is based on support for electricity producers in the form of feed-in tariffs and feed-in premiums (termed “green bonuses”). The specific values of the support are set by the Czech Regulatory Office annually for each type of RES.

The feed-in tariffs consist of mandatory prices at which selected electricity traders are obliged to buy electricity produced from RES. These are designed to ensure that projects recover their investment costs over a 15-year period, and that the revenues per unit of electricity including inflation are maintained. Feed-in premiums represent the direct support the producer receives in addition to the price generated by the sale of RES electricity on the market. They are set so as to cover

at least the difference between the price paid and the anticipated yearly price per unit of electricity.

Constraints and risk factors

A new overcompensation mechanism is being introduced in the Czech Republic, following a recent decision of the European Commission approving the already awarded state aid. Under this mechanism, discharged state aid shall be subject to examination which may result in repayments of subsidies provided in excess of the anticipated valuation of investments. This applies to installations commissioned in the period 2006-2015. Looking at the positive side, this development will have a positive effect in terms of certainty in the market, as the new rules will provide transparency.

Given the controversial outcome of Czech RES subsidies in the past, public opinion tends to be rather skeptical toward new RES projects (especially solar farms). As a final aside, it is likely that the existing Czech nuclear energy facilities will be extended, which might adversely affect the subsidies awarded to RES.

France

France has the second largest wind power potential in Europe. This, combined with a relatively favorable solar exposure in the south of the country, means that France has strong potential to develop RES further. Solar PV and onshore wind represent 42 percent of installed capacity in renewable electricity. Renewable power has increased by 2.3 GW in the last 12 months and now exceeds 47.5 GW.

Share of renewable energy in gross final energy consumption in 2016 – 16 percent

France national target by 2020 – 23 percent

The “Energy Transition Law” of 2015 envisages bringing this share up to 32 percent by 2030.

The Multiannual Energy Program (MEP) plans to increase the production capacity for renewable energy from 47.2 GW in 2017 to between 71 and 78 GW by 2023.

Drivers

France offers visibility and regulatory certainty. The new administration has reaffirmed its commitment to ambitious renewable energy development trends. The political will to

achieve energy transition is one of the drivers of the newly-elected president.

The Multiannual Energy Program (MEP) is a tool used by the government to guide the growth of renewable energy according

to the commitments outlined in the Energy Transition Law. The objective of the current MEP is to reach 40 percent renewable electricity by 2030. The MEP for the period 2023-2028 should be finalized in December 2018. Tenders for new projects are published regularly and can be accessed easily on the regulator's website.

The new legal framework is now well in place. It is based on public tenders and a feed-in premium aimed at compensating the difference between the production price and market price. On-demand feed-in tariffs remain in force for smaller projects. Public support for renewables reached €5.7 billion (€3.1 billion for solar and €1.5 billion for wind) in 2017. New trends include:

- Development of a strong aggregation market, with a standardized aggregation contract
- Development of a capacity market
- New legal framework and experiments for behind-the-meter production
- Falling production prices. Solar PV tenders in 2017 produced average prices of €55.5/MWh for large-

scale ground mounted projects in July and €88.4/MWh for smaller rooftop projects in September.

Constraints and risk factors

In the context of declining electricity consumption due to energy saving policies, the future growth of renewable energy will depend on the pace of reduction of the share of nuclear electricity in the national energy mix. The Macron administration has abandoned the objective of the former government, which was to reduce the share of nuclear from 78 percent to 50 percent by 2025, involving the decommissioning of at least one-third of the nuclear fleet. This has led to some uncertainty as to the future pace of growth of renewables in France. The grid operator RTE has proposed reaching the objective of 50 percent in 2030, which would mean closing down 18 to 27 nuclear reactors by that date.

In spite of recent progress, permitting remains complex and explains why, for instance, neither of the two awarded offshore wind projects are yet in operation.

Georgia

Georgia is rich in renewable energy resources. It has the potential to satisfy its electricity needs fully with RES and to expand its export and transit capacity. The government is eager to develop the electricity sector and wishes to create a favorable investment climate to promote Georgia's RES potential.

The share of renewable energy generation capacity in the total electricity generation capacity in 2017 constituted approximately 80 percent, while the share of renewable energy in total final energy consumption was estimated at 27 percent.

Drivers

Hydropower is the largest potential source of renewable energy in Georgia, but it has been estimated that some 75 percent of Georgia's economically viable hydro resources remain unexploited. In hopes of attracting foreign investment, the government has listed potential sites at: www.minenergy.gov.ge.

There is significant wind energy potential. 2016 saw the launch of the first commercial wind power plant in the South Caucasus (total installed capacity of 20.7 MW and expected annual electricity output of 85 GWh), located in Gori municipality in central Georgia. The Ministry of Energy of Georgia estimates that wind energy can be used to generate up to 4 billion kWh

per year. Further to research, the country has been divided into four zones according to wind potential, and a number of suitable areas for wind farm construction have been identified.

Georgia has substantial undeveloped solar energy potential, with between 250 and 280 days of sunshine per year. Average sun radiation comes in at 4.2 kWh/m², and Georgia's total technical solar energy potential has been estimated as being in excess of 90 GW.

Another major driver for the development of RES plants in Georgia is that all power plants with a generating capacity under 13 MW and power plants that were built after August 1, 2008 are deregulated. This means that—unlike other entities whose tariffs are set or capped by the regulator—they can set their own tariffs in the market.

Constraints and risk factors

Growth in the renewable energy sector in Georgia is being hampered by the existing electricity market framework. However, radical

change for the better is expected as—following the entry into force of its Association Agreement with the EU in 2016 and its accession to the European Energy Community—it has to reform its electricity regulatory regime so as to approximate the EU norms. This reform process is expected to take about two years. Legislation has been drafted on the liberalization of power supply and unbundling requirements for electricity undertakings.

The energy sector faces the challenge of upgrading its existing transmission lines and constructing new lines. There is currently relatively little spare capacity in the transmission system, as demands on it are steadily increasing as a result of the construction of new power stations, growth in domestic demand, the export of power to higher value markets in neighboring countries, and the opportunity to act as an East-West hub for power trading. The government's approval in December 2016 of the transmission operator's 10-year plan for 2017-2027 was an important step in starting to address these issues.

Germany

2017 was the first year with the new German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG 2017) in effect. It introduced the auction model for all commercial scale renewable energy installations. The new legislation for the auction of offshore wind projects is the Offshore Wind Act (Windseeegesetz). These changes have put much more pressure on developers and investors. The effect to date has been a remarkable drop in the prices for RES electricity.

Share of renewable energy in gross final energy consumption in 2016 – 14.8 percent

Germany national target by 2020 – 18 percent

Germany's energy transition, or Energiewende, is centered on a phase-out of nuclear power plants by 2020, a gradual reduction of power generation from coal, and the promotion of RES. In 2017, approximately 36 percent of German gross electricity consumption was generated from RES. By 2025, renewables should have a share of 40-45 percent of the electricity

supply. The federal government expects renewable energy to reach 19.6 percent of gross final energy consumption by 2020, beating the national target of 18 percent.

Drivers

The German Renewable Energies Act, EEG 2017, introduced public tender procedures for the tariffs for commercial-scale onshore wind

and solar plants, as well as biomass facilities. The public tender procedure also applies to offshore wind installations. The auctions are run on the pay-as-bid principle, i.e. successful bidders will receive remuneration in the amount of their bids. As under the previous FIT system, this remuneration is fixed for a period of 20 years. The auctions dramatically reduced the feed-in remuneration for new installations in 2017. For onshore wind the remuneration dropped from 4.2 Ct/kWh to 3.5 Ct/kWh and 3.8 Ct/kWh. In the three rounds of auctions for solar, prices fell from 6.00 Ct/kWh to 4.29 Ct/kWh. The lowest offshore wind bid was 0.0 Ct/kWh for a 900 MW volume. However, in Germany the developer does not have to build the grid connection, which in itself can be considered as a subsidy for the project.

For small-scale projects with installed capacity below 750 MW, the FIT scheme still applies, which may constitute an attractive niche for smaller investments.

Given its ambitious targets for renewable installations and emission reductions combined with legal stability, Germany remains an attractive market for renewable investments.

Constraints and risk factors

- With reductions in prices for RES power, continued expansion of the German RES sector depends to some extent on technological developments to further reduce costs.
- The changes in the subsidy regime have made the sector more competitive, and this may lead to a profound consolidation of the market.
- Grid expansion and stability, which is of particular importance given the need to transmit power from offshore wind projects in the Baltic/North Sea to centers of demand in the south of the country, is still a highly political and problematic issue in Germany.
- The legal framework continues to undergo changes, in particular to provide for a proper integration of renewables and to assure grid stability. However, even under a new government, Germany will remain committed to reducing its carbon footprint.

Hungary

Hungary has the potential to satisfy a significant proportion of its energy needs from RES. After a long period of inactivity, the government introduced major reforms in this area in January 2017, fine-tuning them in late 2017.

Share of renewable energy in gross final energy consumption in 2016 – 14.2 percent

Hungary national target by 2020 – 13 percent

In January 2017, a more market-friendly regime replaced the previous RES support system based on the mandatory offtake of RES electricity at pre-set regulated prices. The previous mandatory offtake regime will continue for existing generators under existing agreements, but new entrants can only receive support through the new regime.

Under this new premium system, developers with projects above 1 MW capacity may submit their desired electricity price in regular

tenders. The winners will be those who request the lowest supported price. They will then sell generated electricity on the market and receive the difference between a price that is derived from spot electricity prices and their supported price submitted in the tender (i.e. the green premium). Projects below 1 MW capacity (excluding wind farms) can apply for a green premium without tendering. Projects below 0.5 MW may still apply for a mandatory offtake support scheme as well.

Drivers

Solar investors who applied for the mandatory offtake regime before December 31, 2016 could obtain more favorable support conditions than those available under the new RES premium system. In light of the numerous licensing processes and project developments in 2017, the picture is still unclear at present as to the future volume of solar capacities actually commissioned and the related burden the increased solar capacities may impose on end-user prices. According to information from the licensing authority, if all of the planned solar projects went ahead then total solar capacity would exceed 2,000 MW by the end of 2018.

Hungary has opted to provide further support (i.e. even after the initial investment has been recovered) for the operation of biomass plants in the form of a "brown premium." As the regulatory goal of the brown premium is to maintain the operation of power plants using biomass or biogas, support may be obtained without any tender for a five-year term.

Constraints and risk factors

Looking at the recent regulatory changes, it seems clear that the support regime will not focus on wind power in the next few years. The government has stated on several occasions that it is not in favor of building new wind farms (or extending existing ones) due to network balancing and landscape concerns. It has implemented rigorous technical and administrative measures, which make the licensing of wind farms practically impossible, regardless of whether or not the developers intend to participate in the renewables premium system.

Due to the potentially large solar capacities that may be installed in the coming years, changes in the mandatory offtake regime affecting solar electricity generators cannot be ruled out with any certainty.

Italy

Italy was a pioneer in renewable energy. Until the 1970s, almost its entire electric system was hydroelectric, and geothermal technology was developed 100 years ago to exploit large steam underground reservoirs of Larderello near Pisa. Hydro capacity is present all over the country. Italy has subsidized RES since 1992. After an initial period of rapid growth (2009-2012), the market for new solar installations has waned due to the lack of new public subsidies. Conversely, subsidies were made available for wind, which has seen a new growth trend in 2016-2017.

Share of renewable energy in gross final energy consumption in 2016 – 17.4 percent

Italy national target by 2020 – 17 percent

Drivers

The generous incentive schemes for photovoltaic installations available between 2005 and 2014 were interrupted after the last regime enacted in 2012 ran its course. Some recent schemes have been reported as viable without subsidy. The ambitious new National Energy

Strategy (SEN 2017) has raised hopes of new tenders for subsidy, but the implementation of the strategy (which envisages an increase in the RES share of power generation from 34 percent in 2016 to 55 percent in 2030 and a trebling of renewable heat) will depend on the outcome of Italy's forthcoming elections.

The tariffs granted earlier were modified in 2014 to be payable over a longer period of time than the original 20 years, with a corresponding reduction in the unitary level. Owners could opt not to join the extended period, in which case they agreed to suffer an immediate higher tariff cut (confirmed as lawful by the Italian Constitutional Court last year). International investors are nonetheless still suing Italy under international arbitrations to protect their investments by seeking compensation.

RES plants other than PV plants operated under a green certificates regime from 1999 until 2015. Since 2012, all new plants have been granted a feed-in tariff. From 2016, this feed-in tariff mechanism has been extended to all plants, which received green certificates in the past.

Constraints and risk factors

There is a significant, renewed interest in RES plants among investors, backed by reliable political support. Under the current bill, wind and solar projects will have an opportunity to compete against each other in a technology-neutral tender process for new incentives by the end of 2018-early 2019.

It is worth noting that general elections will occur in early March 2018, and the outcome will influence the political support for the sector, although in general the parties have not expressed any particular dislike for RES.

Timing issues currently affect only large connections to the grid, but a new wave of requests for permits may cause bottlenecks, delaying the issuance of new permits. Many players are working on the revitalization of expired permits for plants that were not built in the past.

GSE (the national entity that grants public subsidies to RES plants) has significantly increased controls on RES plants already receiving subsidies. If unlawful tariff granting is discovered, it can curtail tariffs by between 20 and 80 percent, depending on the circumstances. Investors considering opportunities in Italy's active secondary market should conduct a careful legal and technical due diligence, also considering that self-reporting to GSE allows a leniency procedure that can be used to avoid one-third of any curtailment.

Kazakhstan

Kazakhstan has accelerated the transition to a “green economy” implying, inter alia, the development of RES. This acceleration is being achieved by increasing state expenditure on the development of RES in the national budget.

As of Q3 2017, 55 facilities in the country generate energy from RES with total capacity in excess of 330 MW. The share of RES in the country’s total electricity generating capacity grew from 0.78 percent in 2015 to 1 percent in 2017. Kazakhstan intends to increase the share of renewable energy sources to 3 percent of the total volume of energy production by 2020.

In March 2017, a project to support the development of renewable energy sources in Kazakhstan was initiated together with the Asian Development Bank (ADB), funded by the Clean Energy Fund. The ADB project provides technical support for the Kazakhstan energy company KEGOC to strengthen its capacity in the planning of the grid integration of renewable energy into the national

network. The cost of the project is US\$1.4 million.

Drivers

The key laws regulating the renewable energy sector in Kazakhstan are the Law on Support for the Use of Renewable Energy Sources, the Law on Electric Power, the Environmental Code and corresponding secondary

legislation. These laws have been amended to introduce a new auction system for buying renewable energy in Kazakhstan from the end of July 2017, which replaced the system of sales of electricity to the Financial and Accounting Center (Costs Settlement Center) at a fixed tariff under a power purchase agreement (PPA). At the same time, the old system of sales under PPAs with fixed tariff will remain effective for projects that existed before the introduction of the auction system. It is assumed that this will lead to a reduction in renewable energy prices and will make the sector more attractive for new investments. However, it should be noted that the auction system is not fully developed in the current law; detailed regulation will only be provided in secondary legislation which will take two years to develop. As the auction system has not been tested in practice, investors tend to prefer to consider "old" projects with PPAs and an approved fixed tariff, which is indexed for inflation and sometimes for currency fluctuation as well.

Currently, the auction price is determined by the results of the auction, but it must not exceed the level of the corresponding marginal auction price. The marginal auction price is established by the government. The auction price is subject to annual indexation based on inflation.

Constraints and risk factors

The development of RES in Kazakhstan is still at an early stage, and market opinion is not particularly optimistic for the short term. The economy is driven by oil, gas and coal, which in practice allows the country to produce energy at costs lower than the current RES power costs. This is also a factor replacing the development of RES. Furthermore, there is no guarantee for long-term offtake. While Kazakhstan law provides for 15-year term PPAs (for "old" PPAs), the Costs Settlement Center has limited assets, and its obligations are not secured by a guarantee or any significant assets.

Luxembourg

There are no major indigenous sources of energy in Luxembourg, making it heavily reliant on energy sources from abroad. On December 23, 2016, Luxembourg adopted a new set of laws on sustainable building, the rational use of energy, and energy from RES. The target is to increase the share of renewable energy to 70 percent in 2050.

Share of renewable energy in gross final energy consumption in 2016 – 5.4 percent

Luxembourg national target by 2020 – 11 percent

Drivers

The production of energy from RES is promoted through subsidies and feed-in and premium tariffs for electricity. Policies have been adopted to promote the development and use of RES installations.

The ministry in charge of the environment grants subsidies to individuals, corporate entities and

public bodies (except the state) for carrying out investment projects in Luxembourg which aim to use energy rationally and to promote energy from renewable sources. Subsidies are granted in certain circumstances for new photovoltaic installations, solar thermal systems, heat pumps, wood-fired boilers, heating networks and connection to heating networks.

Feed-in tariffs apply for electricity generated from any source of renewable energy, except for geothermal energy. Since September 2017, feed-in tariffs also cover photovoltaic installations above 30 kW. Producers receive a feed-in tariff for 15 years (20 years for producers using biogas installations). Grid access for RES electricity is subject to general law provisions applicable to electricity. Since April 2017, it is also possible under Luxembourg law to promote production of energy from RES from abroad under certain conditions. In this context, Luxembourg has signed two renewable energy transfer agreements with Lithuania and Estonia to help achieve its national renewable energy objectives for 2020.

There is also a tax incentive applying to income from photovoltaic installations with capacity of 1 to 4 kW, which are exempt from income tax.

Constraints and risk factors

The national plan for smart, sustainable and inclusive growth—Luxembourg 2020—states that “in 2016, the European Commission

obliged Luxembourg to adapt its regulations concerning electricity production based on renewable energy sources in order to align such regulations fully with the requirements stipulated in the European guidelines in the area of state aid. The adaptation requested consists of introducing provisions to avoid discrimination of imported green electricity by promoting stronger cooperation between EU member states to achieve shared understanding of the possibilities and challenges in developing renewable energy on the electricity markets.” Legislative amendments are therefore to be expected.

The targets set by the government might be ambitious, and the level of imports is still very high. There is still room for improvement to convince individuals and corporate entities to invest in plants and equipment for the production of energy from RES.

The Netherlands

The Netherlands has a liberalized energy market which ranks it among the leading countries in the world in terms of market integration, investment and innovation. The Netherlands has adopted a legal framework promoting increased use of RES. In 2016, RES accounted for 6 percent of total Dutch energy consumption. This percentage is expected to grow to 16.7 percent in 2023, which is within the 14-18 percent range required under the EU Renewable Energy Directive.

Share of renewable energy in gross final energy consumption in 2016 – 6 percent

The Netherlands national target by 2020 – 14 percent

Drivers

Biomass is the largest source of renewable energy produced in the Netherlands. It represents more than 60 percent of total renewable energy production but still less than 5 percent of total energy production. Biomass is followed by wind energy (24 percent), solar and geothermal energy (5 percent each).

To stimulate the production of renewable energy, the government has implemented multiple tax and subsidy initiatives. The subsidy initiative is regulated by the SDE+ tariff scheme, whereby producers of renewable energy can apply for a government subsidy for renewable energy projects. Eligible applicants for SDE+ include companies,

institutions and non-profit organizations developing projects in the field of renewable electricity, renewable gas and renewable heat or combined heat and power. Every category has its own eligibility requirements, and a variable feed-in premium encourages the use of the most cost-friendly technologies.

A large amount of the SDE+ subsidies (up to 40 percent) is granted to coal-fired power stations which co-fire biomass with coal for the generation of renewable energy. Under the new 2017 coalition agreement, the government aims to cut SDE+ subsidies for the co-firing of biomass and coal in 2024 and aims to close all coal-fired power stations in 2030. This will probably result in the granting of more subsidies to other kinds of renewable energy production with biomass, such as thermoelectric conversion projects, and other forms of renewable energy that contribute to the reduction of greenhouse gases.

Constraints and risk factors

Onshore wind projects are eligible for the SDE+ subsidy. In 2013, the government signed an Energy Agreement with parties involved in the energy market. The Wind Energy

Roadmap, which outlines how offshore wind energy generation capacity is to be increased from 1,000 MW to 4,500 MW by 2023, is an important part of this Energy Agreement. Two tender rounds were held (separate from the main SDE+ granting scheme) in relation to offshore wind. Parties interested in developing an offshore wind farm had the opportunity to bid for offshore wind subsidies and the required permits. The winning bids received the permits and the SDE+ subsidy for developing the wind farms. The SDE+ subsidies available per offshore wind farm project have decreased per tender. The latest tender for Sites I and II of the Hollandse Kust (Zuid) Wind Farm Zone closed on December 21, 2017. This tender was only open for bids that did not require any subsidies at all. Several parties entered a zero-subsidy bid, and the winner of the tender will be announced in Q1 2018. In 2018 and 2019, two more tenders will be held for the last two available lots for developing wind farm projects in the Netherlands.

Poland

The installed capacity of Polish renewables is approximately 8.5 GW, of which 5.8 GW are attributable to wind farms. That said, the impressive growth in renewables seen in recent years has recently slowed down. This is most evident in the wind energy sector, which was, until recently, the driving force in the renewable industry. Nevertheless, the problems with wind farms combined with the policy advocated by the government to promote “stable” RES have triggered increased interest in PV and waste-to-energy projects.

Share of renewable energy in gross final energy consumption in 2016 – 11.3 percent

Poland national target by 2020 – 15 percent

Drivers

Under the RES Act, all renewable sources which generated electricity for the first time before July 1, 2016 are eligible for support in the form of certificates of origin for 15 consecutive years starting from the day electricity was generated for the first time.

All other RES projects with capacity in excess of 500 kW may be eligible for support via the auction system, in which a premium is paid on top of the market price.

Under the RES Act, auctions are conducted by the President of the

Energy Regulatory Office (ERO) and individual projects may fall into the following auction baskets:

- Installations of any technology generating more than 3,504 MWh/MW of installed capacity per year – i.e. a 40 percent utilization factor
- Waste-to-energy installations utilizing certain categories of waste
- Installations where CO₂ emissions do not exceed 100 kg/MWh, with a degree of use of the installed electricity generation capacity higher than 3,504 MWh/MW/year
- Installations operated by members of an energy cluster or energy cooperative
- Installations using only agricultural biogas to generate energy
- Installations other than those specified above.

ERO has organized several auctions in recent months to extend support chiefly to PV and agricultural biogas projects. No auction has been organized for wind farms with capacity of 1 MW or more.

After organizing a few auctions in 2017, the authorities decided to

suspend the upcoming auctions.

This decision was made on the grounds that the European Commission challenged the auction competitiveness mechanism. Then, in mid-December 2017, the European Commission approved the auction system with a total budget of €9.4 billion; thus, we can expect new auctions to take place soon.

Constraints and risk factors

- Legislative instability in RES: During the last two years, RES regulations in Poland were amended several times. Most amendments concerned wind energy, and virtually all of them were adverse.
- No proposals showed how to solve the problem of oversupply of certificates of origin and the resulting low prices of certificates of origin.

Romania

During 2010-2013, Romania went through a genuine renewables rush, but recently the sector's growth rate has slowed due to the government's decision to protect energy intensive industries and household consumers from the costs of renewable subsidies.

Share of renewable energy in gross final energy consumption in 2016 – 25 percent

Romania national target by 2020 – 24 percent

Drivers

The country promotes renewable energy through a quota system based on green certificates (GC). Electricity is sold in a centralized market with some exceptions, such as the electricity generated by SME power producers (less than 3 MW), which can be sold via bilateral power purchase agreements.

The support scheme was originally generous, but since January 1, 2014, the number of GCs has progressively decreased (e.g. from 6 to 3 GCs per MWh for solar power plants, and from 1.5 GCs per MWh to wind power plants to only 0.75 GCs per MWh).

Constraints and risk factors

The original support scheme for the promotion of electricity

from RES came to an end on December 31, 2016. Romania notably experienced several green certificate market failures in recent years. Thus, a number of amendments to the current legislation became increasingly urgent. In 2017, the government approved long-term support measures for renewable energy production which should help to achieve a better balance between consumer resilience (both household and industrial) and producers' financial efforts to keep RES capacities running, thus ensuring that Romania does not fall behind its target.

The revised GC support scheme includes:

- The validity term of GCs has been extended from 12 months to up to 15 years to 2032.
- A yearly obligation to acquire a fixed number of GCs over a period of 15 years (referred to as the "static quantity" of GCs) was introduced in 2017.
- Every two years, the static quantity of GCs taken up by the market will be revisited.

- For the purposes of accounting and resale, the GCs will gain in value when traded and not when issued, as the GC is not considered a financial instrument.
- Producers and suppliers must trade GCs only on a centralized anonymous marketplace in order to avoid market distortion.
- From April 1, 2017 until December 31, 2024, the trading of two GCs per MWh produced and delivered by solar power producers is temporarily postponed.
- The GC transaction value (between March 31, 2017 and March 31, 2032) has a minimum of €29.4/GC and a maximum of €35/GC.

Note that from January 1, 2018, the mandatory purchase quota for GCs for 2018 is 0.346 GCs/MWh, while the static quantity referred to above for 2018 is 14.910,140 GCs.

Russia

Russia has reflected on the new realities in the European energy markets and the wider energy world. The Russian energy market is currently facing challenges including overcapacity in the domestic wholesale electricity market and deteriorating infrastructure, which could ultimately adversely affect natural gas exports. In 2017, the government proposed a new budgetary rule aimed at lowering the economy's reliance on hydrocarbons.

Russia's considerable wind, solar and geothermal resources are underdeveloped. In 2016, renewable energy (excluding large hydro projects) accounted for less than 1 percent of Russia's power generation capacity (excluding local power stations that serve small villages and production units). If large hydro projects are included, the figure increases to 17-18 percent. A national target of 4.5 percent RES electricity generation has been set for 2024. Target volumes for solar plants increased, and those for wind farms and small hydro stations were reduced slightly.

In 2017, the government extended support to waste-to-energy plants by allowing investors whose projects won the relevant tender to conclude power supply agreements on preferential tariffs. The Republic of Tatarstan (55 MW), Moscow and Moscow Region (collectively, 280 MW) were selected as territories for the construction of such plants.

The government's program for the development of a unified energy system for Russia for 2017-2023 contemplates further development of RES by constructing 801 MW of wind farms and 1,074 MW of solar power

plants (325 MW of which would be commissioned by 2019).

To stimulate small hydro projects, as well as wind and solar projects of up to 25 MW, the federal budget will pay 70 percent of their grid connection costs, up to a limit of RUB 15 million (approximately €215 thousand). In 2017, the government excluded foreign legal entities, as well as Russian legal entities, in which more than 50 percent of shares are owned by foreign legal entities incorporated in specified jurisdictions, from the list of potential recipients of such state subsidies.

In the 2017 tender for selecting renewable energy generation investment projects in respect of the period 2018-2022, investors demonstrated most interest in wind projects, which accounted for more than 1.5 GW of the total capacity awarded (about 2 GW).

NovaWind (subsidiary of Rosatom) and Lagerway (Dutch manufacturer of wind power generators) established a joint venture (Red Wind) which will be engaged in the marketing, supply and installation of wind turbines

and after-sales servicing. Red Wind is also expected to develop local manufacturing, including supplier selection and purchasing of spare parts for subsequent delivery to NovaWind production facilities in Volgodonsk. It is expected that Red Wind will supply 388 wind turbines to VetroOKG by 2022.

Constraints and risk factors

- There is a perceived potential risk to foreign investments in the current political context.
- Areas of high demand for power are already oversupplied; areas that are undersupplied have relatively low power demand, undermining the economics of RES projects.
- There are difficulties associated with finding financing and technology partners (including difficulties associated with local content of equipment production).
- Clear, reliable and long-term regulations on federal and regional economic incentives to foreign and local investors in RES are lacking.

Slovak Republic

Although Slovakia sources about 70 percent of its power generation from low carbon sources (nuclear and hydro), the renewable sector is expecting changes in 2018. After a relatively steady period in RES projects in recent years, a new impulse in the sector is anticipated.

Share of renewable energy in gross final energy consumption in 2016 – 12 percent

Slovak Republic national target by 2020 – 14 percent

For many years, low transparency, very strict legislation, and a poor administrative and political environment have been viewed as the main obstacles to RES development in the Slovak Republic. The most commonly used RES are biomass and solar energy, and interest in photovoltaic panels and heat pumps is

increasing. Biomass is seen as the most interesting renewable, with theoretical potential of 120PJ. RES development in Slovakia was influenced by fear of the “Czech scenario,” after which the Slovak regulator massively lowered the feed-in tariffs for PV and abolished financial promotion of PV plants with capacity greater than 100 kW.

Drivers

Act No. 309/2009 Coll. on Promotion of Renewable Energy Sources and High-efficiency Cogeneration (the RES Act) was adopted back in 2009 with changes expected in 2018. The RES Act and incentive schemes it provides for have been subject to numerous amendments, with the tariffs being subject to annual adjustment. Currently, electricity from RES is promoted through a feed-in tariff, but an auction system for the purchase of electricity from RES will likely be introduced in 2018. The RES Act also offers RES projects priority connection, priority dispatch for electricity from RES, and a statutory obligation of grid operators to purchase and pay for electricity from RES.

In general, all renewable electricity generation technologies are eligible, provided plant capacity does not exceed a general limit of 125 MW, or 200 MW in the case of certain good quality CHP plants.

Electricity generated from renewable sources is exempt from excise tax.

Plant operators may still receive subsidies for the support of RES from the Operational Program of Environmental Quality funded by the European Regional Development Fund (ERDF).

Constraints and risk factors

The government has declared that the development of alternative RES is welcomed in the future, but consumer protection will always be a priority.

The wind energy potential in Slovakia is limited, due to the specifics of the Slovak natural environment and the fact that protected bird areas cover 23 percent of the country.

Certain RES projects are subject to regulatory requirements, such as building permits, and some PV and RES based power plants need a certificate assuring compliance with Slovak energy policy.

Spain

According to the latest statistics, Spain's share of renewable energy in gross final energy consumption in 2016 was 17.3 percent, still far from the 20 percent in the 2020 objective. Driven by this goal, the Ministry of Energy, Tourism and Digital Agenda of Spain (MINETAD), held two renewable energy auctions in 2017 of 3,000 MW each.

Share of renewable energy in gross final energy consumption in 2016 – 17.3 percent

Spain national target by 2020 – 20 percent

However, the second auction was so successful that many developers presented bids with the highest possible discount, and it ended with a final award of approximately 5,000 MW in new capacity instead of 3,000 MW, making for a grand total of 8,000 MW of RES projects that must be in operation by

December 31, 2019. Now many of the companies, awarded capacity under this second auction, are either looking for financing or JV partners able to provide financial support. This has put Spain back in the spotlight for investors in RES throughout Europe, after a few dark years.

Drivers

Bidders were able to make offers with a discount on their initial investment. This resulted in several bidders offering the maximum discount, and thus projects benefiting from the awarded capacity will receive the lowest allowable revenues specified in the auction framework.

The framework established a minimum “floor price” which the government guarantees investors should the market price for energy fall to the extent that projects are no longer profitable. The floor price was set at €43 per MWh for the first auction (mainly awarded to wind projects) and €30 per MWh for the second (dominated by solar projects).

This mechanism makes the investments easier to fund, helping to build interest in the Spanish RES sector.

Constraints and risk factors

Projects that are successful in the auction must be operational by December 31, 2019. However, some of the awarded capacity may not be operational by the specified date.

In addition, the high volume of projects being developed at the same time enables suppliers to renewable developers to request higher prices for their goods and services.

However, the main risk is uncertainty as to the yield for investors in these RES projects (even with the floor price guaranteed by the government). This is due to the following two factors:

- Potential volatility of pool prices of electricity, which is the main source of income.
- Regulatory changes, given that every six years the IRR that is used to remunerate the income granted by the electricity system to a standard facility, called IT, can be varied by MINETAD. As the remuneration can be changed every six years, investors need to prepare refined financial models to be updated every six years until the end of the asset’s working life.

Turkey

Turkey is a major market with great untapped renewable energy resources. Mostly due to the desire to mitigate dependence on energy imports, green energy opportunities continue to be a key item on the country's energy agenda. The Strategic Plan for 2015-2019, issued by the Ministry of Energy and Natural Resources of Turkey, prioritizes increasing the share of renewables in producing electricity. Following the 2016 amendments paving the way for large-scale, licensed projects and increased use of domestically manufactured equipment, two tenders, each for a 1,000 MW renewable project, were held in 2017. This trend is expected to continue in 2018.

Share of renewable energy in gross final energy consumption in 2015 – 13.6 percent

Turkey national target by 2023 – 20.5 percent

Drivers

In 2010, Turkey adopted a feed-in tariff denominated in US cents. In 2016, a system which may be deemed partly "FIT" and partly "feed-in premium" was introduced for plants commissioned between May

18, 2005 and December 31, 2020. Guaranteed prices are applicable for 10 years after commissioning. The level of FIT varies depending on the technology and the amount and type of domestic equipment used.

In October 2016, a new regulation was enacted to promote (i) large-scale renewable energy designated areas (REDAs) and (ii) the use of domestically manufactured equipment. Rights to a REDA are tendered by way of a reverse auction whose ceiling price may not exceed the FITs. The tender for Karapınar REDA, including a 1,000 MW solar power plant was held in March 2017, with the consortium of Hanwha and a Turkish company offering the winning bid of US\$0.0699/kWh. Another tender for a REDA including a 1,000 MW wind power plant was held in August 2017. The winning bid of US\$0.0348/kWh came from a consortium of Siemens and two Turkish companies. In both tenders, the guaranteed purchase term is 15 years. Although there has been no official announcement yet, more REDA tenders are expected to be held in 2018.

Constraints and risk factors

- Grid capacity for connecting wind and solar power plants is limited.
- The denomination of FITs in US cents introduces an element of currency risk for the government, potentially constraining the level and availability of future tariffs.
- Under the current FIT structure, plants must pay the market operator—rather than the market operator paying them—if the market clearing price is above the FIT. They are also liable to incur additional costs in the case of system imbalances.
- In addition to the tightened regulatory position regarding license-exempt wind and solar projects, which covers projects found eligible for grid connections after March 23, 2016, the distribution fee payable for projects constructed after 2017 is increased, having an adverse effect on financial feasibility.
- Individual rooftop and storage markets are constrained due to over-regulation in the case of the former and the lack of regulation causing uncertainties in the case of the latter.
- As part of the efforts to develop domestic manufacturing capacity for renewable energy components, additional duties were imposed by the Ministry of Economy of Turkey on solar panel imports.

Ukraine

Ukraine took reasonable measures to stimulate the development of RES in 2017. In particular, the standard form PPA for RES power plants has been substantially improved, and the parliament removed uncertainties for RES in primary legislation. New RES capacity continued growing in 2017 (approximately 350 MW). Further growth is expected in 2018 (up to 1 GW) and beyond to 2020, especially in large scale wind and solar projects.

The share of renewables in gross final energy consumption is thought to have exceeded 5 percent in 2017, and further substantial growth of this share is expected in 2018.

In 2017, the attractive premium to the feed-in tariff for locally produced equipment incentivized equipment producers to manufacture nacelles and towers for wind mills, some turbines for small hydro, inverters and steel constructions for solar power plants, and assorted other equipment in Ukraine. Up to 10 new RES projects (wind, solar and small hydro) obtained a premium of up to 10 percent for the use of locally produced equipment in 2017.

New stimulating tariffs for heat from renewables were fully implemented in Q3 2017, opening up opportunities for producers of heat from biomass. By 2020 biomass is expected to replace annually up to 7 bcm of natural gas. Ukraine plans to create a competitive heat market by 2020, eliminating the gas monopoly in its heating sector.

In general, the climate for investments in RES projects improved in 2017 due to a general softening of currency restrictions, stabilizing

of the local currency, state policy on deregulation of business, and considerable improvement in the situation with financing by local and foreign financial institutions. In particular, OPIC approved the financing of its first RES projects in Ukraine.

Drivers

- Feed-in tariffs for electricity from solar and wind farms as well as biomass/biogas, small hydro and geothermal power plants are on average 15 percent higher than in the EU.
- Feed-in tariffs are fixed (and EUR-linked), and there is a state guarantee to purchase the power produced, from the date of commissioning to the end of 2029.
- In general, there has been a positive history of awarding feed-in tariffs and payments.
- There is a stimulating tariff for heat from renewables at the level of 90 percent of current heat production from gas for respective categories of consumers, or 90 percent of average heat production tariffs from gas in the respective region.
- Tariffs for electricity from conventional plants and tariffs for consumers are both growing.

- There is good availability of possible locations for projects and new sites.
- The standard PPA terms improved considerably in 2017, with agreements lasting until December 31, 2029 and signing being allowed pre-commissioning.

Constraints and risk factors

- The feed-in tariff is granted and guaranteed only after the commissioning of power plants, not before.
- There is a need to improve the regulation and practice of grid connection.
- Ongoing reform of the electricity market is needed (from the single buyer model to bilateral contracts and balancing markets), in particular change of purchaser and the procedure for payments for electricity produced from RES from July 1, 2019 and gradual introduction of responsibility for imbalances of solar and wind power plants in 2021.

United Kingdom

UK renewable electricity generation capacity grew by 20 percent during 2017, to 32 GW. Changes to subsidies for new projects have reduced the amount of some kinds of new capacity being developed, and there are some other regulatory uncertainties, but the UK remains a very active and dynamic renewables market in a number of ways.

Drivers

The large-scale RES electricity generation sector in the UK, as in other European countries, was initially stimulated by the availability of subsidies in the form of green certificates (Renewables Obligation Certificates, or ROCs) and feed-in tariffs. Both these forms of subsidy are now effectively closed to new solar PV developments, and the last of the “grace periods” during which projects using onshore wind and other technologies can still qualify for ROCs ends on January 31, 2019. There have now been two successful auctions (in 2015 and 2017) under the new subsidy regime for renewables, Contracts

for Difference (CfDs), and another is planned for 2019. The 2017 auction was focused on offshore wind (which the government sees as a less politically contentious alternative to onshore wind, and an industry that it wishes to encourage as part of its Industrial Strategy), and “advanced conversion technologies” (technologically advanced forms of biomass / energy from waste). It is likely that 2019 will have a similar focus. Following the pattern of other recent European offshore wind tenders, the winning offshore wind CfD strike price bids were notably low.

But while the reduction in availability of subsidies has made the UK's Greenfield RES sector significantly less active, there has been a considerable amount of secondary market activity of various kinds. Portfolios of projects that were built up with finance that took an element of development risk, but often with a clear (sometimes tax-driven) intention to exit relatively early in the projects' operational lives, are now being refinanced or sold to new owners who have a lower cost of capital. The perceived regulatory stability of the UK (and the Brexit-related devaluation of sterling) makes such portfolios attractive to overseas buyers. At the same time, there is a move towards consolidation in the market, with a view to benefiting from economies of scale: examples include the combining of the Infinis and Zephyr portfolios by Ventient, and the £1 billion strategic partnership between BlackRock and Lightsource, targeting 1 GW of installed solar capacity by 2020.

It is still too early to say that the UK RES market as a whole has switched from the old subsidy-based paradigm to a future market model based on corporate PPAs (to provide revenue stability) and

energy storage (to smooth over the difficulties of intermittent solar and wind generation). However, some players and individual projects have had notable successes in both these areas. For example, a number of new or existing renewables projects are being built with some co-located battery storage, enabling the projects to benefit from revenue streams that would not normally be available to wind or solar projects, such as Capacity Market or National Grid ancillary services payments.

Constraints and risk factors

The 2019 CfD auction will probably be the last until at least 2025. There is a risk that the current battery storage bubble will burst without having made post-subsidy RES any more sustainable. As in other markets, low wholesale electricity prices remain a concern. Brexit is also a source of uncertainty, but primarily in terms of its impact on the UK economy as a whole rather than specifically on RES.

Uzbekistan

Since 2015, Uzbekistan has been actively promoting the use of RES. On May 26, 2017, Uzbekistan adopted the 2017-2021 program for RES. The program demonstrates the government's ambition to move ahead with solar, wind and hydro power projects. It envisages the implementation of 810 projects worth a total of US\$5.3 billion. The regions most targeted for RES projects are Samarkand, Navoi and Surkhandarya.

Previously, Uzbekistan had a target of reaching 16 percent of generation of final energy with renewable energy by 2030 and 19 percent by 2050. The current objectives for electricity generation from RES are more ambitious. Its share is to be increased from 12.7 percent in 2016 to 19.7 percent in 2025. Uzbekistan has the following specific objectives (cumulative targets) for renewable energies:

New hydropower: 60.7 new MW in 2018, 157.7 MW in 2019, 382.5 MW in 2020, 601.9 MW and 1,240 MW in 2025

Solar PV: 100 MW in 2018, 200 MW in 2019, 300 MW in 2021 and 500 MW in 2025

Onshore wind: 102 MW in 2021 and 302 MW in 2025.

Drivers

To achieve its RES-related goals, the government provides certain incentives. For example, entities

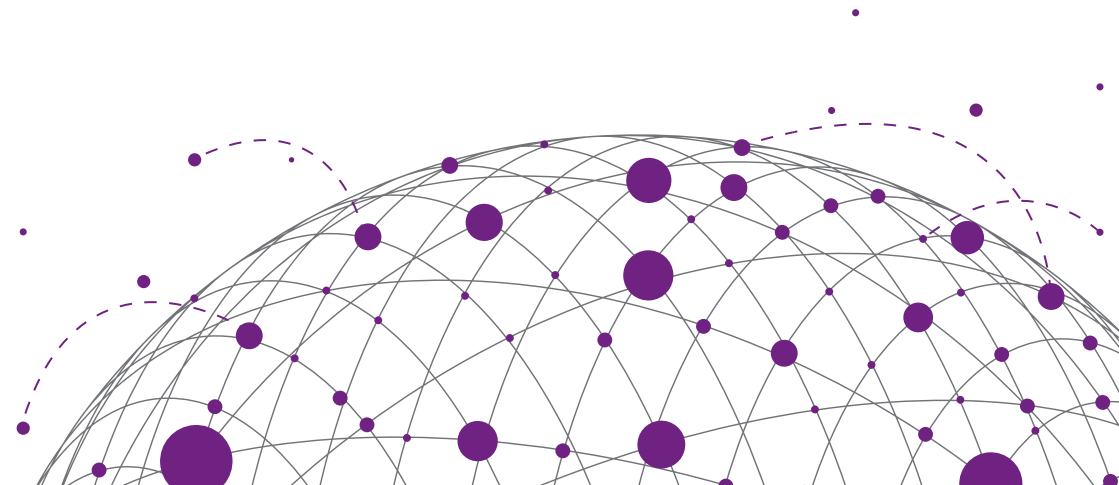
generating energy from RES (with nominal capacity of 0.1 MW and more) are exempt for 10 years from going operational from (i) property tax on

their RES facilities, (ii) land tax for their facilities, (iii) VAT and (iv) mandatory levy payments to the Republican Road Fund and off-budget Fund for reconstruction, maintenance and procurement of educational and medical institutions under the Ministry of Finance (the Funds) on part of the energy volume sold to JSC Uzbekenergo. Entities specializing in manufacturing (assembly) of RES facilities are also exempt, for five years from their incorporation date, from all types of taxes and mandatory payments to the Funds.

The government's commitment to RES can be seen in the establishment of a Commission on energy efficiency and development of RES, the working body of which is the Ministry of Economy of Uzbekistan, and its ratification of the Charter of the International Renewable Energy Agency (IRENA) on June 1, 2017.

Constraints and risk factors

The government encourages investors to take part in a wide range of RES projects (solar, wind and hydro). However, the underdeveloped regulatory framework and lack of RES legislation create substantial delays in implementing projects. Furthermore, investors face challenges in establishing public-private partnership arrangements due to lack of law on PPP projects. In addition, the difference between the tariff at which the local supplier JSC Uzbekenergo sells to consumers (US\$0.2 per kWh) and the tariff for power generated from RES offered by investors (exceeding multiple times) to the local supplier significantly inhibits project development and has led the government to question the feasibility of some projects.



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Sources of official data used in this publication

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