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Investing in renewable energy projects in Europe

Dentons' Guide 2021

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Welcome

Dentons Europe is delighted to present the 2021 edition of our Guide to investing in renewable energy projects in Europe. Our publication grows in stature every year, just as renewables become ever more central to Europe's energy mix, contributing to the modernization and strengthening of the economies in our region.

With the global drive to a green recovery, renewables have gained even greater prominence as Europe's leading example of balanced, yet sustainable development, in a world where what matters is not only how prosperous and rich we are, but also how we can positively contribute to the wellbeing of present and future generations.

Colleagues from more than 20 jurisdictions have prepared a concise overview of renewables developments at various policy levels – the EU, member states

and other countries in our region, which are no less ambitious in their implementation of plans and measures. We are also fortunate to be joined by leaders like BloombergNEF, Wind Europe, SolarPower Europe, and Cummins Inc., who have all added so much to this Guide.

Welcome to the 2021 edition of our Guide to investing in renewable energy projects in Europe. Let it be a small contribution to your plans, whether you are deciding on a new project or renewables investment, or are simply looking to better understand where we are heading across Europe, toward a better, greener and economically viable future.

Arkadiusz Krasnodębski

Head of Europe Energy group,
Dentons

Foreword

There is no doubt that 2020 was a testing year. The COVID-19 pandemic has set off an unprecedented global health, economic and social crisis. The record time in which the pharmaceutical industry developed several vaccines is one of many highlights of human ingenuity on display in this crisis, but it is clear that the pandemic will affect our livelihoods throughout 2021 and beyond. Yet, 2020 also brought a string of good news, especially for the world's transition to a low-carbon economy. Despite the delay of COP26, which will take place later this year, 2020 may well go down as a watershed year for climate progress.

Just a year ago, who would have thought that the vast majority of people walking our planet today may well live to see a carbon-neutral world economy and the impact of human activity on climate reverse? That is the promise made by governments across countries accounting for nearly half of the world economy as of the end of 2020. The European

Union, the UK, Japan and South Korea are targeting to reach net zero emissions by 2050.

In perhaps the single most important development in climate policy since the Paris Agreement, 2020 also saw China commit to peak emissions by 2030, and net zero by 2060. The election of Joe Biden should bring the US back into the Paris Agreement, and the Democrats' majority position in both Senate and Congress means that the country may be able to prepare its own net zero pledge in time for COP26 in Glasgow at the end of this year. India, one of the largest and most active clean energy markets globally, will certainly look to follow, bolstering Boris Johnson's goal to make COP26 the "net zero COP." What are the trends that emboldened governments to make these pledges? Of course, there are many, but here are a few that stand out.

Clean technologies have continued their march forward, delivering further cost declines, increasing their performance, and entering more markets. It looks like 2020

will deliver yet another record for new wind and solar installations, which BloombergNEF expects to reach 200 GW globally, far surpassing any competing technologies. Lithium-ion battery prices have gone down almost 90 percent over the last 10 years, helping decrease the cost of flexibility services in power grids, and of electric vehicles. We expect EV sales to grow 28 percent over 2020, on the back of record growth in Europe, despite the crash of the wider auto market during the pandemic.

This progress on the technology front is now increasingly being recognized by, and matched with, commitments in the financial community. Sustainable debt issuance hit a new record in 2020, reaching US\$732 billion across bond and loan varieties targeting environmental and social investments. Investors are now often ready to put a premium on sustainable products over others, which was best highlighted by the lower interest rate offered to Germany on its first-ever sovereign

green bond compared to its standard issuance. The transition to a carbon-neutral economy is capital intensive, and the global investor community is showing that it wants to play its part.

Investors' and shareholders' expectations typically translate into change in the strategies of the businesses they invest in. Corporate decarbonization commitments have accelerated throughout 2020. Purchase of clean power set a new record at around 18 GW of new capacity in 2020. 537 organizations pledged to join the Task Force on Climate-related Financial Disclosures, and 55 made commitments to science-based emissions reduction commitments (as of December 2020). These commitments are unprecedented, and the months leading up to Glasgow will bring even more.

So, where do we go from here? If 2020 was the year the world came together to agree that the interest of the planet, businesses, investors and civil society align, and that the technological challenges of

reaching net zero can be overcome, then 2021 must be the year where we start focusing on execution, especially here in Europe. Without a step change in the deployment of sustainable technologies and phasing-out of fossil fuel assets, the EU will miss its new climate target of 55 percent emissions reduction by 2030 against 1990 levels. This level of ambition means that the transition needs to accelerate and spread to every country and carbon-emitting industry in the region.

BNEF estimates that Europe needs to install between 566 GW and 651 GW of renewables over the next decade to reach its climate goals, depending on the role taken by electrification. This is about three times more than what was installed in the last decade.

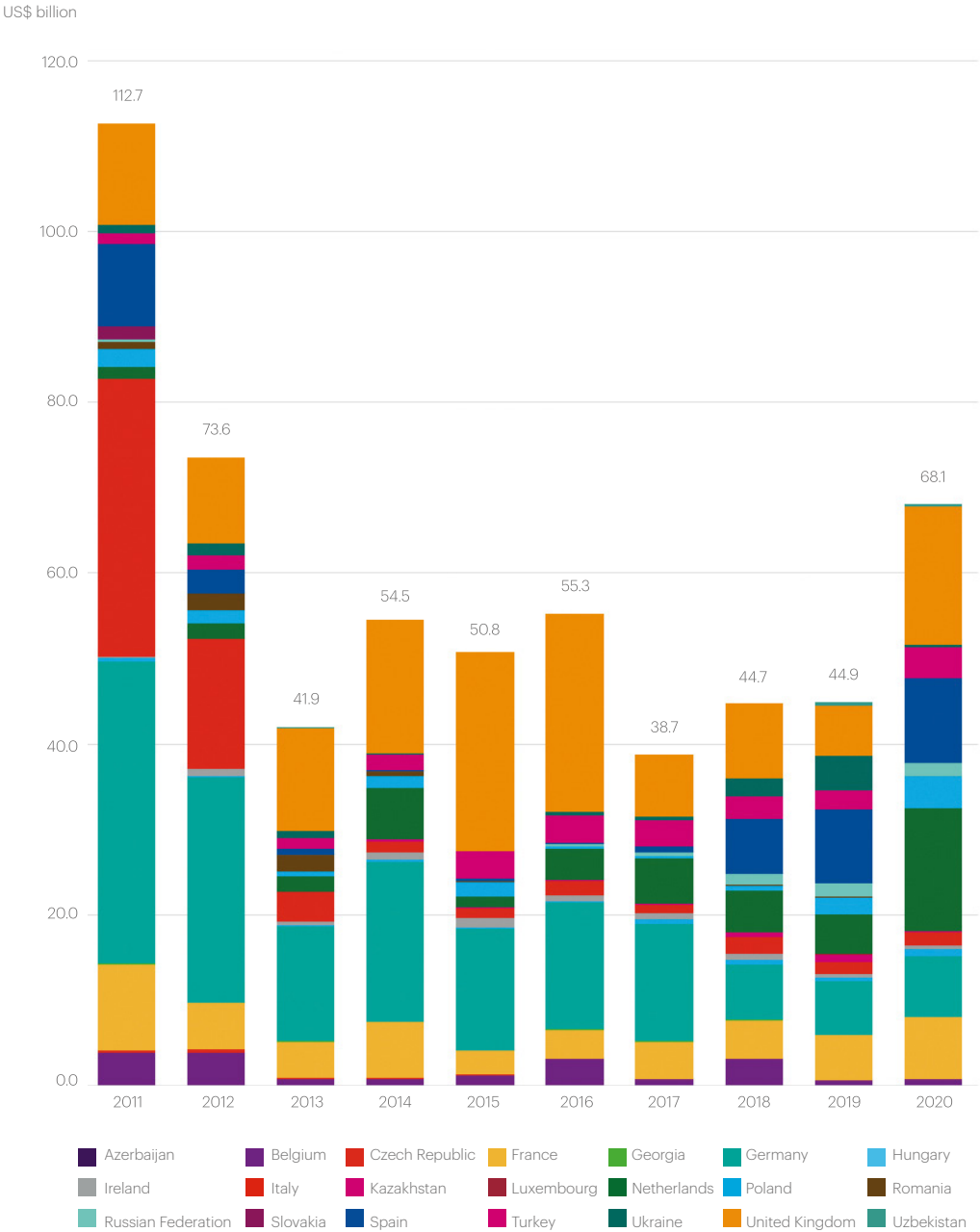
Deployment at this scale requires smooth infrastructure roll-out and social acceptance. Yet, experience in recent years shows that such a consensus is often still missing in key European markets, creating increasingly slow and difficult development conditions for projects on the ground. Delivering the systemic transformation that Europe's climate ambition calls for can bring unprecedented opportunity and accelerate the recovery from the COVID-19 crisis. But to be realized, the political promises must be matched with concrete action to ensure sustainable investments flow unhindered to the sectors and communities where they are needed the most.

Dario Traum

Head of Energy Transitions,
BloombergNEF

Renewable energy investment, including asset finance and small distributed capacity investment

Source: BloombergNEF



Wind industry can power Europe's green recovery

2020 was anything but business as usual. Europe took unprecedented measures to counter the COVID-19 health crisis that affected all areas of the economy.

In the first half of the year, the wind industry supply chain experienced major disruptions, particularly on the manufacturing side. New obstacles to the free movement of people and goods impacted operation and maintenance services and the construction of onshore and offshore wind in Europe. And electricity demand in most European countries dropped by as much as 25 percent during the worst period (mid-March to mid-May), resulting in lower electricity prices.

But the European wind energy sector proved resilient: Turbines produced a record amount of electricity, governments held auctions, and the industry continued to build new wind farms applying strict health and

safety protocols. With reduced electricity demand and less thermal generation, wind covered 17 percent of Europe's electricity demand in the first half of 2020 (it met 24 percent of demand in February 2020, before COVID-19 kicked in).

For project financing, the economic fallout resulting from COVID-19 increased costs of debt in the short term and triggered strains in debt liquidity in the lower-rated states in Eastern and Southern Europe. Despite this, the first semester of 2020 saw a record €14.3 billion raised for the financing of new wind farms. This is a clear signal: Wind is the right bet to build back better. Corporate renewable electricity sourcing in Europe also showed continuous growth in 2020, with cumulative contracted volume of corporate renewable power purchase agreements (PPAs) growing by almost 50 percent.

With its Green Deal, the EU aims to become climate neutral by 2050. It wants wind to account for half of

Europe's electricity by 2050, which entails a huge expansion in onshore and offshore wind between now and then. Investing in wind energy will not only help Europe reach its climate goals, it will be central to its economic recovery.

Wind already employs 300,000 people across Europe, contributes €37 billion to EU GDP and pays €5 billion in taxes each year, supporting local populations and community projects. Each new turbine installed in Europe generates on average €10 million of economic activity. This covers the manufacturing of turbines and components in 248 factories across Europe, as well as planning, construction, logistics, operations and maintenance, and R&D activities. Expanding wind energy will also help Europe strengthen its global leadership in wind: Five of the world's top 10 turbine manufacturers are headquartered in the EU.

To access the €673 billion Recovery and Resilience Facility (RRF) at the heart of the EU's €750 billion recovery plan ("NextGenerationEU"), each member state must draft a recovery and resilience plan (RRP) that specifies how their national envelope will be spent. Each RRP must allocate at least 37 percent of funding to climate-related spending.

The Commission's guidance on RRP identifies renewable energy as a priority for the RRP, including the building and sector integration of 200 GW of renewable energy capacity by 2030 and the installation of 6 GW of electrolyzer capacity and the production and transportation of 1 million metric tons of renewable hydrogen across the EU by 2025.

We at WindEurope want to see funding for grids, ports for offshore wind, renewable hydrogen infrastructure and R&I. And, crucially, we need to see more funding for revenue stabilization mechanisms and the de-risking of projects by public investment banks like the European Investment Bank.

If European governments fully implement their National Energy and Climate Plans, improving their current approach to permitting and making the most out of the EU's recovery strategy, the EU will have 392 GW of wind capacity by 2030, up from 192 GW today. That would increase jobs from 300,000 to 450,000. This is an opportunity we simply cannot miss.

Giles Dickson
CEO, WindEurope

EU solar: a strong 2020, but potential still untapped

Solar PV power in the EU has shown strong resilience in 2020 despite COVID-19. EU member states installed 18.2 GW of solar power capacity in 2020, 11 percent more than in the previous year. This was approximately 12 percent less than we forecast in our previous EU Market Outlook, but significantly higher than we estimated in an adjusted post-outbreak forecast in late spring, when we thought solar demand in the EU would shrink. Instead, 2020 was the second-best year ever for solar in the EU (beaten only by 2011, when 21.4 GW was installed).

Our latest (December 2020) “EU Market Outlook for Solar Power” (EMO) shows Germany was once again the largest solar market in Europe, installing 4.8 GW. It was followed by the Netherlands (2.8 GW); last year’s market leader Spain (2.6 GW); Poland, which more than doubled annual solar deployment (2.2 GW); and France (0.9 GW). These top five solar

markets accounted for 74 percent of new capacity – 5 percentage points lower than in 2019, so that the contribution of the other 22 EU member states, though still relatively small, is rising noticeably. All this has contributed to the EU increasing its cumulative installed solar power capacity by 15 percent to 137.2 GW by the end of 2020.

Looking ahead, we anticipate that the surprisingly positive 2020 for the EU solar sector will be followed by four years of even stronger demand. Our medium-scenario now forecasts additions of 22.4 GW in 2021, 5 percent higher than forecast last year. For the following two years, we are even more upbeat, now projecting 27.4 GW in 2022 and 30.8 GW in 2023, translating into 15 percent and 18 percent higher deployment than in our EMO 2019. And in 2024, SolarPower Europe sees demand cross the 35 GW level, bringing total installed solar PV capacity to 253 GW.

There are many reasons for solar's recent positive developments and optimistic outlook in the EU, not least its unique versatility and constantly improving cost leadership, and policy support in Brussels and several other member state capitals, which have created the right market framework conditions for solar's many possible applications. The crucial topics under discussion to speed up solar growth include ambitions for the Clean Energy Package 2.0, tackling the gap on carbon pricing, initiatives to tap Europe's gigantic rooftop solar potential, and power grid constraints. All these and more are addressed in our EMO 2020-2024.

However, commitment to solar at EU member state level must remain a high priority. While most member states are increasingly seeing total solar capacities grow and have acknowledged solar in their National Energy and Climate Plans (NECPs) to meet 2030 EU targets, most of these deployment levels are still not ambitious enough. The average 19.8 GW per year solar growth projected in the NECPs for the next decade is close to the volume the EU installed during its most severe economic crisis. Moreover, we are seeing market leaders, such as Germany, putting regulatory

obstacles in the way of solar that make investments much more difficult, and thus slow down long-term growth. This is not the way forward if we want to achieve climate neutrality by 2050. As we have shown for Paris Agreement-compatible scenarios modeled in our recent "100% Renewable Europe" report, the volume of solar that the EU must install is at least two and a half times higher than the expected NECPs totals by 2030.

A close look at the cumulative installed capacity reveals that COVID-19 impacts will delay market growth by two years. As it stands now, it will take until 2022 before total installed solar power capacities will reach the level we forecast in our EMO 2019.

To enable Europe's citizens, corporates, and financing institutions to embrace the lowest-cost and most versatile power generation technology even more enthusiastically, member states must provide optimal policy frameworks for solar to continue to surprise so positively in the future.

Walburga Hemetsberger
CEO, SolarPower Europe

Hydrogen: an opportunity for European renewables

The potential for hydrogen produced by low-carbon electricity to provide a source of clean energy is massive. It extends from transport (trucks, buses and trains, and, in combination with other elements, ships and planes) to a range of manufacturing industries (refineries, production of ammonia and other basic chemicals, steel, glass and cement manufacture), and from storing intermittent low-carbon electricity to using hydrogen for heating in residential and commercial settings. Experts disagree on which applications of hydrogen are likely to be most important (and the speed at which the costs of the different technologies involved are likely to decline), but few deny that it will play a key role in the energy transition.

The development of a hydrogen economy is already widely supported, not just in the EU but globally. Governments from Chile to Canada and Australia to Saudi

Arabia are taking strategic steps to encourage not only the use of hydrogen but its large-scale production from renewable electricity, with a view to export as well as domestic use.

The opportunity for hydrogen in Europe is to capitalize on the fact that all the ingredients for success are in place: a supportive policy environment and the availability of financial support from EU and national governments; concentrations of potential industrial users with strong incentives to decarbonize their operations; the presence of developers of hydrogen technology with the potential to be leaders in global markets, including in hydrogen production (such as electrolyzers) and utilization (such as fuel cells); and the availability of infrastructure and related expertise that can be deployed to connect supply and demand for hydrogen, both within Europe (using pipelines) and over

longer distances (using ships).

The challenge for hydrogen in Europe is threefold. First, we must consider if hydrogen is the right solution. Hydrogen fuel cell-based power options often come into their own with heavy weights, high power requirements, and long-range needs. Freight vehicles, for instance, place a premium on carrying capacity and range, where fuel cells can deliver a power density that batteries cannot.

Rail applications, too, are a very promising area, as hydrogen can decarbonize lines without requiring expensive construction to electrify them with overhead power lines.

For other applications, battery electric or clean diesel may be the best solution. At Cummins Inc., we see these solutions as complementary. As a business working on developing and manufacturing clean diesel, battery electric and hydrogen technology, we understand that different circumstances simply require different solutions. Second, as with renewable electricity, scale will drive cost reductions. At present, almost all of the potential uses of hydrogen have been successfully demonstrated, but there is a major

step to be taken to scale up production and use from the MW to the GW level. In this context hydrogen “clusters” or “valleys,” perhaps centered on areas where there is existing demand for hydrogen (currently supplied from high-carbon sources), and the potential Hydrogen for Climate Action Important Projects of Common European Interest (Green Flamingo, Blue Danube, etc.) will play a crucial role. Third, Europe’s hydrogen technology providers and potential hydrogen producers (including renewable electricity generators) will have to hold their own against stiff global competition.

On some estimates, the European market for hydrogen will grow to more than seven times its current size by 2050. Putting the European Hydrogen strategy into action would need investments of around €180 billion to €470 billion and the European Clean Hydrogen Alliance has been created specifically to identify and build up a clear pipeline of viable investment projects. The stakes are high, and the size of the potential prize is huge.

Denis Thomas

Global Business Development
Leader – Electrolyzers,
Cummins Inc.

EU regulatory overview

In 2020, the European Commission started to flesh out the broad outlines of the European Green Deal (EGD) that were first presented in December 2019. Against the backdrop of the EU's response to the COVID-19 pandemic, the EGD has acquired additional importance. The clean energy sector is clearly intended to be a major priority for the EU's 2021-2027 budget and to benefit from some of the additional financial firepower available to EU institutions in the form of the €750 billion NextGenerationEU fund and its Recovery and Resilience Facility. The scale of the challenge remains huge: to put the EU on track to reach "climate neutrality" by 2050, and in the meantime to set credible interim targets for 2030 and regulatory frameworks that will make them achievable. At the level of EU policy development, in particular as regards energy from renewable energy sources (RES) and key adjacent policy areas, the

signs so far are encouraging, if momentum is maintained.

RES and climate targets

The European Commission's latest analysis predicts that the EU will slightly exceed the 20 percent RES by 2020 target set under the 2009 Renewables Directive (RED). If all member states successfully implement their National Energy and Climate Plans submitted under the 2018 Governance Regulation, RES should slightly exceed the 32 percent RES by 2030 target set in the 2018 Renewables Directive (RED II). However, the RED II target does not yet reflect the deeper reductions in EU greenhouse gas emissions (GGE) by 2030 that are now proposed as part of the EGD. If the Governance Regulation is amended to require a GGE reduction of 55 percent, rather than the existing target of 40 percent by 2030, a 2030 RES target of 38-40 percent will be required, and the percentage annual RES shares

of electricity generation will need to double, from their current level (low 30s) to the mid-60s.

It remains to be seen how far the EU will attempt to achieve these increases by raising carbon prices through the further expansion and reform of the EU Emissions Trading System, and how far by other means. The case for sharper carbon pricing (perhaps rising to at least double current EU allowance (EUA) prices of €30 per metric ton) is reinforced by the fact that as the COVID-19 pandemic took hold of Europe, the monthly share of EU electricity generation from renewable energy sources (RES) reached its highest level yet: 42 percent in March 2020, against 31 percent from fossil fuel sources, as relatively high carbon prices (and falling demand) helped to counterbalance relatively low fossil fuel costs.

Strategic considerations

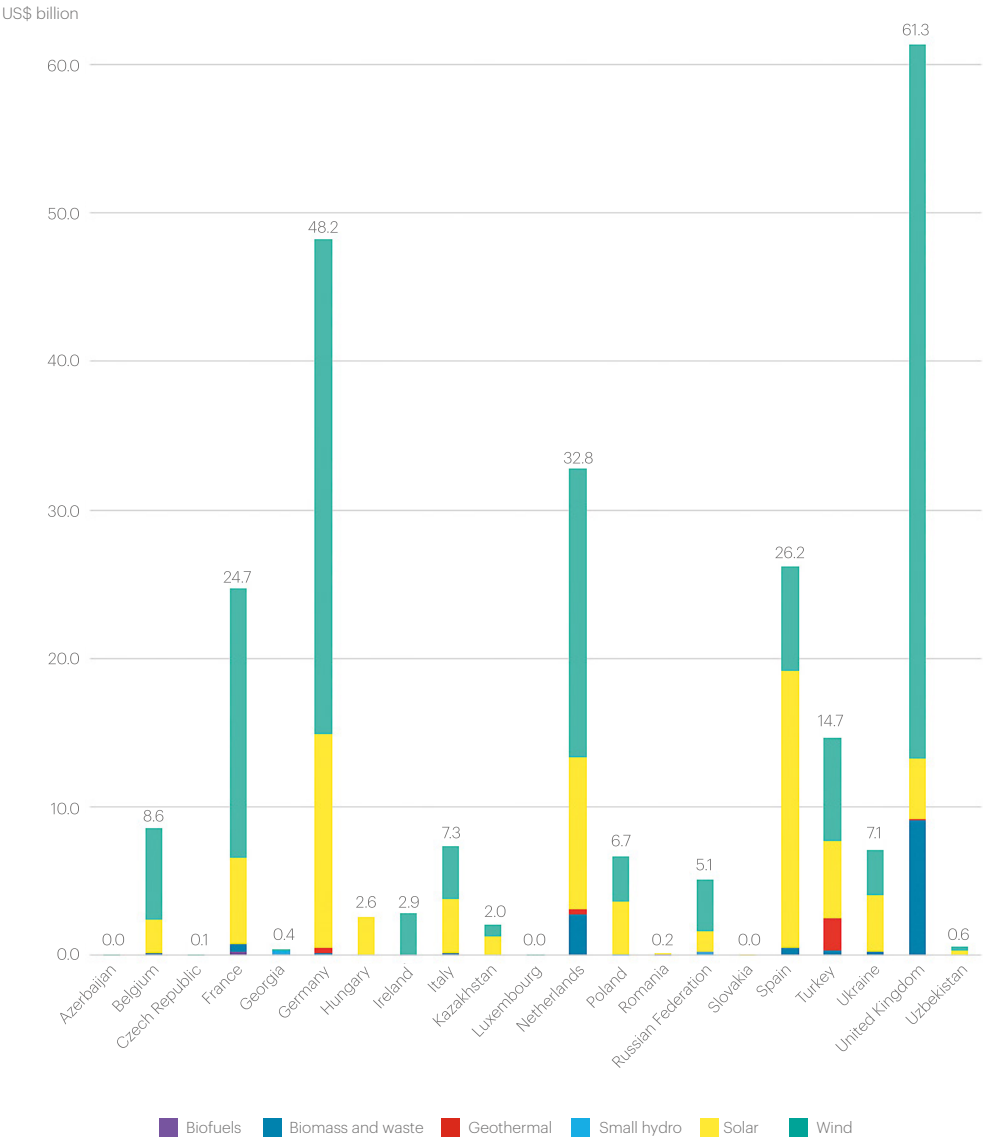
The pandemic has, of course, elevated the importance of the EGD. A key element in the von der Leyen Commission's mission from the outset, its role in promoting EU economic growth is now critical. Here, the European Commission's analysis is less reassuring. Whilst the deployment of vast amounts of new

RES electricity generating capacity and associated infrastructure will in itself provide employment and other benefits, the fact that EU levels of private and public investment in clean energy R&I activity are lower than those of other major economies (including the US, Japan, China and Korea) gives cause for concern that Europe risks missing out on the manufacturing sector benefits of green growth.

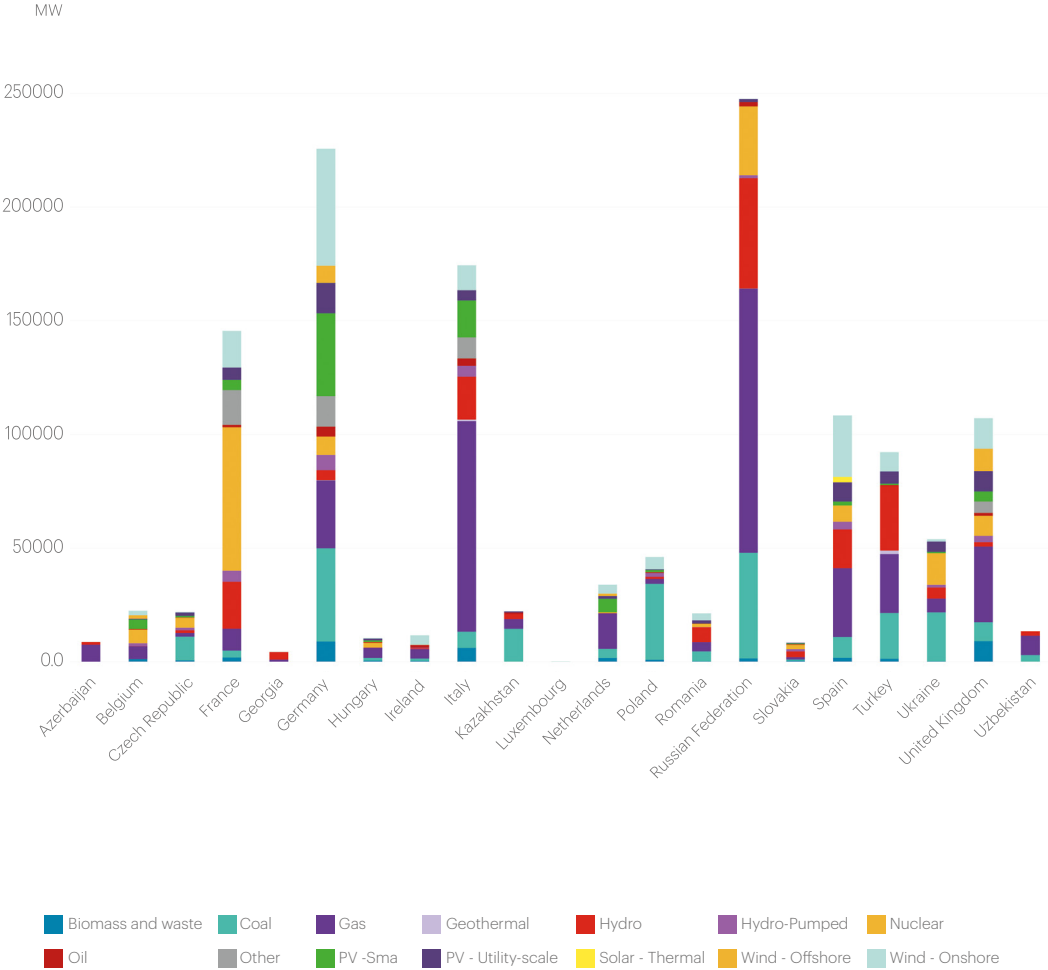
One area that the European Commission has marked out for coordinated RES-specific regulatory action is offshore renewables (including, but not limited to wind, wave and tidal energy). Not entirely coincidentally, this is an area in which the EU still has an edge in manufacturing, with a much higher proportion of equipment in offshore projects than other categories of RES projects being made in the EU. In November 2020, the European Commission published a strategy for increasing offshore renewable capacity from 12 GW today to 61 GW in 2030 and 340 GW in 2050. (Projected increases in onshore wind and solar capacity over the same timescales are on a similar or larger scale in absolute terms, but represent a much less dramatic increase on the current levels of deployment in proportional terms.)

Renewable energy investment, 2016-2020

Source: BloombergNEF



Installed capacity, 2019
Source: BloombergNEF



It will require systematic use of marine spatial planning frameworks, including cross-border collaboration, to develop the sector in a way that is both efficient and takes full account of environmental sensitivities and other uses of the sea. At the same time, the European Commission has proposed steps towards the development of a “meshed” offshore grid (replacing the current “point to point” transmission infrastructure connecting individual generators to national transmission systems, which are then separately connected by interconnectors). This would begin with “hybrid” projects that combine export cables from offshore generators with interconnection capacity. Revisions to the Trans-European Energy Networks (TEN-E) Regulation; creation of new “offshore bidding zones” in the context of the market-coupling regime; measures to facilitate anticipatory investment by TSOs; and Commission guidance on sharing the costs and benefits of hybrid projects, are all planned to help to drive this agenda forward over the next few years. Also on the agenda are clarifications and amendments to avoid hybrid projects being disadvantaged by the existing internal electricity market rules (for example, on use

of congestion income) and taking account of the support needs of offshore projects in the forthcoming updating of the 2014 Guidelines on State aid for environmental protection and energy.

RES are also at the heart of one of the key EGD strategy documents, the Commission’s July 2020 Communication on an EU Strategy for Energy System Integration (ESI). Although the starting point of the ESI Strategy is energy efficiency and the “circular” use of waste (including waste heat), it then goes on to emphasize the importance of electrifying energy demand that cannot be eliminated or met in these ways, using renewable electricity, as well as the use of “renewable gases and liquids produced from biomass, or renewable and low-carbon hydrogen,” both as energy storage vectors and as means of decarbonizing applications that cannot readily be electrified.

The ESI Strategy highlights a number of RES electricity-related areas possibly to be addressed by the revision of RED II during 2021. These include: introducing mandatory green public procurement criteria; tackling remaining barriers to high levels of RES electricity in power systems; and introducing more specific

measures for the use of RES electricity in transport and heat and cooling in buildings and industry. These will come alongside possible revisions to the EU Alternative Fuels Infrastructure Directive and investment support for the roll-out of 1 million EV charging points in the EU by 2030, and revisions of the EU Energy Efficiency Directive and EU Industrial Emissions Directive. A Network Code on Demand-Side Flexibility is also proposed to unlock the potential of “active consumers” of electricity and to support a renewables-heavy grid.

Various regulatory initiatives to support “green” gases and other forms of renewable fuel are also contemplated in the ESI Strategy. These include the revision of the EU Energy Taxation Directive to align the taxation of energy better with the EU environment and climate policies, ensure harmonized taxation of storage and hydrogen production (avoiding double taxation), and work “towards the phasing-out of direct fossil fuel subsidies.” The update of the state

aid guidelines is also mentioned in this context, as are possible reforms to the EU gas regulatory framework.

Finally, alongside and complementing the ESI Strategy, the European Commission has issued its hydrogen strategy. This shows the EU’s determination to make exploiting the potential of low-carbon hydrogen a major plank of its future energy, climate, transport and industrial policies, which will inevitably have strong links to future EU and national renewables policies. We consider the hydrogen strategy and the future EU hydrogen economy further in the section below.

Hydrogen in the EU: policy overview

Low-carbon hydrogen has a key part to play in the EU's net zero future. In 2020 it started to be fully integrated into policy-making. Creating an entire new industry in a relatively short timescale is a major challenge but also a massive opportunity, particularly for the European RES electricity sector.

A silver bullet?

Hydrogen is increasingly seen as an essential component of the toolkit that will be required to achieve a net zero economy in 2050. If produced by low-carbon means, it offers the convenience of hydrocarbons without their greenhouse gas emissions. Producing it from electricity allows energy to be stored on a scale and over time periods that battery technologies struggle to accommodate at present. It could help decarbonize large parts of the economy, including heavy transport, aviation, space heating and carbon-intensive industrial processes. It could give a renewables-heavy power grid

extra operational optimization options and lower curtailment risk.

A key challenge is to scale up production of low-carbon hydrogen and reduce the costs of producing it, whether by electrolysis of water (green hydrogen), or (for those content to produce low-carbon hydrogen using fossil fuels) by reforming natural gas with carbon capture, usage and storage of the waste CO₂ (blue hydrogen). Although low-carbon hydrogen has much to offer both the RES and oil and gas sectors in terms of value extension, for at least the next decade, and probably longer, its production will require some form of regulated financial support in order to be economically viable. Some industrial users will also need support for converting their plants to use hydrogen.

EU and national strategies

In pursuit of its targets of 6 GW of electrolyzer capacity by 2024 and 40 GW by 2030, the EU's

hydrogen strategy identifies several key areas for action at EU level: channeling investment in both R&I and commercialization projects (including through the European Clean Hydrogen Alliance); boosting demand for low-carbon hydrogen (including by developing common standards for its production, and setting up a pilot scheme for carbon Contracts for Difference to support its use in industrial context); adapting natural gas infrastructure and the existing gas regulatory framework for hydrogen purposes; and exploring international cooperation with potential sources of green hydrogen outside the EU (up to another 40 GW of capacity outside the EU is envisaged as potentially supplying EU users by 2030).

The multi-GW ambitions and broad scope of the EU strategy are matched by those of a number of member states. The German government has allocated €9 billion of a €130 billion economic stimulus package to the hydrogen sector and its strategy sets out 38 measures to be taken forward in the next three years alone. France, Spain and others have also published substantial strategies. Beyond the EU, the UK aims for 5 GW of production capacity and a “hydrogen town” by 2030 and is working on regulated support frameworks for blue and green hydrogen, while Russia clearly

sees the potential to convert its strength in natural gas production into a role as a major source of blue hydrogen.

Projects

There are significant policy issues to be resolved in developing these strategies, but government and regulatory activity around low-carbon hydrogen has been matched by practical plans on the part of a range of industries to scope out hydrogen projects – even if some are still relatively small scale and many are predicated on the availability of regulated support. Examples include well-developed plans for clusters around ports on the Dutch and British sides of the North Sea incorporating blue and green hydrogen elements; gas network operators proposing a “European hydrogen backbone;” and numerous plans for individual industrial sites, often using offshore wind power to produce hydrogen.

Azerbaijan

Azerbaijan's economy has long been dominated by the oil and gas sector, a trend that will certainly continue in the near term. However, new laws and model agreements have now been prepared which, for the first time, will provide a clear framework for RES in Azerbaijan. Significant new wind and solar projects are in advanced stages of negotiation with foreign companies, and there are ambitions to expand the development of RES as part of a broader program of infrastructure renewal.

Share of renewable energy in electricity generation capacity in 2020 – 17 percent* (estimate)

Azerbaijan national target by 2021 – 22 percent*

Share of electricity generated from renewable sources in the total production of electricity in 2019 – 1.7 percent*

Drivers

The long-awaited draft Law of Azerbaijan “On the Use of Renewable Energy Sources in the Production of Electricity,” is under final review by the presidential administration. It will address taxes and duties,

guaranteed tariffs, rebates on buyers' obligations, foreign investment and other support mechanisms, such as scientific research. In addition to a guarantee on protection of the investment and certain tax incentives for seven years under existing legislation, incentives proposed for

* Figures from Azerbaijan's Ministry of Energy and State Statistical Committee

investors in RES projects in Azerbaijan include guaranteed offtake (under a take or pay contractual regime), guaranteed connection, priority in dispatching, long-term land leases and the possibility to index payments to foreign currency. Draft model contracts, including forms of a power purchase agreement, connection agreement and state guarantee, have also been prepared and are under consideration. In the near future rules for holding renewable energy auctions and on a net metering and calculation scheme will be published.

The government has also started preparing a “Road map on the development of the use of the offshore wind industry in Azerbaijan.” The World Bank has already estimated that the country has the potential for tens of GW of offshore wind power (in particular, floating units).

A number of projects have moved forward, including a 240 MW onshore wind project involving ACWA Power (for which a PPA, TCA and investment agreement were signed on December 30, 2020), a 200 MW solar project involving Masdar, and a pilot project to install solar panels on Lake Boyukshor. A number of other international energy companies have signed memoranda of understanding (and similar) with the Ministry of Energy of Azerbaijan on a range of renewable energy issues.

As part of a broader infrastructure development effort in the aftermath of the recent hostilities in Nagorno-Karabakh, it has been reported that eight areas with high solar energy potential are being evaluated in the Kalbajar, Lachin, Gubadli, Zangilan, Jabrayil, Fuzuli regions, together with potential wind energy resources in the Kelbajar and Lachin regions.

The Ministry of Energy of Azerbaijan currently estimates a potential RES capacity of 3,000 MW for wind, 23,040 MW for solar, 380 MW for biomass and 520 MW for small hydropower. It is a strategic priority of Azerbaijan to significantly increase its wind and solar energy capabilities in the coming years.

Constraints and risk factors

The protracted time schedule for the preparation and implementation of draft laws and model agreements relating to RES in Azerbaijan has delayed the development of significant projects and has hindered the overall development of the sector. Once the necessary legal and regulatory framework is in place, particular challenges include the competitiveness of tariffs, issues with technology transfer and a lack of available financing, particularly in the current low oil price environment.

Belgium

Energy policy in Belgium is set both at the federal and regional level. While all policy levels acknowledge and remain committed to the stated RES objectives, Belgium has not been able to meet its 2020 goals and it is currently unclear how it intends to meet its objectives after 2025.

Share of renewable energy in gross final energy consumption in 2019 – 9.9 percent

Belgium national target by 2020 – 13 percent, with a long-term goal of 17.5 percent by 2030

Drivers

The largest component of RES in Belgian energy generation is hydropower (nearly 50 percent), followed by thermal energy (biomass), wind, solar and others. The first offshore wind zones were commissioned in 2020 (three new offshore wind farms: Mermaid, Seastar, Northwestern II), bumping Belgium's wind capacity up to almost 2.3 GW.

The regulatory framework remains largely unchanged, including the

systems of tradable renewable energy certificates in all three regions (Brussels, Flanders and Wallonia). The federal government's competence covers matters related to energy supply, nuclear plants, offshore wind farms and large energy infrastructure projects.

One notable and encouraging trend of 2020 has been a number of substantial new corporate PPAs involving offshore wind farms and offtakers in the Belgian chemicals industry.

Constraints and risk factors

Belgium failed to meet its 2020 objective of 13 percent, ending up at 11.7 percent instead, with the Flemish region generating the largest shortfall. Belgium had previously set its combined renewable energy target at 17.5 percent by 2030. Following the determination that Belgium would fall short of its 2020 target, it was concluded that this was mainly due to structural underinvestment by private parties in the RES sector.

In order to achieve its long-term objectives, recent studies point out that Belgium requires at least an additional 2.3 GW in onshore wind capacity and 2.4 GW additional solar capacity between 2019 and 2023, as well as the construction of four or five new gas-fired power plants (providing in sum 3.85 GW) if its remaining operational nuclear power plants close, as currently intended, by 2025. The closure of the nuclear power plants is subject to ongoing political debate and is expected to remain on the political agenda in 2021.

Hydrogen trends

In early 2020, seven major Belgian industrial entities and public stakeholders formed a consortium to construct and operate a green hydrogen plant in Ostend harbor.

Following the completion of an initial feasibility study, steps are now being taken to allow for the construction of the plant, which will use electrolysis to convert surplus renewable energy into green hydrogen. The project will be rolled out by 2022 and the plant is currently scheduled to go operational by 2025. The parties financing the project will include the Flemish regional investment agency, a major Belgian dredging company and one or more private investors, who are currently being selected by the consortium.

Response to the COVID-19 crisis

While contingency plans have been implemented in Belgium to guarantee the availability of production, the period has witnessed an exceptional drop in wholesale prices. Given commitments to renewables, the COVID-19 crisis is not expected to cause a downturn in RES investments in Belgium.

Czech Republic

In the first half of 2020, solar PV capacity increased by 23 MW in the Czech Republic, with at least 2,000 MW more to be built before 2030, according to the recent National Energy and Climate Plan. The proposed Modernization Fund could be one of the key drivers of public funding of RES in the next few years.

Share of renewable energy in gross final energy consumption in 2019 – 16.2 percent

Czech Republic national target by 2020 – 13 percent, with a long-term goal of 22 percent by 2030

While the Czech Republic has been ahead of its 2020 RES share target, approximately CZK 650 billion (€24.48 billion) of investment is needed to attain the overall goals in power generation between 2021-2030, including at least CZK 33 billion (€1.26 billion) of RES public subsidies for small local installations (biomass, solar, heat and wind). Dominating RES are biogas (27.7 percent), solar (24.9 percent) and biomass (22.5 percent).

Drivers

The Environment Ministry of the Czech Republic prepared a new Program Document under the EU Modernization Fund aiming to use resources from the sale of emission allowances to subsidize projects through nine programs, which will focus in the first wave on the development of new non-fueled RES, modernization of heat supply networks, improved energy efficiency and reduction of industrial greenhouse gases in

the EU ETS installations. The goal is to support the development of RES projects in brownfield and industrially polluted sites.

The Environment Ministry has already launched a preliminary registration of projects and hopes to get final government approval of the Program Document by mid-2021. If approved, up to CZK 150 billion (€5.72 billion) will be made available to public and private investors, with at least CZK 59 billion (€2.25 billion) allocated to RES. However, the final amount of available funds will depend on multiple factors, including the fluctuation of emission allowance prices.

Constraints and risk factors

Following consultations, the government redrafted its proposed amendment to the Act no. 165/2012 Coll., the Promoted Energy Sources Act, as amended, which introduces new types of incentives for RES such as (i) a subsidy for the use of biomethane in transport, (ii) auctions for annual or hourly bonuses, and (iii) green bonuses based on own

consumption. So far, it does not include support for hydrogen projects.

The amendment also deals with the issue of overcompensation, especially for RES projects commissioned before 2016. The appropriateness of subsidies will be evaluated by reference to the internal rate of return of investment in RES (6.3 percent for solar, 9.5 percent for biomass, 10.6 percent for biogas and 7.0 percent for hydro, wind and geothermal). To determine the internal rate of return, the Ministry of Industry and Trade of the Czech Republic will review performance at sectoral and, in some cases, individual project level, potentially resulting in adjustment of subsidy levels or in some cases an obligation to reimburse the subsidy received.

Parliament is expected to approve the amendment in the first half of 2021.

France

France is seeing steady growth in renewables. In 2020, RES installed capacity reached 55.3 GW, of which 46.5 percent is hydro. 2.4 GW of RES installations were connected to the grid in 2020 (+4.5 percent), with a significant slowdown due to the COVID-19 outbreak.

Share of renewable energy in gross final energy consumption in 2019 – 17.2 percent

France national target by 2020 – 23 percent, with a long-term goal of 33 percent by 2030

Drivers

In 2020, the government of France announced a national strategy for the development of decarbonized hydrogen. Calls for projects are currently ongoing in relation to the hydrogen supply chain and hydrogen use in transport. The selected projects will be entitled to public support. The government is also drafting an ordinance to regulate the hydrogen sector, setting up a mechanism to guarantee traceability or origin of hydrogen,

and support the production of decarbonized hydrogen.

The final version of the Multiannual Energy Program (MEP) was issued in 2020, setting objectives for the growth of renewables on a 10-year scale. On this basis, competitive procedures launched by the French state to grant feed-in tariffs or Contracts for Difference keep going. The average tariff is €59.7/MWh for onshore wind energy, and €57.4/MWh for ground and roof-based photovoltaic solar power.

As of today, the rate of attainment of the MEP 2023 targets is more than 99 percent for hydro, 71 percent for onshore wind and 50 percent for solar.

Subsidy-free projects are developing. France has not yet reached a corporate PPAs “golden age,” but at least a dozen big corporate PPAs were signed in 2019-2020. The railway company SNCF has notably secured a 260 GWh annual supply of solar electricity through corporate PPAs.

Constraints and risk factors

The litigation risk against RES projects is still high in France, but several measures have been enacted to speed up the processes. Notably, administrative courts of appeal are now the first resort jurisdiction in litigation relating to onshore wind farms.

In 2021, major reforms are underway with respect to the nuclear sector and in a context where nuclear electricity is still predominant, they will surely have an impact on RES too. First, the energy group EDF will be reorganized in order to separate its monopolistic activities—mainly production from nuclear—from its competitive ones. Second, the purchase conditions of nuclear electricity will be amended. Under the current scheme (called “ARENH”), EDF

is obliged to sell up to 100 TWh of “historic” nuclear electricity per year to other suppliers. However, since demand exceeds this ceiling every year, EDF could be obliged to sell the entirety of this electricity in the future. Finally, decisions are expected on the possible construction of new nuclear plants, and extending the operational life of some “historic” generators.

Response to the COVID-19 crisis

The first three quarters of 2020 were marked by a sharp slowdown in the number of grid connections. Nineteen percent fewer onshore wind farms were connected to the grid than during the same period in 2019. However, lots of projects are currently under appraisal.

Lockdown led to an average drop in daily electricity consumption of up to 15-20 percent. In this context, alternative electricity suppliers had no interest purchasing nuclear electricity from EDF, and argued the pandemic was a *force majeure* event enabling them to suspend the ARENH contract. Disputes arose, with the courts agreeing the pandemic was a *force majeure* event. In retaliation, EDF terminated the contracts.

Georgia

Georgia's electricity market reforms are following the timeline envisaged in its Energy Community Accession Protocol. The energy market will undergo significant changes from July 2021, improving the environment for potential investors to capitalize on the untapped potential from hydro, wind, solar, geothermal and biomass sources.

Georgia aims to increase the share of renewable energy in total energy consumption from 29.5 percent (2019 data) to 35 percent by 2030.

The share of wind and solar power plants for 2030 is targeted to hit 18 percent.

Drivers

Among renewables, the Georgian government's focus and priorities have moved from hydropower plants (HPPs), the most established technology, toward wind and solar, partly in order to reduce reliance on imported electricity during periods when HPPs generate less power.

The ongoing reforms to the regulation of the electricity sector should facilitate the development

of RES projects. In April 2020, the government approved the "Concept Design of the Electricity Market" as the guidelines for future liberalization. It outlines measures such as free choice of supply for consumers and competitive price formation, and places public service obligations on some market participants that are intended to benefit RES projects.

In July-August 2020, the electricity regulator adopted new rules for

day-ahead and intraday markets, balancing and ancillary services, and unbundling of distribution system operators. The day-ahead market will start operating and an imbalance settlement mechanism will be introduced in July 2021. The full launch of the intraday market and ancillary services market is scheduled for 2022.

In July 2020, the government adopted a new support mechanism for HPPs with capacity of more than 5 MW. During the first 10 years of operation, for each September-April period, the Electricity Market Operator (ESCO) will assist HPP operators with market risk insurance. If the market price for any hour falls below US 5.5 cents per kWh, ESCO will cover the difference between the market price and this minimum price, up to a maximum of US 1.5 cents per kWh.

The RES sector in Georgia continues to receive steady support from international organizations. In July 2020, the European Bank for Reconstruction and Development agreed to lend €90 million for a project to strengthen and improve Georgia's electricity transmission system (co-funded by Germany's KfW). A combination of new lines and reinforcement of existing infrastructure should enhance the

resilience of the network to deal with new generation capacity and address the geographical mismatch between the country's renewable generation resources and areas of greatest electricity consumption. EBRD is also making a €217 million loan to refinance the GOGC (Georgian Oil and Gas Corporation) corporate Eurobond following the COVID-19 crisis, as part of which EBRD will assess the costs of generating hydrogen from Georgia's abundant hydro resources and transporting it through the nation's existing gas pipe network.

Constraints and risk factors

The biggest challenge to generation from wind and solar sources is integration into the national grid. By 2025, considering certain assumptions, restrictions and requirements, it will be possible to integrate approximately 665 MW of wind and 260 MW of solar-generated power (50 percent of the potential). The conductivity of high-voltage power transmission lines to enable the export of excess capacity and imports to cover deficits remains a challenge.

Germany

The share of renewables in the German power mix continued to increase in 2020, reaching approximately 50 percent. To cut its greenhouse gases, Germany decided to initiate a fundamental reshaping of its overall industrial sector. In June 2020, the National Hydrogen Strategy (*Nationale Wasserstoffstrategie*) was passed, providing for a ramp-up of the hydrogen industry with a particular focus on green hydrogen. Detailed legislation is expected. The Coal Phase-Out Act passed in July 2020 aims at future-oriented sustainable conversion of efficient coal-fired plants, and the ramp-down of less efficient older ones. Parts of the Renewables Energies Act (EEG) were reformed.

Share of renewable energy in gross final energy consumption in 2019 – 17.4 percent

Germany national target by 2020 – 18 percent, with a long-term goal of 30 percent by 2030

RES capacity expanded by around 6.5 GW in 2020, mainly driven by 5 GW of solar PV, very low 0.2 GW of offshore wind and 1.2 GW of onshore wind. Average remuneration following RES auctions in 2020 was

6.07 Ct/kWh for onshore wind and 5.01 Ct/kWh for solar PV. Large-scale subsidy-free (merchant) solar PV projects are now appearing. PPA structures are still at a very early stage.

Drivers

Germany's energy transition is built around the phase-out of nuclear by 2020 and of coal-fired power by 2038 at the latest, alongside continued promotion of RES electricity, and energy efficiency.

This is now supplemented by the National Hydrogen Strategy, which aims to create 5 GW of electrolyzer capacity by 2030 and an additional 5 GW later on. The strategy's action plan sets out 38 measures for the first phase from 2020 to 2023. This will lead to increased demand for energy produced from RES, with a strong emphasis on offshore wind. The framework conditions have been improved: the target for the build-out of offshore wind by 2030 was raised from 15 to 20 GW; by 2040 a total of 40 GW is to be installed. For onshore wind, the distance rule (1,000 meters to the next urban area) does not bindingly apply throughout Germany but is subject to federal state legislation that may provide for shorter distances; preferred building areas will increase.

With the federal government aiming for 65 percent of electricity to be supplied from RES in 2030, and the RES support auction system for new projects now well established, Germany should continue to be an attractive market for investments in renewables.

Constraints and risk factors

- Slow implementation of grid expansion to safeguard grid stability.
- Lengthy permitting process.
- Lack of charging infrastructure is a fundamental obstacle to the expansion of e-mobility.

Response to the COVID-19 crisis

As part of the COVID-19 emergency measures, parliament amended the EEG in May and June 2020. New provisions remove the cap for solar PV subsidies, which would have ended subsidies for smaller scale solar PV installations once the national installed capacity exceeded 52 GW. By removing the cap, solar PV systems up to 750 kWp continue to benefit from the subsidies under the EEG. Further, to mitigate a steady increase of the EEG surcharge (by which the compensation for RES generation operators is levied on top of the power price), the surcharge will be partly covered by funds from the CO₂ pricing regime, which will come into effect in 2021.

Hungary

In 2020, Hungary adopted key legislation, strategies and action plans to achieve its climate objectives. Numerous calls for innovative pilot projects are currently in place to support investments in clean, efficient energy solutions. Solar PV generation continues to be the most popular RES technology in Hungary. The ongoing nuclear power plant development of 2,000 MW capacity at the existing Paks site plays a significant role in Hungary's clean energy policy.

Share of renewable energy in gross final energy consumption in 2019 – 12.6 percent

Hungary national target by 2020 – 13 percent, with a long-term goal of 21 percent by 2030

Drivers

The Action Plan for the National Energy and Climate Plan, adopted in February 2020, envisages a six-fold increase in installed solar capacity in the next 10 years (up to around 6,500 MW by 2030). In June 2020, parliament passed the Climate Protection Act, committing to net zero emissions by 2050.

The RES scheme, called METÁR, is primarily based on a price premium type of subsidy (Contract for Difference) that may be awarded following auctions. After the successful first METÁR auction, which was more than two and a half times oversubscribed, the second METÁR auction took place between September 15 and October 15, 2020. The support to be

distributed was capped at HUF 800 million (€2.2 million) and 390 GWh, each per year. Projects up to a maximum of 49.99 MW built-in capacity were admitted. A preliminary announcement on the list of applicants confirmed the impressive interest, as the second METÁR auction was almost five and a half times oversubscribed, and the lowest bid price was far below expectations (HUF 16.18/kWh, approximately €44.94/MWh). The official auction results are expected in late January 2021.

In the period 2020-2026, the Hungarian Energy Office is authorized to distribute renewable Contract for Difference subsidies through auctions up to a yearly cap of HUF 2.5 billion (€6.9 million) and the government plans to announce a new auction every six months until August 2022.

Hungary is working on its National Hydrogen Strategy, with the establishment of the National Hydrogen Technology Platform. Pilot projects to convert excess carbon-free power to gas (hydrogen, biomethane) with innovative technology will be supported with a budget of HUF 8 billion (€22.1 million). Additional calls for pilot projects are in place, including projects focusing on the establishment and operation of energy communities. These will

aim to help DSOs and TSO to improve the stability and resilience of the public grid through innovation.

Constraints and risk factors

While feed-in tariff (FIT) support is closed to new applicants, several renewable projects were previously awarded FIT support, which will expire in the period 2040-2045. As of April 2020, these projects are exposed to balancing costs due to the introduction of the notion of balancing responsibility. However, until the end of 2025, these FIT projects are entitled to a temporary and gradually decreasing compensation in order to mitigate their significant financial burdens.

Response to the COVID-19 crisis

In response to the COVID-19 crisis, the deadline for the start of commercial operation of FIT projects and those METÁR projects that were awarded CfDs without an auction and which were or are due to start commercial operations between March 11, 2020, and June 30, 2021, was extended until June 30, 2022, and the deadline of those that are due to start commercial operations between July 1, 2021, and December 30, 2021, was extended until December 31, 2022.

Ireland

Dentons' Dublin office opened in 2020, just as the Irish renewables sector embarked upon a period of accelerated, state-backed, infrastructure development. This transformation of the energy sector towards renewables is driven by the need to reduce carbon emissions while meeting Ireland's growing demand for energy. A decade of steady growth, led by onshore wind, left Ireland generating over one third of its power from renewables in 2020 (with a higher proportion of wind power than any other European market), but falling short of the 2020 national target of 40 percent renewable electricity. The National Energy and Climate Plan aims to deliver at least 70 percent by 2030 and carbon neutrality by 2050.

Share of renewable energy in gross final energy consumption
in 2019 – 12.0 percent

Ireland national target by 2020 – 16 percent

Drivers

In September 2020, the results of Ireland's first green energy auction to take place under the long-awaited Renewable Energy Support Scheme (RESS) were released. RESS is based

on a Contract for Difference (CfD) model with two-way payments (and no payments to generators when wholesale prices are negative), and replaces the previous, tariff-based regime. A total of 82 new renewable energy projects were declared

successful under RESS-1. Notably, 77 percent of RESS winners were solar energy projects, which is in line with the government policy to diversify the mix of renewable technologies connected to the national grid. These RESS auctions will be an annual feature for the next decade as Ireland seeks to meet its green energy targets.

Perhaps the most exciting part of the Irish renewables market is the offshore wind sector. Here, the new government proposes to raise the target for 2030 from 3.5 GW to 5 GW and has promised a RESS auction dedicated to offshore projects in 2021. A modernized marine consenting regime is under development, and seven projects that had already made significant progress under the existing regime will be “grandfathered” across into the new process. Ireland’s Atlantic Coast could produce 30 GW or more of floating offshore wind, with the potential for significant exports of energy, either as electricity via interconnectors or as green hydrogen.

Ireland has significant potential for hydrogen production and the coalition government appears keen to focus hydrogen use on difficult to decarbonize sectors such as transport and industry. A national hydrogen strategy is expected

in 2021, which is expected to be closely linked with Ireland’s offshore wind strategy.

Constraints and risk factors

A key consideration up for discussion is cost. A recent Irish Wind Energy Association report noted that the cost of Irish renewables will be significantly affected by decisions taken on key policy points in relation to tax, grid charges, balancing costs, and planning and environmental controls. Collectively, these could make Irish renewables either among the cheapest or most expensive in the EU. The government has indicated that the political will required to make renewable energy a success in Ireland is present on all sides, but this will be an area to watch out for in 2021.

Response to the COVID-19 crisis

As Ireland relies on European and global supply chains for raw materials and components, project sponsors are factoring this into their planning to address any potential logistical delays in their supply chains. Moreover, while scaled government restrictions introduced to combat the COVID-19 cases limited activity in the construction sector over the course of 2020, it did not directly affect RESS projects as many are scheduled to commence construction in 2021.

Italy

The Integrated National Energy and Climate Plan describes Italy's decarbonization and energy strategy from 2021 to 2030. It envisages adding approximately 40 GW of renewable energy generation capacity (principally wind and solar) by 2030, bringing the share of renewables in gross final energy consumption to 30 percent. In November 2020, the Italian government issued a first draft of the National Hydrogen Strategy, setting out ambitious targets for 2030 and 2050.

Share of renewable energy in gross final energy consumption
in 2019 – 18.2 percent

Italy national target by 2020 – 17 percent, with a long-term
goal of 30 percent by 2030

Drivers

The development of utility-scale projects in Italy is booming again, especially in wind and solar PV, which have reached market parity in Italy. On the offtake side, there is a strong appetite for physical and financial PPAs from both utilities and traders, often from outside Italy.

Italian banks are still wary about the

uncertainties of income streams and prefer lending to projects with government support. The 2019 FER1 Decree gives RES plants incentives of about €1 billion per year, and aims to support the development of approximately 4.8 GW of generating capacity until the end of 2021. During the final three rounds in 2021, contracts for a further 2.3 GW of capacity should be awarded. The

government is currently working on a successor incentive scheme (FER2) to continue government support after 2021.

In 2020, new legislation was enacted to provide incentives to renewable energy systems shared by energy communities and self-consumption collectives, thereby partially anticipating the transposition of the new EU Renewable Energy Directive. A pilot phase of the new rules, focusing on systems with a generation capacity of no more than 200 kW, will run until June 2021.

In late 2020, The Ministry of Economic Development of Italy published the draft Hydrogen Strategy. Current predictions are that hydrogen may satisfy around 2 percent of national energy demand by 2030, and around 20 percent by 2050, with 5 GW of green hydrogen production capacity to be operational by 2030. The ministry is targeting investments in the sector of around €10 billion, with half of the amount coming from European funds and private investments. Support will be given only to green, but not blue or gray hydrogen, which in turn will require a further increase of production capacity from renewable energy sources.

Constraints and risk factors

Early rounds of the FER1 support

scheme were undersubscribed. Developers struggle to secure large enough sites and some regions hinder projects on agricultural land despite national law specifying that projects can be installed in such areas. New rules on a single integrated procedure for Environmental Impact Assessments and permitting are not yet correctly applied in all regions.

In 2020, new rules were introduced to simplify administrative procedures relating to renewables and EV charging projects, amongst others, but their impact will be seen only in 2021.

Response to the COVID-19 crisis

The pandemic has had little impact on project development activity in Italy, apart from slowing down permitting processes. The government took emergency measures to extend permitting deadlines, and the energy service management company (GSE) extended certain timelines under the new incentives regimes to protect investments. Prime Minister Giuseppe Conte announced that a robust energy transition will be a pillar of Italy's post-COVID-19 future, and a number of Italian energy majors accelerated their investments in renewables.

Kazakhstan

Kazakhstan continues to support the RES sector with investment incentives, extending deadlines during the pandemic, and initiating legislative amendments to boost investment attractiveness.

Drivers

The Law of Kazakhstan on Support for the Use of Renewable Energy Sources (RES Law) and related secondary legislation continue to evolve.

In 2019, in addition to regular RES auctions, project auctions were introduced, where projects are auctioned with land plots, connection points and some project documentation already available. Project auctions are designed to address investors' concerns regarding the costs of obtaining a site and building a transmission line to the connection point.

Kazakhstan held its first project auctions for solar power in 2019. In 2020, auctions for new renewable capacity went ahead, as the regulator

tried to boost interest from RES project developers. There were eight renewable auctions for a total capacity of 250 MW, of which only two auctions were unsuccessful. In 2019 and 2020, in total 16 projects were successfully auctioned for a total capacity of 147.95 MW. The Ministry of Energy of Kazakhstan has also announced plans to organize project auctions for wind in the very near future.

Separately, in February 2020 Kazakhstan included electricity generation, transmission and distribution as priority activities, eligible for investment preferences such as customs and tax exemptions, and state grants.

Importantly, in December 2020 the RES Law was amended to extend the

term of power purchase agreements (PPA) from 15 to 20 years. This will apply to PPAs concluded further to auctions held after January 1, 2021.

International financial institutions are increasing their support for RES projects in Kazakhstan. The Asian Infrastructure Investment Bank financed its first such deal in Central Asia. The Asian Development Bank (ADB) raised 14 billion tenge (US\$32 million) in the first green bonds listed on the Kazakhstan Stock Exchange. Commercial banks are also becoming active on the RES market.

Constraints and risk factors

There are still a number of constraints hindering RES development in Kazakhstan, such as the offtaker having limited assets, without any guaranteed support from the system operator or the state, tariffs being fixed in tenge (with limited linking to hard currency) while most equipment is imported, tightening fiscal policy with respect to solar projects, etc.

Response to the COVID-19 crisis

On the positive side, in 2020 the Minister of Energy of Kazakhstan amended the underlying regulations concerning purchase of renewable energy by the offtaker. The regulations set deadlines after which the offtaker could cash in 30 then 70 percent of the developer's performance bond and even terminate the PPA. The amendments provided a one-time grace period during which the notice period for the commissioning of facilities could be extended for one year in relation to a feed-in PPA. With regard to an auction PPA, the notice periods for the commencement of construction and commissioning of facilities could also be extended for one year, subject to provision of an extended financial security.

Luxembourg

Luxembourg has made the development of sustainable finance activities a top priority. It is a key destination for investments in RES projects, using its prominence as a financial center to play a significant and growing role in green finance.

Share of renewable energy in gross final energy consumption
in 2019 – 7.0 percent

Luxembourg national target by 2020 – 11 percent, with a long-term
goal of 25 percent by 2030

Drivers

In 2020, the Luxembourg Sustainable Finance Initiative was launched to coordinate the development of a local sustainable finance ecosystem and agenda.

In Luxembourg, the production of energy from RES is promoted through subsidies and feed-in and premium tariffs for electricity.

Grid access for RES electricity is subject to general law provisions applicable to electricity. As of January 1, 2020, consumers who wish to use their own electricity

production can now take advantage of the elimination of charges and fees for self-consumed electricity. This has made self-consumption more attractive.

The draft National Energy and Climate Plan (NECP) refers to hydrogen as part of the energy transition to a low-carbon economy, especially in mobility and industry, and as an energy storage vector. Luxembourg also sees hydrogen as an interesting opportunity for its industrial companies and research institutions.

Two draft laws are currently under review in parliament in relation to the implementation of the NECP in order to increase the share of renewable energy in gross final energy consumption and to enhance energy efficiency.

Constraints and risk factors

The level of self-consumption remains low in Luxembourg compared to other EU member states. Luxembourg's energy system is characterized by its high dependence on imports and reliance on fossil fuels. These, plus the challenges presented by rapid population growth and the expanding economy, may have a negative influence on meeting the government's ambitious targets.

Response to the COVID-19 crisis

A law was adopted on July 24, 2020, in order to stimulate business investments during the COVID-19 crisis. The purpose of the law is to encourage companies that find themselves in financial difficulty following a significant drop in their turnover to make investments that would have been canceled or postponed due to the COVID-19 crisis. One of the three types of investment aid relates to energy efficiency projects or projects that do not comply with standards.

The Netherlands

The Dutch Climate Agreement aims to reduce the emission of CO₂ and other greenhouse gases by at least 49 percent by 2030. Compared to 2018, the share of renewable energy in gross final energy consumption increased slightly in 2019. However, the Dutch target for 2020 is far from being achieved. To speed up the energy transition, the government is taking additional measures to stimulate the use of RES.

Share of renewable energy in gross final energy consumption in 2019 – 8.8 percent

The Netherlands national target by 2020 – 14 percent, with a long-term goal of 27 percent by 2030

Over the past few years, the Netherlands has seen significant growth in solar energy. In 2019, 2,350 MW of new solar production capacity was installed, which brought the total capacity to 6,874 MW. The contribution of solar energy to the final use of renewable energy is still growing and was close to 11 percent in 2019. Compared to 2018, the installed capacity of wind energy increased slightly in 2019

(2 percent) to a total installed capacity of 4,500 MW (960 MW offshore and 3,540 MW onshore). Biomass is still by far the largest source of RES in the Netherlands (59 percent), but it is highly controversial.

Drivers

In 2020, a new subsidy scheme was introduced: the SDE++ subsidy.

This scheme stimulates not only the generation of renewable energy, but also other emission reduction technologies, such as carbon capture and storage (CCS), to contribute to the emission reduction goal of 49 percent by 2030. Under the new subsidy scheme, projects compete based on the criterion that they have “avoided CO₂ and other greenhouse gases,” instead of “generated renewable energy,” as previously. The first round of the SDE++subsidy opened on November 24, 2020, with a budget of €5 billion.

The Netherlands is currently also seeing important developments in the field of hydrogen. A number of large-scale hydrogen production projects have been announced. In addition, the Ministry of Economic Affairs and Climate, the national electricity grid manager, TenneT, and the operator of the gas transport network, Gasunie, are investigating the possibilities of developing national transport infrastructure for hydrogen. The Netherlands is

also a frontrunner in developing hydrogen as an energy carrier for the shipping industry.

Constraints and risk factors

The Dutch RES market can be termed competitive. This is due to the limited availability of land and to the fact that people living in the direct vicinity of a planned project often start proceedings against permits for RES projects. In addition, there is insufficient grid capacity available in many parts of the country.

Response to the COVID-19 crisis

Many RES projects have come to a standstill as a result of COVID-19. This may have a significant impact on the Dutch energy transition. Nevertheless, CO₂ emissions in 2020 are significantly lower than in 2019, because of the measures relating to the COVID-19 crisis and because of the high RES production level, amongst other factors.

Poland

The Polish RES market continued to thrive in 2020, with resilience to the COVID-19 turmoil enhanced by quick regulatory action to aid projects under construction. Key regulatory and legislative developments materialized towards the year-end (offshore and balancing market design), with solar projects enjoying the fastest growth rates.

Share of renewable energy in gross final energy consumption in 2019 – 12.2 percent

Poland national target by 2020 – 15 percent, with a long-term goal of 21-23 percent by 2030

Drivers

The Polish government began 2020 with a robust plan to stimulate growth in RES. With the current auction schedule closing in 2021, the government proposed extending the scheme to 2026, along with works on multi-year budgets, making the support framework much more transparent.

In January 2021, parliament passed the Dedicated Offshore Wind Act.

By June 2021, the first group of most advanced projects may receive individual grants of sliding CfD premiums, covering up to 5.9 GW of capacity. Less developed projects may look forward to the auctions planned for 2025 and 2027, each for 2.5 GW. The scheme is marked by a generous 25-year term of support (or 100,000 hours per MW of installed capacity). The scheme and individual grants will need to be notified to the European Commission for state aid

clearance, with procedural provisions already included in the law.

The first onshore projects successful in the 2018 auction neared completion, with financings closing and Poland turning into a major RES construction site. In 2020, the market saw increased interest in long-term offtake contracts supporting both auction-based projects and merchant development, with physical delivery, as well as virtual PPAs.

Commercial solar PV (in Poland, constructed projects not exceeding 1 MW) kept growing in 2020 and utility-scale projects (over 1 MW) successfully competed in the 2020 auction. The rooftop installations sector continued its lightning pace of development, driven by the initial success of the government support program in 2019. Overall, solar PV installations reached over 2.6 GW of installed capacity by October 2020, delivering over 12.3 GWh of electricity on the peak production day in August 2020.

From January 1, 2021, new rules of the balancing market will apply, allowing RES sources to enter the balancing services market in line with the European network codes. The reform will be gradually rolled out throughout 2021, with additional financial drivers planned for 2022.

Constraints and risk factors

With lessons learned from the 2018 and 2019 auctions, investors prepared with more assurance for the next auction round. Financings progressed, with major projects closing in H1 2020. The key residual limitation remained the onshore wind distance law affecting the development of new locations. This favors utility-scale PV projects, which have a better chance of accessing the auction budget. The key challenge remains for the government to ensure good progress of notifications to the European Commission in order to secure continuation of the scheme towards 2026.

Response to the COVID-19 crisis

The Polish government reacted swiftly to the pandemic, increasing the permitted construction time of auction-based projects by up to 12 months to mitigate delivery and construction delays caused by the disturbance of supply chains and additional safety requirements affecting the workforce. The regulation was welcomed by market participants and proved easy to apply in practice.

Romania

Romania has significant unexploited natural RES resources. Although the legislative agenda has moved forward, further measures need to be taken in order to meet investors' expectations.

Share of renewable energy in gross final energy consumption in 2019 – 24.3 percent

Romania national target by 2020 – 24 percent, with a long-term goal of 29.7 percent by 2030

Drivers

For RES capacity commissioned before January 1, 2017, the support system is based on a mandatory quota of green certificates (whose validity is extended to 2032) corresponding to a mandatory quota of RES power to be sold by electricity suppliers. The government has announced that it is considering a new RES support mechanism based on auctions of two-sided Contracts for Difference (CfDs). In June 2020, it published a Memorandum regarding General Principles for Implementing

CfDs, developed by the Ministry of Energy in accordance with Romania's RES Strategy.

Against the background of fluctuating wholesale power prices, CfD payments based on the difference between an indexed strike price—set by a pay-as-bid auction process—and a wholesale market reference price, would provide certainty of revenues for projects, and certainty of scheme costs imposed on consumers. The CfD mechanism is also proposed for new nuclear and carbon capture, usage and storage projects, but with

separate allocation processes. The finalized CfD proposals will need to be approved by the European Commission for state aid purposes.

More generally, the authorities have been implementing a number of outstanding market structural requirements of the EU Clean Energy Package, including the provision for electricity storage and aggregators. Looking further ahead, although much remains to be done before developers can exploit the tens of GW of potential for wind generation in the Romanian Black Sea (fixed and floating technologies), a law on offshore wind is now progressing through parliament. Offshore wind is seen as potentially playing a big part in a future green hydrogen industry in Romania. Pilot renewable hydrogen projects are already taking shape and a preliminary regulatory step has been taken in relation to licensing hydrogen producers.

Constraints and risk factors

RES producers are required to sell all their electricity production on the organized electricity market operated by Transelectrica's subsidiary OPCOM (except for facilities under 3 MW). This has resulted in long-term PPAs being scarce and bank financing difficult to obtain.

In May 2020, the government promulgated new legislation allowing power producers to conclude bilateral power purchase agreements (PPAs) outside of OPCOM's centralized markets, at negotiated prices, for electricity produced by facilities commissioned after June 1, 2020. This is progress. Producers are also exempted from the obligation to publicly and non-discriminatorily offer the electricity produced by the above-mentioned new capacities. This partial lifting of the ban on PPAs helped boost investor confidence in the RES market in Romania in H2 2020.

Market hopes are that the aforementioned provisions will be maintained by the newly elected Romanian parliament that started work in late December 2020. Given that the EU RED II Directive requires EU member states to remove unjustified barriers to the making of long-term PPAs agreed directly with generators (an obligation which must be implemented by June 30, 2021), it is hoped that other measures to encourage PPA formation may follow.

Russia

Geo-politics and COVID-19 have triggered a perfect storm in the Russian economy. Lockdowns and restrictions of economic activities have underlined the need for development and greater efficiency. In response, the state program on the development of renewables has been extended until 2035 and continues to be updated to address ongoing challenges. Meanwhile, the collapse of state income from the export of fossil fuels is forcing the Russian government to trim budgets, and the RES market is no exception.

Economic instability is slowing down the scheduled pace of the RES development in Russia. By 2024, RES generation (excluding hydro) is expected to be approximately 1 percent of total generation. That is less than one-third of the 4.5 percent target set by the government.

Drivers

The updated RES state program provides for RES power supply agreements (DPM VIE) to remain the main tool for RES development in Russia. It is expected that up to 5 GW of RES capacity will be commissioned by 2024 under DPM VIE 1.0 and up to 7 GW by 2035 under DPM VIE 2.0.

However, the latter target may be significantly reduced (down to 3 GW) due to budget cuts.

The revised state program sets capacity targets, as well as local content requirements for equipment: Over the next 15 years, local content should increase steadily to 98-100 percent. In addition to local

content requirements, RES players have export targets as regards local equipment.

In 2020, the national solar power market welcomed a new champion: The Staromarievskaya solar power plant reached its maximum power capacity and officially became the most powerful solar PV station in Russia, with attested capacity of 100 MW – almost 40 percent more than the capacity of the former leader, the 60 MW Sorochinskaya solar power plant.

As for microgeneration (private generating facilities with up to 15 kW capacity), despite a positive start in 2019, there are still ambiguities and gaps in the applicable legislation that hinder expansion. The procedure for sale of surplus power from microgeneration also requires improvement.

Constraints and risk factors

- Slowdown of RES development due to fossil fuels surplus.
- Lack of financial incentives.
- Increasing local content requirements for equipment.
- Slow lawmaking in the sector, lack of regulation addressing current challenges.

Response to the COVID-19 crisis

COVID-19 meant a large number of RES players faced delivery bottlenecks as regards hardware and spare parts, as well as commissioning delays at both operating RES power plants and those under construction. At least 30 percent of the capacity scheduled to be commissioned in 2020 is said to be subject to delay.

At the same time, there are no state anti-COVID-19 measures for the RES sector. Notably, the Russian government is reluctant to extend commissioning deadlines for RES plants under construction. Individual discussions are ongoing between the RES regulator (Association “NP Market Council”) and market players on the extension of deadlines and granting of grace periods.

Slovak Republic

Slovakia has struggled to meet its EU targets for the share of RES in the energy mix for a number of years. It adopted some fundamental changes in RES legislation in 2019 as a first step and much is expected of the new government. New incentives, clear and coherent legislation and more optimistic expectations are required in order to meet the EU targets for 2030.

Share of renewable energy in gross final energy consumption in 2019 – 16.9 percent

Slovak Republic national target by 2020 – 14 percent, with a long-term goal of 19.2 percent by 2030

EU authorities criticized the lack of ambition of the Integrated National Energy and Climate Plan of Slovakia for 2021-2030, prepared by the Ministry of Economy. Slovakia proposed to lower its contribution to the European target by 2030, with only a 19.2 percent (from 20 percent) share of RES, while the EU proposed to increase its national target to 24 percent.

Due to Slovakia's historic energy mix, the costs of RES support

are still seen as exceeding the economic benefits it brings, which is problematic, especially in light of the national target for 2030.

The most commonly used renewables in Slovakia are biomass and solar energy, although there is also interest in heat pumps. Biomass is seen as one of the most interesting renewables.

The wind energy market, long underdeveloped due to the natural

conditions of the country, is slowly recovering as new projects are introduced in western Slovakia.

Drivers

The Regulatory Office for Network Industries, under new management following the elections, is also focused on repositioning the existing system of RES support to prolong the operation of existing projects beyond the current 15 years of support and, at the same time, reduce the total burden of support that falls on consumer tariffs each year.

The recently introduced auction system based on feed-in premiums applies for new electricity-generating installations with installed capacity exceeding 500 kW. Winners of auctions will be granted a supplementary sum ("green bonus").

The new regime encourages the local consumption of electricity generated by installations not exceeding 500 kW capacity and not connected to the grid. This targets businesses that want to produce electricity for their own needs. Such projects will not be entitled to a subsidy, but equally will not pay grid connection charges, elements of which are a concern for other RES producers, which view them as making their power more expensive than imports from other countries.

Constraints and risk factors

- Inconsistent legislation and rules.
- Nuclear energy, with its current 54 percent share in electricity production (and one reactor in construction), remains the most important source of electricity in Slovakia.
- Most photovoltaic sources connected to the grid in 2010-2012 will lose financial support in 2025-2027 and are expected to be disconnected.
- Regulatory requirements, such as building permits and natural habitat protection, are a typical barrier to solar and wind plants in Slovakia.

Response to the COVID-19 crisis

All auctions were postponed until after the COVID-19 crisis.

Spain

The Spanish renewable energy market remains attractive for foreign investors, with large transactions in 2020 and new ones expected for 2021. New regulations affecting connection to electricity networks and a new system of auctions to support renewable generation projects are expected to further enhance investment appetite.

Share of renewable energy in gross final energy consumption in 2019 – 18.4 percent

Spain national target by 2020 – 20 percent, with a long-term goal of 42 percent by 2030

Drivers

Purchases of large portfolios of renewable assets continue to help drive the Spanish renewables market, often involving oil and gas companies, international investment funds and Chinese companies, which are increasingly showing their appetite for RES opportunities.

New regulations passed in June 2020 have tightened the requirements with which projects developers

must comply to keep their grid connection rights secure. Failure to meet milestones, such as obtaining environmental approvals and administrative authorizations by set deadlines, means the project loses secured connection points and the developer forfeits guarantees. These measures have released about 40 GW of connection capacity. New regulations to provide more transparency regarding the available capacity in the network and accuracy

in the management of connection points by the grid operators were approved in late 2020. Transparency platforms must be in place in the short term according to criteria to be approved by the regulator (CNMC). Until then, no new connection capacity can be allocated by the network companies.

The government approved a new renewables support mechanism, which will provide successful bidders with an element of price stability (price per MWh) for a specified amount of their output during a 10 to 15-year term (projects with qualifying storage capacity are also incentivized). The first auction under this new regime will be resolved by Q1 2021 and will award at least 3,000 MW of renewable generation capacity (in particular, for solar PV and wind facilities). Annual auctions are expected to be held until 2025 (with the scheme expected to be extended until 2030).

A renewable hydrogen roadmap was approved to achieve 4 GW of electrolysis capacity by 2030 (reaching 300 to 600 MW by 2024), 25 percent of industrial consumption of hydrogen from renewable sources, and a significant increase of renewable hydrogen-powered transport.

Constraints and risk factors

Despite the massive release of grid connection capacity, scarce availability of connection points remains an entry barrier for developing renewable energy projects in Spain, and it will continue to be so until provision of access and connection permits is resumed. This is preventing a number of projects from being developed, and the price of connection permits is still rather high.

In addition, government authorization is now needed for foreign investments under certain requirements in the electricity sector (including RES), either from non-EU/EFTA countries, but also (at least until June 2021) for investments of over €500 million coming from EU/EFTA countries. This administrative hurdle affects project timelines.

Response to the COVID-19 crisis

COVID-19 caused a big drop in electricity demand for most of 2020, with electricity market prices falling from €30-50 per MWh to €20-40 per MWh. However, the RES generation market is still buoyant, without any specific support measure being needed.

Turkey

Mostly due to the desire to reduce dependence on energy imports, Turkey remains committed to increasing the share of renewables in electricity generation. Although the RES sector has had its share of delays and challenges due to the COVID-19 crisis, the policy of supporting renewables and using locally manufactured equipment persists. The collection of bids for auctions relating to multiple solar projects (initially planned for Q1 2020) will now take place in March 2021.

Share of renewable energy in gross final energy consumption
in 2018 – 13.7 percent

Turkey national target by 2023 – 20.5 percent

Drivers

For renewables, Turkey offers a system which is partly feed-in tariff and partly feed-in premium, whereby the guaranteed prices are applicable for 10 years after commissioning. The level of FIT varies depending on the source and the amount and type of local content. The US cent denominated FIT is applicable for renewables commissioned by

June 30, 2021 (the previous commissioning deadline of December 31, 2020, was extended due to the COVID-19 crisis).

The Ministry of Energy and Natural Resources of Turkey announced that the next round of YEKA applications (Turkish acronym for renewable energy designated area) are to be submitted between March 8 and 12, 2021, for 74 solar

mini-YEKA tenders (each with a capacity of 10-20 MW). The projects are spread across 36 provinces and have an aggregate installed capacity of 1 GW. The tenders will be held by way of reverse auction, with a ceiling price of 35 kuruş/kWh. The offered electricity purchase term is 15 years from the execution of the agreement granting YEKA utilization rights.

A series of amendments to the relevant regulations has set the regulatory framework for hybrid and multi-source power projects, which were previously restricted due to a lack of regulation.

In November 2020, the regulation on renewable energy source guarantee certificates was published, paving the way for the issuance and trading of renewable energy source guarantee certificates (similar to guarantee of origin certificates). The regulation shall be effective from June 2021.

In December 2020, amendments to two main laws concerning renewables have brought positive changes, such as broadening the scope of licensing requirement exemptions provided for renewables and abolishing the requirement for permission from the Turkish Electricity Market Regulatory Authority (EMRA) to transfer shares in generation license holders.

Constraints and risk factors

- Grid capacity for connecting wind and solar power plants is limited. EMRA had announced that it would accept preliminary license applications for wind projects with an aggregate capacity of 2 GW in October 2022, but this has been postponed until further notice.
- For projects commissioned after June 30, 2021, the RES support mechanism will continue to apply, but with Turkish lira prices which are yet to be determined. The terms on which the local content incentive will apply to renewables remain uncertain.
- The storage market is constrained due to uncertainties caused by the lack of regulation.

Response to the COVID-19 crisis

EMRA has published several decisions on measures against the impact of COVID-19. The most notable is that EMRA declared the pandemic a *force majeure* event as defined under relevant legislation. Accordingly, all statutory deadlines (regarding fulfillment of certain requirements to obtain generation licenses, completion of construction, etc.) have been extended for three months.

Ukraine

In the first 10 months of 2020, against a backdrop of uncertainty that is starting to come to an end, about 1.1 GW of RES power capacity was awarded feed-in tariffs. Total RES power capacity with established feed-in tariffs in Ukraine has now reached 7.5 GW.

As of the end of 2019, the shares of renewables in overall electricity production and heat production in Ukraine were approximately 10.9 percent and 9 percent respectively.

Drivers

Feed-in tariffs (FITs) for wind, small solar, biogas and biomass projects make projects commissioned in Ukraine in the next two years profitable. These FITs are fixed (EUR-linked), with a state guarantee to purchase power from the date of commissioning to the end of 2029. Support awarded by auction will be fixed in EUR and have a PPA for 20 years after commissioning. Auctions are expected in the summer and autumn of 2021. The need for highly flexible generating and energy

storage facilities in the power system has prompted the government to run auctions for 2 GW of new highly flexible capacity in 2021. There are plans to build energy storage infrastructure to facilitate balancing of RES and enhance energy security, reducing import dependence.

Gradual increases in electricity prices and network tariffs are making RES self-consumption attractive. Industrial players completed the first solar projects for self-consumption without FITs in 2020. Other new subsidy-free projects were

announced, for both solar and wind. There is increased interest in physical corporate PPAs for electricity from RES.

There is a stimulating tariff for heat from renewables and huge potential for renewable gases. Ukraine's potential for green hydrogen facilities is up to 10 GW; realizing it will require up to €20 billion of investment. The European Commission considers Ukraine as a priority partner for green hydrogen production due to the availability of RES and developed gas transportation and storage systems. Ukraine's biomethane potential is 25 percent of its total natural gas consumption.

Constraints and risk factors

Protracted debate over expected changes in the support scheme eventually resulted in retroactive cuts of feed-in tariffs for wind (7.5 percent) and solar (mostly up to 15 percent) from August 1, 2020, as well as reduced periods for completion of new large scale solar FIT projects. Anticipating this, most investors tried to complete their solar projects by the end of 2019. Many then focused more on smaller projects, and the pace of solar project construction slowed further from March 2020 due to the COVID-19 crisis. Due in part to a lack of balancing facilities, there was frequent curtailment of RES

producers (without compensation) to balance the system and the first defaults on payment to RES producers occurred, as there were issues with the liquidity of the guaranteed offtaker. Wind projects were significantly delayed by the impacts of the pandemic on the supply chain.

The general situation began to improve as the new law cutting FITs and reducing timelines for completing new solar projects under such tariffs for solar was finally adopted and took effect in August 2020. Timelines for constructing current wind projects under FITs are unchanged; most have until the end of 2022 to complete. Payments for electricity to RES producers have improved and the methodology for curtailment compensation has taken effect. The government is taking steps to finance payment of what is owed to RES producers. It has announced quotas for auctions in 2021 (365 MW) and indicative quota figures for auctions in 2022-2025, but so far these are at quite a low level and have not yet been officially adopted. There is uncertainty over upgrading the grid system and timelines for synchronization with ENTSO-E. Lack of liquidity in the electricity market and distortion due to price caps, subsidies for households and cross-subsidies are also unhelpful.

United Kingdom

In the first half of 2020, renewables accounted for 46 percent of UK electricity generation. For the first time, offshore wind produced a higher share (14 percent) than any other renewable technology. There are signs that policy related to RES will develop quite significantly (and in broadly positive ways) over the next year or two.

Drivers

The government sees the opportunity for a green recovery from the COVID-19 crisis as playing well with its mission to “level up” economically disadvantaged areas. COP26 in Glasgow (in 2021) gives the UK a further reason to show leadership on decarbonization.

Renewable highlights of the UK’s recently announced 10-point plan for a “green industrial revolution” include quadrupling current offshore wind capacity by 2030 (to 40 GW) and targeting 5 GW of low-carbon hydrogen production by 2030. The target capacity for next year’s allocation round (AR4) for Contracts

for Difference (CfDs) for renewable generators has been doubled to 12 GW, and there are proposals to tighten the rules on “supply chain plans” so as to maximize local content. The government has started consulting on the possibility of wide-ranging changes to the CfD regime beyond AR4. Other areas highlighted for (possibly radical) reform in the December 2020 Energy White Paper include storage, system standards and data.

The 2021 auction will provide the first opportunity since 2015 for solar projects and onshore wind farms (other than those on Scottish islands) to compete for CfD support. It will also see the first allocation of CfD

support for floating offshore wind (sub-target for 2030: 1 GW).

Floating projects will not be competing against fixed bottom projects, but against other less mature technologies.

The scale of future offshore wind projects is exemplified by the 3.6 GW Dogger Bank development, for which debt finance (€6 billion) and offtake arrangements have been agreed. Eni entered the UK offshore wind market by taking a 20 percent equity stake in the project's first two phases. The secondary market continues to be active for onshore technologies as well, and another notable feature of 2020 has been the continuing strength of the battery storage project pipeline.

Constraints and risk factors

The scale of the UK government's ambition for renewables, and for other aspects of net zero policy that directly relate to them, such as EVs (no new diesel or petrol cars are to be sold in the UK after 2030), is extremely welcome. But it creates major implementation challenges, and it is hard to judge whether the program is deliverable until more of the detail has been worked out. Items on the agenda for 2021 include a transport decarbonization

plan and strategies for industrial decarbonization, EV charging infrastructure and hydrogen.

Another area of policy scheduled for development is the possible evolution of the current "point to point" offshore transmission arrangements into a fully-fledged grid. Although the end of the Brexit transition period means that GB is excluded from the EU's internal energy market from January 1, 2021, the draft EU-UK Trade and Cooperation Agreement published on December 26, 2020 provides what appears in principle to be a good framework for EU-UK cooperation in respect of offshore RES cooperation and other key areas of energy policy.

Response to the COVID-19 crisis

UK renewable support schemes are financed by levies on energy retailers – the part of the value chain that has suffered most as a result of the COVID-19 crisis. However, a combination of industry and regulatory initiatives has so far enabled the sector to be fairly resilient, notwithstanding some periods of significantly reduced demand, low wholesale market prices and high balancing costs.

Uzbekistan

Uzbekistan continues to develop a legislative framework that will facilitate development of the renewable energy sector. It aims to increase the share of renewable energy sources in total energy generation from 10 percent currently to at least 25 percent by 2030.

Drivers

Legislation adopted in 2019 defined the main directions of current state policy in relation to RES and provides certain incentives based on tax exemptions.

In 2020, the government of Uzbekistan approved a policy that defined the medium-term and long-term objectives for the period to 2030, to be adjusted as circumstances arise. These include the diversification of fuel and energy resources through development of RES. Electricity capacity is expected to increase from the current 12.9 GW to 29.3 GW, and production from 63.6 billion kWh to 120.8 billion kWh.

In October 2020, the Ministry of

Energy of Uzbekistan approved new rules for awarding support for RES projects by means of competitive selection. These are to apply to all RES projects of industrial scale with a capacity of 1 MW or more (except for small hydro plants) from January 1, 2021. A plan has been announced to develop hydropower, including 35 new HPPs and the modernization of 27 HPPs.

The new Tax Code of Uzbekistan includes substantial tax reliefs for legal entities created with direct private foreign investment and specializing in the construction of alternative power plants.

In December 2020, the Ministry of Energy published the list of prequalified bidders for the IFC

Scaling Solar 2 Project (in Jizzakh and Samarkand regions).

Fifteen international companies proceeded to the RFP stage of the tender process. Two renewable energy projects, namely the utility-scale solar PV project in Sherabad, Surkhandarya region (under consultancy of the Asian Development Bank), and a 100 MW wind power plant in Karakalpakstan (under consultancy of the European Bank for Reconstruction and Development), are currently at the tender stage.

Constraints and risk factors

In November 2018, the government addressed low consumer prices for fuel and energy resources, approving a gradual increase in tariffs. President Shavkat Mirziyoyev stated that electricity price liberalization is the only way to attract investment in the energy sector. The authorities believe that Uzbekistan should raise electricity prices to attract more investors. This is part of a general transition to a more liberalized and competitive electricity sector that will include:

- Development of the national power grid: To increase the reliability of the electricity supply by 2025 all nodes of the single power system

will be connected by 500 kV power lines.

- Development of the distribution network: In the process of transition to a wholesale competitive electricity market, the functions of operating the distribution network and selling electricity to consumers will be unbundled, and the distribution network will become state property. The function of selling electricity will be gradually transferred to private company retailers on the basis of transparent tenders for PPP projects.
- Transition to a wholesale market and improvement of tariff policies: This will take place in stages in 2020-2023, with the transition to each subsequent stage depending on whether the conditions are met. By 2023, a competitive wholesale market is expected to be formed and all participants should have equal and unimpeded access to the grid.

These are all positive developments, but will inevitably generate some uncertainty in the near term.

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