THE RENEWABLE ENERGY LAW REVIEW

Third Edition

Editor
Karen B Wong

THE LAWREVIEWS

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PREFACE

When the first edition of *The Renewable Energy Law Review* launched in 2018, renewable energy made up approximately 26.2 per cent of electric generation globally and has increased to nearly 28 per cent in the first quarter of 2020. Similarly to the renewable energy sector, which has grown steadily, this compendium has also grown and now covers 19 jurisdictions in this third edition.

The renewable energy industry at the time I worked on my first transaction in 1987 was nascent and relatively tiny when compared to the conventional power industry. Fast forward 33 years and, in 2020, it is projected that renewable energy will comprise 80 per cent of the new energy capacity in the United States. According to statistics published by Smart Energy International, renewable energy projects accounted for 176GW of energy capacity globally and over 70 per cent of new capacity globally in 2019, with wind and solar projects accounting for 90 per cent of that new capacity.

Since the 'early days' of renewable energy projects, it has been incredibly satisfying to see the exponential worldwide growth that has taken place over the past several decades. As a US-based partner at Milbank practising in the energy industry, I see different political environments, tax and other incentives in place in our 50 states and, having worked on multiple international projects on four different continents, I know that the regimes across the world are equally unique. This compendium has been formulated to provide you with a good overview of the legal framework and current status and challenges in structuring, financing and investing in renewable energy projects in the selected jurisdictions.

Whether you are already active in this sector or merely interested in learning more about the policies, legal structures and state of play in the renewable energy industry globally or in a particular country, I hope that this guide will aid you in your efforts as a participant in an exciting and continually expanding industry.

Karen B Wong
Milbank LLP
Los Angeles
July 2020

Chapter 6

GERMANY

Markus Böhme and Carsten Bartholl[1]

I INTRODUCTION

Over the years, the development of renewable energy in Germany has been, foremost, on the basis of the German Renewable Energy Act (EEG). Whereas traditionally the German scheme for renewable energy relied on fixed feed-in tariffs provided under the EEG, the current version – the EEG 2017[2] – has shifted the framework to an auction system for the more significant onshore forms of renewable energy production (wind energy and large-scale photovoltaic solar installations (solar PV)).[3] Tenders for offshore wind energy are subject to a separate law, the Code on the Development and Support of Wind Energy at Sea.[4]

The main drivers, and the focus of both investment and financing, in renewable energy in Germany are onshore wind energy, solar PV and – specifically because of its very large project volumes – offshore wind energy. Biogas and biomass played a more significant role in previous years. There are also some utility-scale geothermal projects to be seen, as well as some hydropower projects.

Because of fundamental errors in the design of the EEG 2017 auction system, newly installed capacity in onshore wind in Germany declined.[5] The most recent evaluation by the German institute for renewable energy, IWR, of the Federal Network Agency's core energy market data register shows that new onshore wind turbines with a capacity of around 900MW (compared with 2,400MW in 2018) were commissioned in 2019 – a decline of more than 60 per cent from the previous year and the lowest level in the past 20 years. The figures indicated represent gross values (i.e., excluding decommissioned or shut-down old turbines). In comparison, in 2017, the gross capacity increase of new onshore wind energy in Germany

1 Markus Böhme and Carsten Bartholl are partners at Taylor Wessing Partnerschaftsgesellschaft mbB. The authors want to thank Jasmin Schlee, Cora-Marie Pinter and Lina Keese for their valuable research in the preparation of this chapter.

2 German Renewable Energy Act 2017 (EEG 2017) – Erneuerbare-Energien-Gesetz 2017 as of 21 July 2014 (BGBl. I S. 1066), latest amendment dated 20 November 2019 (BGBl. I S. 1719).

3 Solar photovoltaic (PV) installations of or above 750kWp rated power are subject to a successful auction bid.

4 Code on the Development and Support of Wind Energy at Sea – Gesetz zur Entwicklung und Förderung der Windenergie auf See as of 13 October 2016 (BGBl. I S. 2258, 2310), latest amendment dated 13 May 2019 (BGBl. I S. 706).

5 For projects (allegedly) owned by citizens of the municipality for which the project was (allegedly) intended, participation in a tender did not require a permit. The first two auction rounds in Germany under the EEG 2017 were almost entirely awarded to such citizens energy projects that did not have permits, and thus not only are the bulk of these projects not under construction yet, but they have also blocked projects with permits from winning a bid (see also Section II.vi).

was 5,330MW. Newly installed capacity for solar PV in 2018 in Germany has outperformed onshore wind energy, with 2.81GW of new photovoltaic capacity (compared with 1.66GW of photovoltaic in 2017). At the end of 2019, Germany had a total installed solar PV capacity of 49.0GW, with more than 1.8 million installations[6] of all types (from small domestic household installations to utility scale).[7] By comparison, Germany has 2.4 million (mostly small-scale) solar thermal installations, with a total of 14.8GW of solar thermal capacity.[8] In 2018, 140 new offshore wind turbine generators (WTGs) were installed, with a rated power total of 970MW (compared with 1,250MW in 2017). In 2019, 160 WTGs with a capacity of 1,111MW were newly installed in Germany. Following the decline in annual capacity expansion to around 970MW in 2018, the capacity increase in 2019 is equivalent to growth of around 14 per cent. A total of around 1,470 WTGs with a total capacity of around 7,500MW are now connected to the grid. Overall, offshore wind energy in Germany accounted for 6.38GW of rated power at the end of 2018, which is slightly above one third of the total installed capacity for offshore wind in Europe.[9]

Final energy consumption in Germany has hardly decreased at all since the early 1990s. Although more and more energy is being used more efficiently and in some cases saved, economic growth and increases in consumption are preventing a more significant decline in consumption.[10] In 2019, the shares of the various energy sources in the national energy mix have shifted further compared to the previous year: fossil energies declined overall and carbon intensity was reduced further. However, a broad energy mix remains characteristic. A good 60 per cent of domestic energy consumption is accounted for by oil and gas. While statistics from different sources differ, hard coal and lignite together cover about 18 per cent of consumption. Renewables contributed about 17 per cent.[11]

In 2019, Germany saw fewer renewable energy transactions for newly developed projects, mainly because of the significant reduction of newly installed capacity in the onshore wind sector. German investors and German financing banks have therefore put more focus on international business and projects outside Germany, mainly within Europe. This

6 Fraunhofer ISE, 'Aktuelle Fakten zur Photovoltaik in Deutschland' (10 June 2020 version currently available for download from www.pv-fakten.de), https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/aktuelle-fakten-zur-photovoltaik-in-deutschland.pdf, p. 5, last accessed 7 May 2020.

7 In West Germany, between 75 per cent and 95 per cent of installations are rooftop installations, whereas in East Germany rooftop installations constitute between 35 and 55 per cent, depending on the particular state they are built in. A current trend in Germany is the development of solar PV farms with a rated power of around 100MW or more, and these are aimed at power purchase agreements with large offtakers.

8 Bundesverband Solarwirtschaft e.V.: 'Statistische Zahlen der deutschen Solarwärmebranche (Solarthermie)' (2020), https://www.solarwirtschaft.de/datawall/uploads/2020/04/bsw_faktenblatt_solarthermie.pdf, last accessed 7 May 2020.

9 Offshore-Windindustrie.de: 'Windparks in Deutschland' (2020), https://www.offshore-windindustrie.de/windparks/deutschland, last accessed 7 May 2020.

10 Umweltbundesamt: 'Energieverbrauch nach Energieträgern und Sektoren' (2020), https://www.umweltbundesamt.de/daten/energie/energieverbrauch-nach-energietraegern-sektoren, last accessed 7 May 2020.

11 Energiewirtschaftliche Tagesfragen: 'Energieverbrauch in Deutschland gesunken' (2020), https://www.energie.de/et/news-detailansicht/nsctrl/detail/News/energieverbrauch-in-deutschland-gesunken-2020819/, last accessed 11 May 2020. Umweltbundesamt: 'Erneuerbare Energien in Zahlen' (2020), https://www.umweltbundesamt.de/themen/klima-energie/erneuerbare-energien/erneuerbare-energien-in-zahlen#statusquo, last accessed 13 May 2020.

trend is expected to continue in 2020. New legislation (specifically against the background of the German administration's climate protection programme) is to be expected and there are significant differences in public opinion whether the programme really supports the sector or – as many think – puts a further burden on and will cause further slowing down of renewable energy development. Among other concerns, restrictions on permissible distances between onshore wind installations and residential homes have been criticised as limiting available onshore wind areas, although the government has addressed this issue in a recent announcement (see Section II.vi). Another element of the programme subject to debate is financial incentives for local communities and residents, where the incentives have to be earned by the project concerned.

II THE YEAR IN REVIEW

In recent months, German renewable energy law has been subject to amendments mainly resulting from national legislative initiatives. Apart from these, there was also a decision of the European Court of Justice (ECJ) that is particularly noteworthy, since it will have a significant impact on the interaction between the German federal parliament, the Bundestag, and the European Commission in Brussels regarding the future promotion of renewable energies.

i Climate Protection Act of December 2019

The German greenhouse gas reduction targets are bindingly defined in the Climate Protection Act of December 2019 (KSG). According to these targets, greenhouse gas emissions are to be reduced by at least 35 per cent by 2020 and by at least 55 per cent by 2030 (in each case compared with 1990). Targets for German climate policy also result from the UN Framework Convention on Climate Change and from EU agreements and the KSG refers to Germany's commitment at the United Nations Climate Summit in New York in September 2019 to pursue greenhouse gas neutrality by 2050 as a long-term goal. In the KSG, binding greenhouse gas reduction targets for the years 2020 to 2030 in the various sectors[12] were set as permissible annual emission quantities. In addition, the KSG defined the responsibilities of the respective federal ministries both for compliance with the sectoral targets and for monitoring this. If the permissible annual emission levels of a sector are exceeded, the responsible federal ministry is obliged to submit an immediate programme with corrective measures. However, for the energy sector, which has the highest emissions, permissible annual emissions were only defined for the support years 2020, 2022 and 2030.

ii Phase-out of coal (January 2020)

The Federal Cabinet has adopted the legal regulations for the phase-out of hard coal-fired power generation. These are part of a package of laws by which Germany intends to end electricity generation from hard coal and lignite by 2038 at the latest. This is to be achieved through the gradual, contractually agreed closure of individual lignite-fired power plants. The contract, which is to be concluded with the respective operators of the power plants, primarily provides for the payment of compensation to the operators and for them to waive their right to take legal action against the federal government. Against this background, from the perspective of managing directors or executive board members in terms of the

12 Annex 2 KSG, interim and sector targets.

scope of their duty of care, it may be necessary to have the constitutionally highly dubious legal situation clarified to avert possible damage to the company; this may result in complex factual clarifications that affect the entire market.

iii Smart meter roll-out (December 2019/January 2020)

The Metering Point Operation Act (MsbG), which is the core of the Act on the Digitisation of the Energy System Transformation and the central law for metering, came into force on 2 September 2016. It aims at the nationwide introduction of 'intelligent metering systems' to strengthen smart grids and increase energy efficiency. After years of delay, the third certification of a gateway finally took place at the end of December 2019. This was the basic prerequisite for the mandatory roll-out of smart metering systems. On 31 January 2020, the German Federal Office for Information Security published a positive market analysis, stating that the requirements of the MsbG had been met and signalling the commencement of the mandatory smart meter roll-out; various legal issues are associated with the roll-out.

iv Obligation for demand-controlled night-time labelling of wind turbines

Within the framework of the amendments to the Energy Collection Act, which came into force on 1 January 2019, it was determined that, as of 1 July 2020, all operators of wind turbines will be obliged to carry out demand-controlled night-time labelling of wind turbines in accordance with Section 9(8) EEG. This conversion can lead to considerable costs. In the event of economic unreasonableness, plant operators may be exempted from this obligation.

v ECJ decision regarding denial of state-aid character of the EEG 2012

On 28 March 2019, the ECJ ruled that the EEG 2012 does not constitute a state-aid provision within the meaning of Article 107(1) of the Treaty on the Functioning of the European Union.[13] It has thus set aside the first-instance judgment of the General Court of the ECJ (the General Court) and annulled the contested decision of the European Commission. This gives the Bundestag considerable room to manoeuvre, as to date similar levy systems have, as a precautionary measure, been notified to the Commission in the form of state aid (e.g., the Combined Heat and Power Act and the regulation on individual grid fees under Section 19 Paragraph 2 of the Electricity Network Fee Regulation Ordinance). The lynchpin of the legal dispute was the question of whether the EEG levy constituted state resources. The ECJ has now rejected this – maintaining the position adopted in the *PreussenElektra* case of 2001.

In its judgment, the ECJ held that state resources are not used, since the EEG 2012 does not oblige utilities to pass on to end consumers the amounts paid based on the EEG levy.[14] The ECJ held that the fact 'that "in practice", the financial burden resulting from the EEG surcharge was passed on to the final customers and, consequently, could "be assimilated, from the point of view of its effects, to a levy on electricity consumption"' is not sufficient for the state to have power of disposal over the funds from the EEG levy.[15] However, the General Court 'failed to establish that the State held a power of disposal over the funds generated by the EEG surcharge or even whether it exercised public control over the [transmission system

13 Decision C-405/16 P.

14 Paragraph 70 of the judgment.

15 Paragraph 71 of the judgment.

operators] responsible for managing those funds'.[16] Even if public authorities (in this case the Federal Network Agency) control the proper implementation of the EEG 2012, this does not automatically lead to the conclusion that the funds generated by the EEG levy are themselves under state control.[17]

The ECJ decision has important consequences regarding the question of which rules obtain in the creation of national promotion and levy systems; the parliaments of the Member States have thus regained considerable powers as a result and can now decide quickly and flexibly on the design of such systems without the prior involvement of the European Commission. The significance of the current revision of the Environmental Protection and Energy Aid Guidelines 2014–2020 will therefore decline in the present context.

vi Legislative amendments to the EEG

Recent significant legal changes to the EEG arose recently, primarily as a result of the Energy Collective Act.[18]

First of all, the tendering system for renewable energy that was introduced by the EEG 2017 was adjusted with regard to tender types, volumes and modalities. In general, the legislature expects better quantity control and greater cost efficiency from tenders. Thus, installations that are not exempted from the tendering obligation pursuant to Section 22 Paragraph 2 EEG 2017 only receive financial support if the Federal Network Agency has awarded the plant a contract in the tendering procedure. Only onshore wind turbines and solar plants with an installed capacity of up to 750kW do not have to submit tenders. The administratively fixed remuneration rates continue to apply to them.

As a short-term contribution to achieving the 2020 national climate-protection target, and to avoid feared construction gaps in the onshore wind energy sector,[19] as of 1 September 2019, special invitations to tender for a total of 4GW each of installed capacity for solar and for wind turbines on land were issued. In addition, the first innovation tenders also took place on 1 September 2019. Innovation tenders will focus on the testing of new pricing mechanisms and tendering procedures, and should lead to more competition and more network and system serviceability. Tenders are invited on 1 September each year and these were for 250MW in 2019 and are for 400MW in 2020 and 500MW in 2021.[20] Tender volumes not awarded will generally be carried over to the following calendar year.

With regard to onshore wind, shorter implementation periods of 24 months instead of the usual 30 months applied to bids awarded a contract in the first three tender rounds in 2019. The background to this was the fear that a construction gap would arise after privileged citizens energy companies[21] were awarded contracts almost exclusively in the tenders throughout 2017, in accordance with Section 36g EEG 2017, and benefited from, among other things, no permit requirement and an extended implementation period of

16 Paragraph 73 of the judgment.

17 Paragraph 80 of the judgment.

18 Energy Collective Act – Energiesammelgesetz as of 17 December 2018 (BGBl. I S. 2549).

19 See Section I.

20 Section 28 Paragraph 6 S. 1 EEG 2017.

21 Bürgerenergiegesellschaften.

54 months. The newest analysis shows that of the 2,688MW for which tenders were awarded for projects that did not yet have permits in 2017, less than 10 per cent (232MW) had been commissioned by the end of March 2020.[22]

For this reason, the further suspension of privileges for citizens energy companies until the first half of 2020 had already been decided before the introduction of the Energy Collective Act. In this way, economic distortions among wind turbine manufacturers and the supply industry are to be avoided by completely displacing the privileged bidders. In a new regulation, it is planned to link the right to award a contract to the existence of an emissions-related licence for turbines, pursuant to the Federal Act on Protection against Emissions (BImSchG).[23]

Solar PV in Germany has also faced another obstacle until recently. The EEG 2017 stipulated a 'solar cap' of 52GW as the maximum overall amount of installed solar PV capacity that was eligible to receive financial support following a successful bid in the tendering process. However, this is no longer a concern since the German government decided to abolish the 52GW solar cap in June 2020.[24]

vii Acceleration of electricity network expansion

In line with increasing electricity production from renewable energies, the federal government wants to accelerate the expansion of the electricity network through the amendment of the Network Expansion Acceleration Act (NABEG). The new Act entered into force on 13 May 2019 and is intended to simplify the approval procedures required for network expansion. This applies to the many steps involved, from the determination of requirements (including future requirements) and the search for a suitable route to planning approval and concrete construction.

Under certain circumstances, the construction of parts of a new route can already begin, even if the final metre has yet to be approved. Simplifications should be possible in particular where people, the environment and space are only slightly affected. In the case of large new construction projects, on the other hand, participation options are retained.

Above all, the Act enables foresighted planning and approval. If a channel has already been dug, it should also be possible to lay empty conduits through which pipes can be laid later, saving costs in the long term.

In addition, the differing compensation regimes for owners of agricultural and forestry land has proved to be an obstacle to network expansion. The Act therefore harmonises and legalises compensation payments nationwide and moderately increases acceleration bonuses. Last but not least, it provides for better cooperation and coordination between the federal, state and local governments in this matter, with a view to avoiding conflicts from the outset.

22 Fachagentur Windenergie an Land: 'Ausbausituation der Windenergie an Land im Jahr 2019' (2020), https://www.fachagentur-windenergie.de/fileadmin/files/Veroeffentlichungen/Analysen/FA_Wind_Zubauanalyse_Wind-an-Land_Gesamtjahr_2019.pdf, last accessed 12 May 2020.

23 Federal Act on Protection against Emissions – Bundesimmissionsschutzgesetz as of 17 May 2013 (BGBl. I. S. 1274), latest amendment dated 8 April 2019 (BGBl. S. 432).

24 PV Magazine: 'Bundestag beschließt Streichung des 52-Gigawatt-Deckels für die Photovoltaik aus dem EEG' (18 June 2020), https://www.pv-magazine.de/2020/06/18/bundestag-beschliesst-streichung-des-52-gigawatt-deckels-fuer-die-photovoltaik-aus-dem-eeg/#:~:text=Unternehmensmeldungen-,Bundestag%20beschließt%20Streichung%20des%2052%2DGigawatt%2DDeckels%20für%20die%20Photovoltaik,als%20Vehikel%20für%20die%20Streichung, last accessed 29 June 2020.

viii Restriction of feed-in priority for renewable electricity and changes to redispatch

In addition to fossil fuel power plants, from 1 October 2021 renewable energy plants or combined heat and power (CHP) plants will also be included in the management of grid bottlenecks. The federal government expects lower grid costs and a lower use of fossil fuel power plants as a result of this step. Together with the amendment of the NABEG, changes will be made to 'redispatching'; this regulates the reduction and increase of generation capacity before and after grid bottlenecks. To date, only fossil fuel power plants have been used for redispatching; in future, renewable energies and CHP plants can also be included. The regulations for feed-in management will be transferred to redispatch with the change. The feed-in priority will thus be lifted to some extent. In future, renewable energy plants are to be included in redispatching if this allows the regulation of multiple conventional power plants to be eliminated. The federal government assumes that the change will reduce the use of fossil fuel must-run capacities, since fewer plants will have to be turned down before the bottleneck and fewer plants will have to be turned up after the bottleneck. In addition, according to the government's expectations, the use of balancing energy, which until now has come almost exclusively from fossil fuel power plants, will decrease.

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

As mentioned above, the ECJ decided in March 2019 that the EEG 2012 could not be qualified as state aid and thus annulled contrary decisions from the European Commission and the General Court. However, at the request of the European Commission, Germany had already changed its subsidy scheme before the ECJ rendered its decision, and had brought the legal framework into line with the European Commission's 'Guidelines on State aid for environmental protection and energy 2014–2020'.

Since 1 January 2017, the promotion of renewable energies in the electricity sector has been determined largely on a competitive basis. The EEG 2017 ended the phase of technology promotion with politically fixed prices and the amount of the required remuneration for electricity from renewable energies has since been determined via auctions. Further expansion will thus take place at competitive prices. The level of remuneration for onshore and offshore wind energy, solar PV and biomass will be put out to tender. Small plants are excluded from this tendering obligation.

The EEG levy finances the promotion of renewable energy plants in Germany. The annual total amount is calculated from the difference between the expenses for remuneration and premium payments and the income from marketing revenues of the grid operators, the 'EEG differential costs'. This amount is then passed on to the electricity customers as a consumption levy and paid automatically with the electricity bill.

With regard to encouraging greater technological developments, the EEG 2017 has implemented cross-technology tenders and innovation tenders.

In a pilot project in the years 2018 to 2022,[25] joint tenders for onshore wind power plants and solar power plants will be conducted. The aim of the joint tenders is to test the functionality and effects of cross-technology tenders and to evaluate the results, in comparison to technology-specific tenders.

25 See 36i (I) EEG.

The aim of the innovation tenders is to promote particularly grid- or system-supporting installations that prove to be efficient in competition. The content requirements are 250MW for 2019, 400MW for 2020 and 500MW for 2021, and participation is not limited to individual renewable energies. It will therefore also be possible to bid for combinations of different renewable energies.

ii The regulatory framework

Regulators of renewable energy

As an agency of the Federal Ministry for Economic Affairs and Energy, the Federal Network Agency is the main regulator for renewable energy. The Federal Network Agency's core task is to ensure compliance with, inter alia, the Energy Economy Act,[26] the EEG and their respective ordinances. In this way, it guarantees the liberalisation and deregulation of the energy market through non-discriminatory network access and efficient system charges. The Federal Network Agency's decisions in the energy sector are made by its Ruling Chambers. Companies directly concerned may participate in the Ruling Chamber proceedings and business circles affected by the proceedings may be invited to attend. Decisions can be challenged before the civil courts. Furthermore, although the Federal Ministry for Economic Affairs and Energy is the relevant supervising authority, it cannot overturn a decision made by the Ruling Chambers since their members act with a judge-like independence.

In this way, the Federal Network Agency ensures a reliable and low-priced supply of electricity, issues administrative orders to concretise legal requirements,[27] provides tender procedures for renewable energies and supervises the correct application of the law.

Tracking of renewable energy and renewable energy credits

The monitoring of the development of renewable energy takes different forms. First, the Market Master Data Register commenced operation on 31 January 2019. As a comprehensive energy management database, it serves to increase the availability and quality of energy management data, such as the master data of generation plants, to reduce the effort involved in reporting such data and at the same time create a high degree of transparency. Commissioning was delayed by about one and a half years.

In addition, the Federal Environment Agency's regional register for electricity from renewable energy sources went online on 1 January 2019.

The register serves to ensure that the regional property of a kWh of electricity generated from renewable energy sources can only be sold once to a consumer.

Involvement of associations as special-interest stakeholders

The political and executive process is subject to the participation of not only market participants, but also many different associations representing the agendas of their respective members. These include, for example, the federal Association of the Energy and Water Industries, the Association of Local Utilities and the German Renewable Energy Federation (BEE). The

26 Energy Economy Act – Energiewirtschaftsgesetz as of 7 July 2005 (BGBl. I S. 1970, 3621), latest amendment dated 5 December 2019 (BGBl. I S. 2002).

27 Festlegungen.

BEE mainly represents renewable energy-related interests since it is committed to the rapid expansion of renewable energies and provides arguments and models for the restructuring of the energy supply.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

The typical legal setup for a renewable energy project (utility scale) in Germany does not differ much from the established structures found customarily in all jurisdictions with a developed renewable energy market. The projects are typically owned by special purpose vehicles (SPVs) to allow for single project non-recourse project financing, as well as for single project transactions, by which a project – typically by way of a share transfer in the SPV – is sold to an investor. However, the German market has seen more and more portfolio transactions in recent years where developers have put together portfolios of five, 10 or more renewable energy projects, both existing and under development (also partly with diversified types of energy production, namely solar PV projects together with onshore wind projects), but even in typical portfolio transaction structures, the individual projects are still owned by individual SPVs, which typically have all received individual non-recourse project finance.

Project documentation and administrative requirements

For each renewable energy project (onshore or offshore), the SPV must bring together the necessary paperwork and documentation to evidence full ownership of that project. Some developers choose to have the SPV concerned own the project from the outset, and some tend to transfer project rights to the SPV at a later stage, but in any event when financial close occurs, at the latest, the rights must all be owned by the project SPV. As in practically all other jurisdictions, the necessary paperwork comprises the following.

Engineering, procurement and construction contract or balance-of-plant contract

Each project requires an engineering, procurement and construction (EPC) contract or balance-of-plant contract together with delivery contracts for main components (onshore wind turbines and foundations, offshore wind turbines, pool, foundations; solar PV modules, mounting systems, inverters; and, in all cases, cabling and, as the case may be, separate transformer stations depending on the grid connection situation). The typical onshore setup is characterised by one overall EPC contract, which sometimes even includes main component delivery or is accompanied by one or two separate main component delivery contracts. Single contracting for all different types of works and equipment is rarely seen in onshore projects but has been used more frequently in the wind offshore segment. In any event, investors and financing banks are well advised to request that delivery of all project rights (see more specifics below) that might be missing, as well as orderly construction of all interfaces that might otherwise remain unattended to, must be part of the EPC or balance-of-plant obligation.

Operation and maintenance agreements

Operation and maintenance (O&M) agreements are essential in the wind energy sector (with long-term agreements of 15 years common in the onshore wind energy segment and more and more projects contracting full service O&M agreements for a period of 20 years); they

are sometimes also relevant in solar PV installations and obviously so in technically more challenging situations such as utility-scale geothermal plants. In addition, practically every project in Germany comes with agreements on technical and commercial management (in many cases provided by the project developer, who often tends to consider the remuneration for these services to be part of the commercial project package in a transaction).

Land use rights

A very crucial and sensitive issue in German renewable energy practice is the securing of land use rights.[28] As well as the production sites, cable ways to the designated grid connection point (which can be many kilometres away from the production site) have to be secured. For onshore wind energy installations, the rotor blade diameter (in all directions) and distance rights must also be secured, by way of mutual agreement with the landowner concerned, and the accompanying registered rights of use (easements) must be recorded in the relevant land register. In addition, financing banks require separate rights in their favour (see also 'Financing', below), including rights to be recorded in the land register, which makes the marketable and bankable securing of land use rights a very complex task for the project developer.

Permits

Obviously, all necessary permits must be secured as part of the administrative requirements. The most relevant permits are the building permit for solar PV (which in some German states may even be dispensable) and the permit under the BImSchG[29] for onshore wind, both of which usually comprise all other necessary permits.[30] Offshore wind projects require a permit from the Federal Maritime and Hydrographic Agency and these permits are published on its website.[31]

Grid connection

Another important cornerstone in securing the project paperwork is the grid connection. Grid connection is among the easiest of the administrative requirements to address for offshore projects (although in terms of factual development, grid connection had proven to be one of the major obstacles in offshore wind development in Germany some years ago). Project owners for any renewable energy project in Germany have a codified right to receive grid access, the details of which relate mainly to technical issues.

28 The requirement for written form criteria for long-term lease agreements under Section 550 German Civil Code and a very diversified jurisprudence on how to cope with that requirement makes long-term lease contracts potentially very susceptible to challenge, which adds to the complexity of the task to secure the land use rights.

29 See footnote 13.

30 In individual cases, additional permits might be required, such as permits to use or cross waterways, and specific permits for productions sites in woods. Environmental concerns, specifically concerning bats and birds in the onshore wind segment have increasingly become crucial in wind energy project development. The same applies to sound emissions from wind turbines.

31 Bundesamt für Seeschifffahrt und Hydrographie: 'Offshore-Vorhaben' (w. Y), https://www.bsh.de/DE/THEMEN/Offshore/Offshore-Vorhaben/offshore-vorhaben_node.html, last accessed 1 July 2020.

Proof of income

Last, but not least, the project development paperwork needs to prove the securing of income. After fixed feed-in tariffs (and even in the early stages, the combination of direct marketing mechanisms plus a codified market premium, which ultimately amounted to what could, commercially, still be considered a 'tariff'), future projects will have to rely on successful auction bids (for solar PV, these will apply to installations of or greater than 750kWp). A successful bid, however, would still provide 20 years of a secured level of income per kWh.[32] In addition, projects that no longer rely on subsidy mechanisms but are based only on market mechanisms (i.e., on power purchase agreements (PPAs)) have also been seen in the German market and are expected to become more and more popular, particularly for large-scale solar PV projects. On the basis of examples provided by foreign project developments and project transactions for market-based renewable energy projects, there is ongoing debate in Germany on the various prospects (and risks) of PPA-based projects, and PPAs are expected to play the leading role in renewable energy remuneration in Germany in the future. The German market is apparently getting quite used to the idea of wholly or mostly merchant-based projects.

Financing

With all the relevant paperwork in place, and construction, commissioning and handover having occurred, the renewable energy project is then (more than) ready for the market. Given the very competitive situation for the acquisition of renewable energy projects on the German market, investors have for a number of years sought to acquire projects in their very early stages, sometimes as 'paperwork-only' deals, thus assuming all, or the remaining, potential construction risk.

In project finance, on the other hand, short-term financing during the construction phase has long been an established part of renewable energy debt financing on the German market and, usually, the same banks that provided interim construction facilities also take over the long-term financing. In terms of commercial requirements, financing banks in project debt financing for renewable energy projects in Germany essentially have the same requirements as typical investors. Long-term debt financing should be regarded as a standard product on the German project finance market, with a duration of approximately 15 years (plus or minus two years depending on the individual case) and a debt financing percentage of 80 to 90 per cent (sometimes even more) of overall project capital expenditure. Often (and more so in the past), such project financing is based on subsidised loan facilities made available by the German state-owned development bank KfW.

The typical security package required by project financing banks in the renewable energy sector includes the following:

a charges or security rights over title to major plant equipment or components;[33]

b assignment of feed-in income or income from electricity sales;

c assignment of warranty claims under component supply and assignment of claims under O&M agreements;

d step-in rights for major project agreements, mainly the major lease agreements, including complementary rights to be registered in the land register and for O&M and

32 Unless the bid expires as a result of late construction, which would be very unlikely to occur.

33 For onshore installations, certain prerequisites have to be observed, mainly in the land use agreement, to ensure that no automatic ownership of the plant equipment by the landlord occurs. For far-shore offshore installations, the granting of security rights may require specific related legal issues to be addressed.

asset management contracts; if the construction phase is also financed, step-in rights are also requested for the major component delivery contracts. Typical step-in rights, if drafted accurately, would substitute for otherwise required direct agreements;

e debt service reserve accounts;

f specific reserve accounts for the backing of dismantling guarantees; and

g typical covenants and debt-service coverage ratio requirements, as in any other project finance agreement.

Debt financing for renewable energy projects in the German market is typically provided by project financing banks. There are a large number of banks acting in a nationwide capacity, as well as local institutions who have provided, and continue to provide, debt finance. Debt financing for renewable energy projects, including utility scale, has become a very standard product. Many German banks are also active in financing renewable energy projects outside Germany, mainly in other European countries. On the investment side, many large funds and infrastructure investors, from both Germany and abroad, can be seen to compete for the acquisition of renewable energy projects. A smaller number of private investors and family offices are also active on the market on occasion.

A market for the purchase of renewable energy has not yet developed fully in Germany as the EEG 2017 framework still provides for reliable long-term fixed income for existing projects, and now also for projects that have successfully won an auction bid. However, PPA structures are the subject of intense debate at present and some quite significant first projects came to the German market in 2018.

ii Distributed and residential renewable energy

Residential solar PV has always played a very strong role in the German market; currently support for small-scale solar PV under the EEG 2017 appears to be stronger than for larger open-field installations of between 0.75 and 10MWp. Residential solar PV can be used both for own consumption and to feed into the grid and it receives EEG 2017 tariffs for electricity fed into the grid. Business models for immediate consumption of solar PV generated electricity where the installation is not owned by the consumer have developed strongly, but have also faced significant regulatory obstacles and required complex legal and tax issues to be resolved. The EEG 2017 has tried in particular to incentivise landlord-owned solar PV for residential apartment leasehold properties. However, many restrictions apply; inter alia, a rated-power limit of 100kWp for EEG 2017 support.

Nowadays small-scale solar PV is practically always installed together with battery storage applications; at the end of 2019, around 180,000 storage units for solar generated electricity had been installed and in 2019 around 56 per cent of new installations had an accompanying storage unit, a slight increase compared to 2019.[34] Virtual power plants have developed or are under development by combining a large number of decentralised small-scale installations and storage units to form one large flexible provider.

Utility-scale storage projects are increasingly more important on the German market and many projects are in the test phase. Considerably greater use (e.g., for power-to-gas

34 Bundesverband Solarwirtschaft: 'Statistische Zahlen der deutschen Solarstrombranche (Photovoltaik)' (2020), https://www.solarwirtschaft.de/datawall/uploads/2020/04/bsw_faktenblatt_photovoltaik.pdf, last accessed 11 May 2020.

projects) could be made of available renewable energy that is currently not being fed into the grid for grid-management reasons, if there were stronger support for this in the regulatory framework.

Distributed and residential renewable energy does not play a role in the wind energy sector in Germany.

iii Non-project finance development

Although the typical project finance structures described above are the main source of debt financing for renewable energy projects (and will remain so for the immediate future), some alternative or complementary renewable energy financing measures have been established and are beginning to play a more significant role on the German renewable energies market.

One of the first issues that comes to mind when considering alternative renewable energy financing is the issuance of 'green bonds' (i.e., capital market debt instruments specifically for financing renewable energy or other sustainable carbon dioxide reduction projects). However, green bonds in larger quantities or for larger volumes have yet to play a major role in the financing of specific projects or specific project pipelines on the German market. German state-owned development bank KfW, for example, stated in its news feed No. 245 dated 7 March 2019 that although green bonds could be of specific interest for communal municipalities, at the same time: 'However, there are no "true" municipal green bonds in Germany yet, even though Hanover was the first German city with a green and social bond, raising €100 million in capital in 2018.' On the other hand green bonds may serve to refinance other debt or equity financing on the market in quite significant volumes: according to a report issued by the Federal Ministry for Economic Affairs and Energy, as at 2017, Germany was still ranked fourth in the world for the issuance of green bonds, with an offering volume of close to US$10 billion in that year (with France leading significantly in Europe). At the end of 2017, the overall volume of green bonds issued in Germany was approximately US$25 billion (in comparison, France had issued approximately US$42 billion, China US$48 billion and the United States US$80 billion).[35]

The development bank KfW itself issued a €3 billion green bond (demand had totalled €8 billion) with a coupon of only 0.01 per cent in May 2019. Another recent (smaller-scale) example of complementary financing is the offering by local renewable energy provider Hamburg Energie of a 'citizen participation model', connected to a specific wind farm (offering, in essence, a specific savings account with a guaranteed amount of interest).

There have also been smaller-volume green bond offerings on the market in connection with specific projects; for example, to finance or refinance a sponsor's necessary equity contribution, or to finance a further tranche of debt required to allow private persons in the area of a renewable energy project to hold a small share of investment in the project, thereby increasing acceptance of the project with the public. A typical form of such a smaller volume (in the region of one-digit millions of euros) would be profit participation rights as a regulated capital market instrument.

In addition, other new complementary financing schemes, in particular to refinance sponsors' equity contributions, have started developing on the German market, the idea

35 KfW Research: 'Green Bonds – nachhaltige Alternative für die kommunale Infrastrukturfinanzierung?' (2019), https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Fokus-Volkswirtschaft/Fokus-2019/Fokus-Nr.-245-Maerz-2019-Green-Bonds.pdf, last accessed 13 May 2020.

being that the sponsor concerned does not have to sell a project on the market to raise the capital for subsequent projects, but can retain ownership of the project and obtain the necessary additional liquidity by way of mezzanine financing instruments, always depending of course on the evaluation of the profitability of the particular project.

V RENEWABLE ENERGY MANUFACTURING

The German market for the manufacturing of main components for renewable energy installations is quite significant in the wind energy sector. As at the end of 2018, roughly 60 per cent of the installed capacity in wind turbine generation in Germany could be credited to wind turbines manufactured in Germany. Of the overall installed capacity in Germany at the end of 2018, the most significant German manufacturers had a market share of 42.5 per cent (Enercon), 9.6 per cent (Senvion) and 8.7 per cent (Nordex) respectively, and Siemens Gamesa, based in Spain, had a share of 6.7 per cent.[36] Of the German wind turbine manufacturers, Enercon was listed at number five in the world in 2018, with overall newly installed capacity of 2.5GW, followed by Ming Yang and, at number seven, Nordex with 2.43GW newly installed capacity. Although the figures for turbine manufacturing worldwide had seen a two-year decline, the international wind power market had recovered somewhat by 2019, with the major wind turbine manufacturers doing good business, especially in the United States and Asia. However, Germany is at a historic low following a market collapse in this sector.

Germany's position in the manufacture of offshore wind turbines is even more significant. At the end of 2017, Siemens' worldwide market share in newly installed offshore capacity was 58 per cent. German manufacturer Senvion (which faced significant commercial difficulty in 2018, and has applied for protective insolvency proceedings) still commands a 3.7 per cent share of the total offshore wind turbines produced worldwide.

There no longer exists any significant solar PV module production in Germany, whereas years ago the country was among the market leaders. However, for components such as inverters or mounting systems, Germany still plays a significant role, with some inverter producers still claiming to be among the market leaders.

No specific tariffs or trade policies apply to the import of renewable energy plant components. Penalty charges on Chinese solar PV modules were lifted years ago.

VI CONCLUSIONS AND OUTLOOK

Germany's development in renewable energy, which proceeded at an impressive rate until 2018, is now seeing a slowdown in activity, mainly because of the low volumes of newly installed capacity in wind energy. However, notwithstanding the half-hearted support of the current federal administration for the further development of renewable energy, the market is still active and should return to full strength in the next few years, assuming that policymakers provide the backing for a firm and reliable legal environment in this field. Solar PV will (and has already started to) play a stronger role than it did in the past. Given the results of the renewable energy auctions conducted under the German EEG regime so far, reduced prices for produced electricity per kWh will continue to provide full support for

36 Fraunhofer IWES: 'Marktanteil der Anlagenhersteller in Deutschland' (2019) http://windmonitor.iee.fraunhofer.de/windmonitor_de/3_Onshore/2_technik/7_anlagenhersteller/, last accessed 11 May 2020.

market-based projects and the further development of renewable energy PPAs (partly on the basis of the existing practice of direct marketing under the EEG 2017). Renewable energies in Germany have proven able to assume a role in energy production fully equivalent to that played in the past by traditional energy sources. With further grid-related measures and grid enhancement, combined with the increased significance of storage facilities, the German market is bringing about big opportunities for achieving successfully the goals of the energy turnaround. New projects and an increased project offering within the coming years may also contribute to reducing, at least slightly, the currently very high level of prices for the acquisition of renewable energy projects in Germany.

Appendix 1

ABOUT THE AUTHORS

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Dr Markus Böhme is a member of the environmental, planning and regulatory practice area at Taylor Wessing. He focuses on energy law and advises national and international clients on all transactions in this field.

He is regularly consulted for advice on regulatory matters in the context of the liberalisation of the energy sector. Furthermore, he advises on all aspects of energy supply (gas, electricity and local and district heating) and on renewable energy, drawing on, among other things, the experience he gained in the legal department of a large German energy supplier. He is regularly involved in M&A transactions and has represented clients in numerous proceedings before the Intermediate Court of Appeals and before the German Federal Supreme Court.

Markus Böhme received his PhD in 2008 following his law studies at the Rheinische Friedrich-Wilhelms University of Bonn. Markus also participated in the Master of Laws programme (LLM) at Nottingham Trent University.

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Carsten Bartholl heads Taylor Wessing's energy industry group. He advises on transactions and financing, primarily in connection with renewable energy projects and on investments in technologies for the avoidance or reduction of CO_2 emissions. His practice includes ongoing consultancy services for relevant investment schemes. Regarding renewable energy projects, Carsten has substantial experience in advising in cross-border projects in transactions throughout Europe and worldwide. Recently, he has advised in renewable transactions and in particular on projects based on corporate power purchase agreements, in northern and western Europe and Australia.

Carsten studied law in Hamburg and has worked as an attorney since 1996.

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