THE GERMAN "ENERGIEWENDE" – A NATIONAL CONCEPT IN THE FRAMEWORK OF THE EU

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Abstract: *In spite of its relatively brief history, the German Energiewende has changed the electricity mix in Germany substantially; Green electricity from wind, solar, water and biomass now provides the largest contribution to the total electricity consumption. In this respect, the Energiewende can be regarded as an overall success. But in parallel to this scenario, a critical discourse has evolved concerning the socio-political, economical, and legal issues. The congruence of objectives and measures - for example in regards to ensuring security of supply, the expansion of electricity networks, the development of the electricity price and the environmental consequences - in the course of the expansion of electricity generation from renewable sources is the main focus of the socio-political and economic discussion. From a legal perspective, the accelerated phase-out of nuclear energy and the constitutional disputes, regarding the legality of the national orientation of the promotional scheme for green electricity in respect to the integration of the German electricity sector in a European internal market for energy, are in the centre of the debate. Against this background, the present article examines the contribution of the German Energiewende to the resolution of the complex challenges of a developed industrial society.*

Keywords: *green electricity, European internal market for energy, German Energiewende*

I. THE OBJECTIVE

In 2011, under the impact of the nuclear disaster at Fukushima, the German government decided to convert the electricity generation of around 80% from fossil fuels and nuclear energy to 80% from renewable energy sources in less than 40 years. The concomitant political, legislative and administrative measures are referred to as "Energiewende". This term is not fully accurate, since the central measures, especially the so-called nuclear phase out and the expansion of electricity production from renewable sources, were already decided and set in motion prior to 2011.[1] The two basic elements of the German Energiewende, namely the complete nuclear phase out and the accelerated expansion of renewable energies, have already had a history of development, even if it has been a brief one so far. The decision to dispense with the production of nuclear energy or rather the consumption of nuclear power in Germany dates back to the year 2000;[2] but it has been accelerated by the amendment to the Atomic Energy Act in 2011 and the thereby decided nuclear phase out until the end of 2022. The political, legislative and administrative support of electricity from renewable sources is given since the adoption of the Act on the Feeding of Electricity from Renewable Energy Sources in 1990,[3] in 2014 the Energiewende

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[1] The term "Energiewende" was first used in 1980 as a cipher for the presentation of scenarios regarding an alternative energy future; see KRAUSE, F., BOSSEL, H., MÜLLER-REIßMANN, K. F. *Energie-Wende: Wachstum und Wohlstand ohne Erdöl und Uran*. Umwälz, 1980; cf. HESELHAUS, S. Europäisches Energie- und Umweltrecht als Rahmen der Energiewende in Deutschland. *EurUP*, 2013, pp. 137–150.

[2] Of fundamental importance was the so-called nuclear consensus, namely the "agreement between the Federal Government and the power supply companies of 14 June 2000". 2002, the contract was legally secured by the amendment of the Atomic Energy Act and subsequently the first nuclear power plants were shut down in 2003.

[3] BGBl. (Federal Law Gazette) 1990-I, 2633.

led to an amendment to the relevant law. The Energiewende took place in the development of the energy concept adopted by the German government in September 2010.[4] This outlines Germany's energy policy orientation until 2050, and specifies the measures for the development of renewable energy, the development of the networks and for the energy efficiency. In the wake of the meltdown at Fukushima in March 2011, the role of nuclear power, as represented by the energy concept, has been re-evaluated. The seven oldest, plus one additional, nuclear power plants were closed down permanently; it was also determined that the operation of the remaining nine nuclear power plants will be gradually phased out until 2022.[5] The German Government appointed an ethics committee with the mandate to holistically consider the ethically responsible basis of decision making and its conclusions. The ethics commission, made up of representatives of different social groups, was, according to the submitted report, "firmly convinced, that the nuclear phase out can be completed within a decade."[6] In the light of this report, the federal government adopted an energy package on the 6th of June 2011, which complements the measures of the energy concept and accelerates their implementation.[7] The introduced measures approach the conversion of Germany's electricity supply in a more determined and complex manner. Since then, the term "Energiewende" refers to the thereby initiated complex process, the measures in the field of energy networks, of power plants, of energy efficiency, of the renewable energy and the energy research,[8] as well as the process of the conversion of the power generation to zero-emission and renewable sources, the reconstruction and extension of the grid structures as well as the reorganization of the power distribution and the power consumption. The concept of the Energiewende has five general objectives:[9] The greenhouse gas emissions shall be reduced by 2050 by at least 80%. The renewable energies shall be developed into one of the cornerstones of energy supply. At the same time, the aim is to reduce energy consumption in the long term. By 2050 the power consumption shall be reduced by 25% compared to 2008; by 2020 it shall already be decreased by 10%; in 2050 the final energy consumption in the transport sector shall be declined by about 40% compared to 2005. The building renovation rate will need to double from the current figure of less than 1 % a year to 2 % of the total building stock. The expansion of renewable energies was originally initiated by "the Act on the Feeding of Electricity from Renewable Energy Sources into the Public Grid" of December 7, 1990.[10] It has always pursued the aim of resource conservation and climate protection.[11] This fundamental objective was maintained, when the law was at first developed into the "Act on Granting Priority to Renewable

[4] Federal Government. Energy Concept for an Environmentally Sound, Reliable and affordable supply of energy on 28/09/2010. Available at: http://www.bundesregierung.de/ContentArchiv/DE/Archiv17/_Anlagen/2012/02/energiekonzept-final.pdf?__blob=publicationFile&v=5.

[5] Federal Ministry of Economics and Technology. The energy transition in Germany. 2012. Available at: http://www.bmwi.de/Dateien/BMWi/PDF/energiewende-in-deutschland,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf.

[6] Ethics Commission for a Secure Supply of Energy. 2011, p. 9. Available at: http://www.bmbf.de/pubRD/2011_05_30_abschlussbericht_ethikkommission_property_publicationFile.pdf.

[7] Cf. footnote 5.

[8] Cf. Federal Ministry of Economics and Technology. *Die Energiewende in Deutschland*. 2012, p. 4.

[9] Cf. Federal Ministry of Economics and Technology. *Die Energiewende in Deutschland*. 2012, p. 6.

[10] BGBl. (Federal Law Gazette) 1990-I, 2633.

[11] Cf. SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, recital 4.

Energy Sources (EEG 2000)[12]" in 2000 and finally amended to the "Act on Expanding Renewable Energy Sources (EEG 2014)[13]" in 2014. The explicitly specified goals of the EEG 2014 are due to the time-bound objectives, ranging up until 2050, remarkable. It states that the share of renewable energies in the power supply shall rise to 40–45% by 2025 and 55–69% by 2035 and shall finally increase to at least 80% by 2050.[14] A Legislation that is that far sighted into the future is very unusual. In general, the strictly timed proportionate requirements do not establish subjective rights, regarding the realisation of certain measures for the implementation of the programmatic objectives. If it proves impossible to achieve the quotas within the specified time line, there will not be any perceptible legally significant penalties. In this respect the objectives for the future energy mix do not establish any legally enforceable claims; they are programmatic concepts regarding the future of Germany's (industrial) society.[15] The Energiewende should also contribute to the climate protection objectives of the UN Framework Convention on Climate Change. Therefore, in the course of the short history of the Energiewende, the initial optimism and confidence has been replaced by sobering restraint; this is known as the "paradox of the Energiewende"[16]: the increase in electricity production from renewable energy sources has led to price declines on the electricity exchanges; this in turn has been conductive to pollutive ways of electricity production (such as coal). The Energiewende goes hand in hand with increased CO2 emissions in Germany, which, despite the growing number of environmentally friendly electricity production from wind turbines, photovoltaic and biogas plants, are not only not conductive to the desired climate protection objectives but might even be, by a somewhat paradoxical contrast, jeopardizing.

II. CONCEPTION

1. Origins

Initially, the core objectives of climate protection and the conservation of scarce energy resources were meant to be realised through the promotion of electricity produced from renewable energy sources. The therefore established law[17] had six paragraphs and was meant to account for a funding of about 50 million Euros.[18] Throughout the different stages of development the legislation of the energy revolution has grown into a hardly manageable bundle of statutory provisions. The 2014 revised Act on Expanding Renewable Energy Sources (EEG 2014) alone now consists of 104 paragraphs and is supplemented by numerous provisions in regulations and accompanying laws. The original conception provided for the promotion of electricity produced from renewable sources in a tiered approach. Briefly outlined, the five stages consist of the connection of the electricity generation

[12] Legislation from the 29th of March 2000, BGBl I-2000, 305.
[13] Legislation from the 21st of June 2014, BGBl. I-2014, 1066.
[14] Cf. § 1 (2) EEG 2014.
[15] Cf. SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 1 recital 5.
[16] PETERSDORFF, W. Energiewende paradox Deutschlands wundersame Stromschwemme. *FAZ*. 2013, p. 15.
[17] The Act on the Feeding of Electricity from Renewable Energy Sources into the Public Grid of December 7, 1990 (recital 10).
[18] Cf. SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, recital 8.

plants to the network, the transmission of electricity to the transmission system operators, the equal contribution of the amount of electricity to network operators, the transmission of electricity to the power supply companies and then the sale to the final consumer.[19] First, the requirement was established that local distribution network operators must prioritize grid connection systems for the generation of electricity from renewable energy sources. In the second stage this was accompanied by the prioritized purchase and transmission of electricity from renewable energy sources by the distribution system operators to the responsible transmission system operator. This was not only a physical but also a commercial obligation, since the receiving distribution network operators had to pay a statutory remuneration to the administering plant operators. At the third stage, a (horizontal) equalisation took place between the transmission system operators to balance the differences between windy and low wind regions; finally, each of the transmission system operators had to handle the same amount of electricity from renewable sources. At the fourth stage the system operators transferred the electricity from renewable sources, again physically and commercially, to the downstream energy companies. Quantitatively speaking was the EEG quota concerned with the amount of the physically administrated energy from renewable sources to the respective transmission network operators within its control area and the electricity that was delivered to the final consumers by power supply companies in these control areas. The transmission system operators were entitled to a legally defined payment claim for the supply of energy to power supply companies; the average price had to be determined, which was calculated from the average of the rates of remuneration weighted by the quantities delivered. Finally, and at the fifth stage, the power supply companies had to sell the acquired electricity to the final consumers. Regulatory stipulations for this final stage were not and are not provided for by law until today. The hereby legally established concept was applicable until 2009 and formed a self-contained (promotion) model. It was characterized by the fact that it did not make use of any state resources; the costs or rather the commercial promotion of renewable energies was fully borne by the electricity consumers. The consumers were meant to pay a levy for the promotion of renewable energies embedded in the price of electricity. But the established model also caused a substantial administrative and regulatory effort, especially with respect to the complex calculation of the volume and price components.[20]

A conceptual change was effected by the 2009 reform. This arose from the realisation - acquired through accumulated experience - that the physical transfer of electricity from renewable sources to the power supply companies should neither exceed nor fall below a specific maximum or minimum volume. To ensure this, it was initially necessary for the transmission system operator to purchase additional quantities of electricity from conventional power generation. This did not only prove to be inefficient but also very costly.[21] Therefore, a new mechanism was introduced in 2009. Since then, the transmission system operator no longer (physically) transfers the electricity from renewable sources to the

[19] Federal Network Agency. *Evaluation report regarding the Ordinance on a Nationwide Equalisation Scheme*. 2012, p. 16 ff.

[20] Cf. SCHMIDT-PREUß, M. Das Erneuerbare-Energien-Gesetz: Aktuelle rechtliche Fragen und Probleme. In: Klees, A., Gent, K. *Festschrift für Peter Salje.* Carl Heymanns Verlag, 2013, p. 397, p. 399 ff.

[21] Cf. BT-Drucks. 16/13188, p. 8.

downstream energy companies, but has the right to market the according quantities on the electricity power exchange.[22] The (spot market) sales on the stock exchange do regularly not achieve the rates that correspond to the fixed rates of remuneration. The transmission system operator should then be reimbursed for the resulting differential costs by a levy (the so-called EEG Levy) from the power supply companies. Part of this compensation mechanism is that the power supply companies in turn add the costs of the levy to the electricity price that has to be paid by the consumer.[23] A partial exemption from the payment of EEG-levy was provided for electricity-intensive enterprises.

In 2014, the EEG was reformed again; this reformation introduced a change of system regarding the further development of renewable energies. The change was one element of the comprehensive legislation in the scope of the Energiewende and should therefore be presented in this context.

2. Alternative concepts

Regarding the question of alternative funding models, the government draft concerning the reform of the central law of the Energiewende – the law on the development of renewable energies (EEG 2014) – stated that there were "no" alternatives[24]. It is also stated that the Reform Act ensures that the objectives for the development of renewable energies are achieved. In fact, a number of different concepts of the Energiewende were considered in the course of the legal policy discussion and analysed in various studies. They range from proposals that pursue a solely market-driven, competitive approach,[25] to proposals that favoured the promotion of green electricity from state resources,[26] especially from taxes. Alternatives (such as the introduction of a quota model or a technologically neutral promotion) were examined in the course of the legislative consultation procedure of the Energiewende but rejected in view of the intended objectives.[27] The EEG 2014, however, expressly provides that alternatives to the existing system of the state-set level of funding for renewable energies should be tested[28] and evaluated[29] with the tendering models. Therefore the explanatory memorandum of the law shows, that the established legislation of the Energiewende is not understood as a final concept, or even as a completed entity.[30]

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[22] Baur, J., Salje, P., Schmidt-Preuß, M. (eds.). *Regulierung in der Energiewirtschaft*. Carl Heymanns Verlag, 2011, chapter 34, recital 6.

[23] SCHMIDT-PREUß, M. Das Erneuerbare-Energien-Gesetz: Aktuelle rechtliche Fragen und Probleme. In: Klees, A., Gent, K. *Festschrift für Peter Salje*. Carl Heymanns Verlag, 2013, p. 397, p. 401.

[24] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 3. Available at: http://www.bmwi.de/BMWi/Redaktion/PDF/Gesetz/entwurf-eines-gesetzes-zur-grundlegenden-reform-des-erneuerbare-energien-gesetzes-und-zur-aenderung-weiterer-bestimmungen-des-energiewirtschaftsrechts,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf.

[25] See HAUCAP, J., KLEIN, C., KÜHLING, J. *Die Marktintegration der Stromerzeugung aus erneuerbaren Energien*. Nomos 2013.

[26] Cf. BÜDENBENDER. *ET*. 2014, 82, 87.

[27] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 129 f. (see footnote 24).

[28] Cf. § 53 EEG 2014.

[29] Cf. § 95 EEG 2014.

[30] See § 2 (5) EEG 2014.

3. The basic laws of the Energiewende

The legislative basis of the German Energiewende was created by a series of laws. They especially relate to four main areas and include, in particular, the legislative acts outlined below.

a) Atomic Energy Law

One of the first legislative steps towards the implementation of the Energiewende was a change to the Atomic Energy Law.[31] Thereby it was decided to (gradually) end the electricity generation from nuclear energy by the 31st of December 2022. Closer inspection of the therefore necessary amendment of the Atomic Energy Act shows that this change stands for the reversal of a trend that, up until that point, had not followed a straight line. The starting point of this development was the "nuclear consensus" from 2000, in which the then acting Federal Government and the companies of the nuclear industry agreed to end the production of nuclear energy.[32] In order to achieve this purpose, the remaining electricity was allocated by law to the existing nuclear power plants; the assignment was based on a standard time-frame of 32 years. In 2009, after a change of government, it was politically decided to use nuclear energy for a longer period of time as a bridging technology. The implementation of this conception was realised with the power supply companies according to an amended nuclear consensus[33] through the statutory allocation of additional residual quantities of electricity.[34] As a result, it came to a statutory extension of the authorised remaining term for existing nuclear power plants. The hereby extended remaining terms were later revoked by a further amendment to the Atomic Energy Act[35] in response to the nuclear disaster at Fukushima; additionally this resulted in an exact time limit for the operating life of each individual nuclear power plant. The thereby legally accelerated nuclear phase-out has been, and still is, subject to legal controversy surrounding the question of whether these actions are a de facto expropriation, which would violate the guarantee of ownership under constitutional law and the regulations of the Energy Charter Treaty.[36]

b) Promotion of green energy

The second legal act of the Energiewende involved a change in the promotion of renewable energies. The changes introduced by the EEG 2012[37] were primarily intended to

[31] Act on the controlled termination of the use of nuclear energy in the commercial generation of electricity from the 2nd of April 2002, BGBl. (Federal Law Gazette) 2002-I, S. 1351.
[32] Available at www.bmu.de/N4497. So called Atomkonsens II.
[33] So called Atomkonsens II; see KLOEPFER, M., BRUCH, D. Die Laufzeitverlängerung im Atomrecht zwischen Gesetz und Vertrag. *JZ*. 2011, p. 377, p. 380 ff.
[34] Cf. eleventh Amendment of the Atomic Energy Act of the 8th of December 2010, BGBl. (Federal Law Gazette) 2010-I, p. 1814.
[35] Cf. thirteenth Amendment of the Atomic Energy Act of the 31st of July 2011, BGBl. (Federal Law Gazette) 2011-I, p. 1704.
[36] Cf. available at http://www.encharter.org.
[37] Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act – EEG) from the 28th July 2011, BGBl. I-2011, p. 1634.

further increase the effectiveness and the efficiency of the legislation. Furthermore, the CO2 abatement costs, that were associated with the use of renewable energy, were meant to be significantly reduced. A conceptual reorientation followed when the concept of promotion took a more market-oriented approach. The EEG 2009 was the first amendment to consider the stock market prices as part of the concept of promotion, which provided for the marketing of electricity from renewable sources by transmission system operators, a statutory target concept was established by which the plant operators themselves should operate as close to the market as possible; the aim was to establish the direct marketing of green electricity by generating plant operators.[38] With the choice of the direct marketing the plant operators had the chance to obtain a higher compensation than established by law. With the option, to sell electricity from renewable sources directly to meet demand, the chances of supply and demand could thus be used for the first time. One of the established model options put the electricity traders into the position to pay the plant operator a higher electricity price, because they were in turn partially exempted from the EEG levy if the composition of their portfolio, from which they supplied the electricity, met the legal requirements.[39] Opted the system operator for the other model, the market premium, he had a claim for compensation amounting to the difference between the market price and the statutory remuneration as well as the additional costs of direct marketing by means of a statutory management premium.[40]

c) Promotion of offshore wind energy

The amendment to the legislation on power supply[41] regulates the electricity generation on the high seas by way of offshore production facilities. The amendment, as part of the Energiewende, is supposed to make a substantial contribution towards meeting future energy demands of the Federal Republic of Germany. Accordingly, the transmission system operators are obligated to provide an annual offshore grid development plan, which contains the necessary actions for an efficient, safe, reliable and economic connection of offshore installations, including a schedule for their implementation. The offshore grid development plan is reviewed and approved by the authorities and forms (in addition to the onshore grid development plan) the basis for the federal consumption plan.[42] Transmission system operators are also obliged to implement the measures of expansion contained in the offshore network development plan in accordance with the set schedule.[43] Additionally, in the event of a delay in the establishing process or a problem with the grid con-

[38] Schneider, J. P., Theobald, C. (eds.). *Recht der Energiewirtschaft*. 4th edition. C. H. Beck, 2013, § 21, p. 106 ff.; OHMS, M. *Recht der Erneuerbaren Energien*. C. H. Beck, 2014, p. 884 ff.

[39] Cf. SCHROEDER-SELBACH/GLENZ. In: Säcker, F. (ed.). *Energierecht*. 3rd edition. R&W, 2014, Vol. 2, § 33b EEG 2012, p. 2 ff.; SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 33b, p. 12; WUSTLICH, G., MÜLLER, D. Die Direktvermarktung von Strom aus erneuerbaren Energien im EEG 2012. *ZNER*. 2011, p. 380, p. 390.

[40] Säcker, F. (ed.). *Energierecht*. 3rd edition. R&W, 2014, Vol. 2, § 33g EEG 2012, p. 44 ff.; SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 33g, p. 13 ff.

[41] Third Law regarding the amendment on power supply from the 20th of December 2012, BGBl. (Federal Law Gazette) 2012-I, p. 2730.

[42] Cf. § 12e EnWG.

[43] §§ 12e (4), 17d EnWG.

nection of the offshore production systems, a carefully weighed liability regime was established. The operator of the offshore installation participates in the entrepreneurial risk with a deductible. In the event of both involuntary as well as negligent interferences and delays he receives 90 percent of the otherwise payable compensation for electricity fed into the grid; the obligation of the transmission system operator for compensation applies from the eleventh day of continuously impaired feed-ins.[44] In the case of a delayed establishment of the connection line he receives a claim for compensation, for which a temporal deductible of the offshore structure's operator is provided; compensation may be required from no earlier than the eleventh day after the binding date of completion.[45]

d) Network expansion

The Grid Expansion Acceleration Act (NABEG)[46] provides for nationwide territorial impact and planning approval assessments from a central authority for lines for the transport of electricity with European or national importance (especially extra-high voltage lines). Consequently, all statutory provisions that are relevant to the process, in particular those provisions relating to the environmental compatibility as well as other interests of spatial planning and nature conservation law, will be examined. The procedural rules for the planning and the planning approval include opportunities for stakeholders to be fully incorporated. Both procedures are preceded by an application conference with ample opportunities to participate.

4. The further development under the amendments of the EEG 2014

The EEG 2014[47], with its changes on volume control and direct marketing, introduced significant changes to the promotion regime for renewable energy. It is the first amendment that provides for a volume control of eligible electricity from renewable sources. The Act also includes mechanisms that ought to reduce the costs of the promotion of electricity from renewable sources in terms of cost efficiency. The volume control is carried out in such a way, that an expansion target is determined for the share of consumption of every climate neutral energy source for certain periods of time.[48] This ought to make the actual implementation more specific and predictable. The development targets of the onshore wind energy are basically consistent with the annual quantities of the last (boom) years, while the solar energy and biomass targets are a significant reduction compared to the past developments. This states the lower economic suitability of these two forms of power generation for the support scheme.[49] The amount of the funding is adjusted four times a year depending on the expansion of the previous twelve months to ensure the control and adherence of the expansion targets. This requires extensive administrative work to develop a nationwide installation register to which plant operators must report certain information

[44] § 17e (1) EnWG.
[45] § 17e (2)EnWG.
[46] Grid Expansion Acceleration Act (NABEG) from the 28th of July 2011, BGBl. (Federal Law Gazette) 2011-I, p. 1690.
[47] Act from the 21st of July 2014, BGBl. (Federal Law Gazette) 2014-I, 1066.
[48] § 3 EEG 2014.
[49] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 131 (footnote 24).

about their plants in order to receive the funding for their installation.[50] With this information, the competent authority should be in the position to detect the respective expansions and calculate the amount of the promotion in accordance with the specifications laid down by the EEG 2014. A bundle of measures was introduced to limit the electricity costs for consumers.[51] In addition to the mentioned volume control use is made of potential savings regarding the amount of the promotion, especially when it comes to bioenergy and onshore wind energy. Another instrument is the inclusion of electricity for the self-supply in the allocation of costs. Now - besides numerous exceptions - even the electricity from renewable sources for the self-supply is burdened with the EEG levy. This is to ensure that the costs of the expansion of renewable energy are appropriately distributed to all stakeholders of the energy sector and the amount of the EEG levy therefore limited for the electricity consumers. Thus, the legislature responds to the fact that the amount of the EEG levy does not solely depend on the costs of the expansion of renewable energies, but also on other factors. Especially falling electricity prices on the stock market lead to lower revenues from electricity sales at the stock market and thus to an increase of the differential costs. An (additional) step towards the desired market and system integration of renewable energies is taken by the legislature by following a concept that introduces mandatory direct marketing (for new installations) instead of the previous promotion concept of "produce and forget".[52] This also took place to improve the integration of renewable energy in the national and European electricity market.[53] The green power privilege, that proved to be a failure, was abolished, and the so far granted management premium was priced into the promotion.[54] To allow all market actors to adapt to the future direct marketing, the implementation of the mandatory direct marketing is applied gradually over time.[55] It is also envisaged that plant operators, who cannot directly market their electricity, tender the electricity to transmission system operators; however, they will only receive 80 percent of the amount that they would have achieved with the market premium.[56] This exception from the mandatory direct marketing is not dependent on any limiting conditions. Because of the introduction of the mandatory direct marketing, the plant operators have to bear certain marketing risks. In the future they can only demand the physical acceptance of their generated electricity; the commercial purchase, however, has to be arranged in the way of a private autonomous agreement. Furthermore, the general claim for compensation for electricity fed into the grid no longer exists. This means that the plant operators are now largely dependent on the revenues from the direct marketing of their electricity. In addition, they receive funding in the form of a market premium, because the marketing revenues do not cover costs.[57] The market premium is calculated by

[50] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 264 et seqq. (footnote 24).
[51] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 138 et seqq. (footnote 24); further MÜLLER, T., KAHL, H., SAILER, F. Das neue EEG 2014. *ER*. 2014, p. 139, p. 142 ff.
[52] See HAUCAP, J. Der dritte Weg funktioniert nicht. *FTD*. 2012.
[53] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 132 (footnote 24).
[54] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 133 ff. (footnote 24).
[55] § 37 (2) EEG 2014.
[56] § 38 EEG 2014.
[57] § 34 EEG 2014; see also MÜLLER, T., KAHL, H., SAILER, F. Das neue EEG 2014. *ER*. 2014, p. 139, p. 140 ff.; HERZ, S., VALENTIN, F. Direktvermarktung, Direktlieferung und Eigenversorgung nach dem EEG 2014. *EnWZ*. 2014, p. 358, p. 361 ff.

subtracting the monthly market value of the electricity from the statutory value of the concerned installation. The monthly market value is the actual mean of the hourly contracts at the energy exchange. This means that the risk of the debtor's solvency and the related safeguards will also be imposed on the plant operators. Further, the statutory provisions that (in part) exempt the energy-intensive companies from having to pay the EEG levy were amended. Originally, it was considered to reduce the number of privileged companies and thus limit the burden of the EEG levy.[58] With regard to the compatibility of the privileges with the EU Commission's guidelines on State aid for environmental and energy[59], the new regulation was designed to prevent an increase of the number of beneficiary companies and the loss of revenue compared to the previous regulation.[60] Finally, a fundamental change in the determination of the promotion amount was stated as the new principle for the promotion of green electricity. The previous administrative system to determine the promotion amount is to be replaced – in the field of solar energy production on open space systems – with a new competitive system that determines the amount of the promotion and the eligibility by calls for tenders.[61] The pilot tendering is to be used to gain experience with this new system. This is to prepare the same reorganization of the financial support system for electricity from other technologies. The final aim of the system change is to achieve the objectives of the Energiewende with less expense. In the light of experience, particularly regarding the pilot tendering process, the tendering procedure should be assigned to other renewable energies no later than 2017.[62] This requires a further amendment.

III. FUNDAMENTAL LEGAL CHALLENGES

The legislation of the Energiewende raises a number of legal challenges that are basically concerned with its compatibility with national constitutional law and European law. The following is limited to an exposition of the key problems. All the issues that will need to be addressed have not yet been conclusively clarified, particularly since the relevant court cases are still pending; in the following the two main problem areas, the accelerated phase-out of nuclear energy and the promotion system for renewable energies, are outlined.

1. The accelerated phase-out of nuclear energy

Regarding the accelerated phase out of nuclear energy under the legislation of the Energiewende the question of the compatibility of that legislation with the fundamental right to property arises. In fact, three major energy companies have raised constitutional complaints in Germany to assert the violation of their constitutionally protected right to prop-

[58] See the explanatory memorandum for the government's draft regarding the EEG 2014, p. 136 (footnote 24).
[59] Commission Communication, ABl. 2014 no. C 200/1; also MACHT, F., NEBEL, J. Das Eigenverbrauchsprivileg des EEG 2014 im Kontext des EU-Beihilfeverfahrens und der Umwelt- und Energiebeihilfeleitlinien 2014–2020. *NVwZ*. 2014, p. 765, p. 767 ff.
[60] See the explanatory memorandum for the government's draft regarding the EEG 2014. p. 238 ff. (footnote 24).
[61] § 2 (5) EEG 2014.
[62] See the explanatory memorandum for the government's draft regarding the EEG 2014. p. 161. (footnote 24).

erty.[63] Moreover, a further public energy supplier that has its principal place of business abroad has raised a request for arbitration at the World Bank tribunal ICSID; they asserted a claim for compensation with reference to the Energy Charter Treaty.[64] The review standards for the compatibility of the accelerated nuclear phase-out are – in accordance to a controversial interpretation of the law - only the fundamental rights laid down in the Basic Law and not the EU Charter of Fundamental Rights.[65] The decision of the accelerated nuclear phase out moves solely within the scope of national constitutional guarantee of one's property rights and is not within the scope of Union law. In particular, the energy competence rules under Art. 194 TFEU are not affected, since they explicitly assign the decision regarding the composition of the energy mix to the Member States. Therein lies an energy policy sovereignty consideration, which establishes the legitimacy of the nuclear phase-out as a legal issue of national law and thus a question of national constitutional law.[66] After this starting point, the legislation for the accelerated phase-out raises the question whether it constitutes an expropriation within the meaning of the right to property under the Basic Law. In view of the package deal (Junktimklausel) defined in Art. 14 (3) s. 2 of the Basic Law, the legislation would be unconstitutional because of the lack of a compensation regime for affected power utilities. Under the current case law of the Federal Constitutional Court can a characterization of the accelerated phase-out as an expropriation within the meaning of the Basic Law's right to property only be considered if measures of direct expropriation exist. This is given when property is completely or partially removed and the measures are part of goods procurement for a specific public project.[67] Measured against these criteria the amendment to the Atomic Energy Act regarding the accelerated phase out of nuclear energy cannot be understood as expropriation.[68] Since the protection of property is recognised under the European Convention on Human Rights and the international investment protection contains protection against indirect expropriation,[69] it appears doubtful that measures that (completely or partially) depreciate property should in future not be assigned as measures equivalent to the expropriation term under German constitutional law. However, even after an appropriate change in case law would the legislation regarding the nuclear phase out not necessarily be considered a compensable de facto expropriation. The operation of the affected nuclear power plants was limited, even before the legislation of the Energiewende, by the limited volume of the residual current. This is why often the legal opinion is held that the regulations of the nuclear phase out,

[63] Cf. BVerfG, file number 1 BvR 282/11, 321/12 and 1456/12.

[64] Vattenfall AB (Sweden) et al. v. Federal Republic of Germany (No. 2), ICSID Case No. ARB/12/12.

[65] Cf. DEGENHARDT, C. *Gesetzgeberische Sorgfaltspflichten bei der Energiewende*. Nomos. 2013, p. 80 ff.; OSSENBÜHL, F. *Verfassungsrechtliche Fragen des beschleunigten Ausstiegs aus der Kernenergie.* Nomos, 2012, p. 15 ff, p. 72 ff; DiFabio, U., Durner, W., Wagner, G. *Kernenergieausstieg 2011*. Nomos 2013, p. 9 ff.

[66] LUDWIGS, M. Die Energiewende im Zeichen des Europa- und Verfassungsrechts. *RW*. 2014, p. 254, p. 258 ff.; other opinion NETTESHEIM, M. *Gesetzgebungsverfahren im europäischen Staatenverbund*. Nomos 2014, p. 97 ff.

[67] Cf. BVerfGE 104, 1, p. 9 ff.; also BVerfGE 126, 331, 359 and BVerfGE 115, 97, p. 111 ff.

[68] See LUDWIGS, M. Die Energiewende im Zeichen des Europa- und Verfassungsrechts. *RW*. 2014, p. 254, p. 258 ff.; BATTIS, U., RUTLOFF, M. Vom Moratorium zur Energiewende - und wieder zurück. *NVwZ*. 2013, p. 817 ff.; Cf. PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP*. 2013, p. 150, p. 154 ff.

[69] Cf. FISCHBORN, B. *Enteignung ohne Entschädigung nach der EMRK*. Mohr Siebeck, 2010, p. 86 ff.; MEIFORT, C. *Der Begriff der Enteignung nach der Rechtsprechung der internationalen Schiedsgerichte zum internationalen Investitionsschutzrecht*. Peter Lang, 2010, p. 104 ff.

which make a return of investment and a reasonable profit possible, hold up to a review of proportionality and are not beyond the discretion available to the national legislature.[70] This reasoning is further reinforced by the fact that the energy supplier is given the opportunity to transfer the residual electricity volumes from one system to another, expressly even after the expiry of the authorization to operate.[71] Another evaluation comes into question, if an energy supplier has made new investments into existing installations in reliance on the continued existence of the power plant, which then becomes useless in the course of legislation in the phase-out process.[72] Should the company concerned be 100 % publicly owned, the personnel basis behind the entity organised under private law is likely to be missing, which is, however, a widely recognized requirement for the recognition of the legal capacity under Basic Law.[73] Overall, the most predominant reasons suggest that the phasing out of nuclear energy under the legislation of the Energiewende must be understood from the perspective of the protection of property as a non-compensation determination to the content and limits of the possession of energy generation plants and not as a de facto expropriation that requires compensation.

2. The promotional scheme for renewable energy

a) Compatibility with State aid rules

The second cornerstone of the Energiewende, the promotional scheme for the development of renewable energies, raises questions of compatibility with the European and constitutional law. In 2014 the financial support will be about 20 billion Euros. The costs will be calculated by the transmission system operators in the described manner, allocated to the electricity suppliers and then regularly shifted onto the final consumer. Electricity-intensive companies are privileged by means of a discount on the support costs for green electricity and in particular these discounts prompted the European Commission to initiate a formal procedure[74] which questions the compatibility with EU State aid law.

b) Compatibility with the free movement of goods

The question of compatibility with European law (ensuring free, competitive trade flows) also arises in the respect that the promotion of green power as part of the Energiewende is designed as a purely national projects. Since the effects of legal provisions are not limited to Germany and the German electricity markets, the basic approach taken by the promotion system is discriminatory; the support mechanisms is limited to plants from the Federal territory, while green electricity from other states is excluded from the

[70] Schneider, J. P., Theobald, C. (eds.). *Recht der Energiewirtschaft.* C. H. Beck, 2013, § 8, p. 118; KERSTEN, J., INGOLD, A. Die Beschleunigung des Atomausstiegs. *ZG.* 2011, p. 350, p. 356; LUDWIGS, M. Die Energiewende im Zeichen des Europa- und Verfassungsrechts. *RW.* 2014, p. 254, p. 261 ff.; WIELING, J. Verfassungsfragen der Beendigung der Nutzung der Kernenergie. *EnWZ.* 2013, p. 252, p. 257.

[71] Cf. § 7 (1)b AtomG.

[72] Cf. KLOEPFER, M. 13. Atomgesetznovelle und Grundrechte. *DVBl.* 2011, p. 1437, p. 1442; LUDWIGS, M. Die Energiewende im Zeichen des Europa- und Verfassungsrechts. *RW.* 2014, p. 254, p. 263.

[73] See PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP.* 2013, p. 150, p. 155.

[74] State aid SA.33995 (2013 / C), ABI. 2014, no. C 37/73.

promotion.[75] This poses the question of the compatibility of the promotion system with the freedom of movement of goods within the European domestic market protected by European law. According to the legislation of the Energiewende green electricity is strictly a matter of priority, which means it must be purchased, transmitted and distributed prior to all other types of conventional power generation. The precedence principle does not only apply to conventional forms of domestic power generation, but also to electricity imports from EU neighbouring states.[76] Conventional power plants in Germany and in the EU are being pushed into a reserve position by the priority given to the renewable energies - with all resulting economic consequences.

The law of the European Union does not legitimize such a far-reaching exemption from the principle of competition. In particular, the 2009 directive on renewable energy[77] does not allow for an overall foreclosure of competition. On the contrary, this Directive refers to the policy securing competitiveness for the internal market in electricity and leaves the European legal obligation to give reasons of competition strictly unaffected.[78] Any other result would also be incompatible with the hierarchy of EU law: Union law makes it mandatory to ensure the free movement of goods and thereby also ensures competition in the internal market for electricity. The Directive on the internal electricity market[79] defines this principle in regards to the electricity sector. The Renewable Energy Directive grants the limited restriction of competition resulting from the support mechanisms for renewable energy but not an almost complete abolition of competition in the field of power generation. An anchor point for the clarification of the relationship between the Renewable Energy Directive and the Internal Market Directives as well as the free movement of goods under Art. 34 TFEU is the decision of the European Court in the ÅlandsVindkraft case.[80] The decision became the Swedish quota model for the promotion of renewable energy sources. The ECJ had to decide whether territorial restrictions of support schemes for renewable energies are consistent with the Renewable Energy Directive and the provisions of the free movement of goods under the TFEU. While the ECJ's Advocate General noted in his Opinion the invalidity of an exemption under secondary law and the incompatibility of a territorial restriction on the promotion of renewable energies with Art. 34 TFEU, the ECJ reached a different decision. Initially, during the course of the audit of Art. 34 TFEU, the ECJ assumed that national support schemes, such as the Swedish quota model, might hinder electricity imports and in particular the import of green electricity from other Member States.[81] In a second step, however, the ECJ considered the established interference with the free movement of goods to be justified by objectives of general interest.[82] The promotion of renewable energies is therefore legitimized by imperative requirements of environmental protection as well as the protection of human, animal or plant life or health within the meaning of Art. 36 TFEU.

[75] Cf. § 4 EEG 2014.
[76] Cf. SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 2, p. 28.
[77] EG Directive 2009/28/ from the 23rd of April 2009, ABl. Nr. L 140, p. 16.
[78] Cf. Art. 2j, 15(1), 7, 8, 11, Art. 22 (1b).
[79] 2009 Directive/72/EG from the 13th of July 2009, ABl. Nr. L 211. p. 55.
[80] ECJ decision from the 1st of July 2014, C-357/12, recital 56 et seqq. – ÅlandsVindkraft.
[81] ECJ decision from the 1st of July 2014, C-357/12, recital 65 et. seqq., 75 – ÅlandsVindkraft.
[82] ECJ decision from the 1st of July 2014, C-357/12, recital 76 et. seqq., 119 – ÅlandsVindkraft.

As part of the proportionality assessment, the Court particularly emphasized that Member States must retain the control over the impact and costs of the national funding provisions and, at the same time, the legitimate expectations of investors must remain coherent. Overall, the ECJ concluded that "given the current state of EU law", it could be regarded as necessary to achieve the legitimate objective pursued.[83] The basic statements of the decision should be transferable to the legal situation in other Member States and thus also to the funding regime for green electricity in the scope of the German Energiewende.[84] On the other hand, by referencing the current state of the, not fully harmonised, energy law of the Union, it is not completely certain that discriminatory national support schemes will not be restricted in the future. In particular, it would seem hardly appropriate to determine the admissibility without taking the total electricity consumption's share of green energy into account.

Even if the support system would be limit to domestic plants to archive the intended target of the German Energiewende – to generate 80% of electricity from renewable sources by 2050 – it would hardly be compatible with the free movement of goods within the internal market. A proportionate balance of the competitive free movement of goods and environmental protection would no longer be guaranteed. The following contemplation makes this clear: If all Member States acted in the same way, the idea of an internal market for electricity would become obsolete; in its place would be a variety of completely separate national green electricity markets.[85]

The Union law requires a competitive system of power economy in order to promote a common market of EU Member States. Member State regulations that block the competition are therefore not compatible. The German support system for renewable energy does not only cause a significant restriction of the competition between electricity from renewable energy sources and conventional power generation at a national level but also blocks electricity exports from the EU region to Germany. This applies, because of the purely national orientation to the priority principle, not only to electricity from conventional power plants, but also to the use of renewable energy in the EU. Of course it cannot be overlooked that any promotion of renewable energies means some impairment of competition. However, this must not lead to undue discrimination of EU foreign producers of renewable energy or to a comprehensive blockade on competition. In particular, a total blockade of the supply of electricity from other EU countries is not justified for reasons of competition law as well as ecological aspects with regard to the equivalence of renewable energy regardless of the production place. In future, Member States are therefore required under European law to create a better (more coherent) balance between environmental and competitive interests.[86]

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[83] ECJ decision from the 1st of July 2014, C-357/12, recital. 92 – ÅlandsVindkraft.

[84] See especially BRÜCKMANN, R., STEINBACH, A. Die Förderung erneuerbarer Energien im Lichte der Warenverkehrsfreiheit. *EnWZ*. 2014, p. 346 ff.; LUDWIGS, M. Die Energiewende im Zeichen des Europa- und Verfassungsrechts. *RW*. 2014, p. 254, p. 273 ff.

[85] WOLFRUM, R. (ed.). *Rechtliche Rahmenbedingungen für die Reform der Förderung erneuerbarer Energien in Deutschland*. 2014, p. 10.

[86] WOLFRUM, R. (ed.). *Rechtliche Rahmenbedingungen für die Reform der Förderung erneuerbarer Energien in Deutschland*. 2014, p. 34: PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP*. 2013, p. 150, p. 163.

c) Compatibility with the German financial constitutional law

Notwithstanding the challenges of the European law is the green electricity also the focus of a financial-constitutional examination. It concerns the question whether the funding of the levy represents an extra duty, which would conflict with the rules of financial constitutional law.[87] Extra duties are only allowed, according to the German constitutional law, under strict conditions. This includes, in particular, the criteria that the affected group must form a homogeneous category that can be distinguishable from the community and that the revenue of the duty is used for the benefit of the group members.[88] These conditions are missing when it comes to the promotion of green electricity, not only because the totality of electricity consumers is not a homogeneous group distinguishable from the community, but also because the revenue of the EEG levy is not used for the benefit of the electricity consumers. However, this criticism would only apply if the EEG levy is a duty that falls under the scope op the financial constitutional law. A duty under the scope op the financial constitutional law requires that the measure has an "increasing effect in favour of the public sector".[89] The thereby limited term of "duty" follows the idea that ultimately the budget law should be preserved as an essential tool of parliamentary government control. This aims at preventing any risk of citizens being burdened with extra duties which are not subject to parliamentary controlled budget.[90]

However, the promotion of renewable energies according to the EEG levy under the concept of the German Energiewende will not gain the public sector access to financial resources of the EEG means. According to the system of redistribution, the financial resources are only available to the private parties in the electricity market. Therefore they cannot be classified as extra duties.[91]

IV. SPECIFIC GOVERNMENTAL REGULATORY TASKS

1. The management of network congestions

In some cases networks are exposed to a considerable amount of physical stress because of the increasing proportion of volatile electricity from renewable sources in the course of the Energiewende. Traditionally they are not designed to withstand the loads coming from the new mix, which creates the risk of overuse. To avoid a black out, it is necessary to reduce the feed-in if necessary. This requires a legally defined congestion management.

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[87] Cf. BICKENBACH, C. Die Finanzierung der "Energiewende" in der Zwickmühle aus Finanzverfassung und Art. 107, 108 AEUV. *DÖV.* 2013,p. 953 ff.; MANSSEN, G. Die EEG-Umlage als verfassungswidrige Sonderabgabe. *DÖV.* 2012, p. 499, p. 501 ff.; PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP*. 2013, p. 150, p. 157.

[88] BVerfGE 55, 274, 298 et. seqq.; also BVerfGE 122, 316, 334 et. seq.

[89] See BVerfG, NJW 1997, 573; BGHZ 155, 141, 153 et. seq.

[90] WALDHOFF, C., ROßBACH, M. Das EEG zwischen Verfassungsrecht und Politik. *WiVerw.* 2014, p. 1, p. 14 ff.

[91] GAWEL, E. Die EEG-Umlage: Preisregelung oder Sonderabgabe? *DVBl.* 2013, p. 409 ff.; KRÖGER, J. Die EEG-Umlage ist keine Sonderabgabe. *ZUR.* 2013, p. 480, p. 482; Schneider, J. P., Theobald, C. (eds.). *Recht der Energiewirtschaft. Recht der Energiewirtschaft.* 4th edition. München: C. H. Beck, 2013, § 21, p. 145.

The German legislator has adopted a statutory scheme for the management of congestions. According to that, the network operator is entitled to carry out the necessary regulations to eliminate network congestions.[92]

Since the legislature knows about the precedence of electricity from renewable energy sources, the regulation applies to the particular situation that a network is temporarily overloaded with electricity from renewable sources. During the implementation of congestions measures the priority of electricity from renewable sources must be kept in mind. An exception is made however, if other electricity producers in the network are absolutely essential.[93] In this case, the law provide for the special authorisation to reduce the electricity from renewable sources. This is in particular the cases when the networks are threatening to overheat during strong winds or the supply of conventional power plant electricity must be maintained for network reasons.[94]

Regarding the question of how the down-regulation takes place, two contrary answers come into question: Either all electricity producers – according to a principle of solidarity – are obliged to throttle their feed-in;[95] the other answer could be that in the interest of planning and investment security of the already connected plant operators, and in accordance with the temporal principle of priority, only the last investor or investors have to put up with the throttling.[96]

In this regard the regulatory tasks of the legislator proves to be quite complex. Ultimately it will take a holistic management scheme, which can not only be focused on the various types of supply and production, but must also take the situation of network expansion into account. The legislation of the German Energiewende has accepted the legislative challenges and overcome some of the regulatory task.[97] It is envisaged that the priority principle in favour of renewable energies should also be applied when it comes to measures regarding the avoidance of hazards or disturbances in the network. In exceptional cases one may deviated from this rule, in order to respond to the need for a minimum supply from certain plants. From the precedence of electricity from renewable energy sources may be deviated if other electricity producers must remain connected to the grid to ensure the safety and reliability of the electricity supply system.[98] This legally ensures, that the supply of green electricity can be reduced, while conventional power plants remain on the grid. Thereby it is provided by law that the supply of green electricity can be reduced, while conventional power plants remain on the grid. The dimension of the network expansion has not yet found any consideration in the regulations. In addition establishes the right of the Energiewende a so-called hardship regime for the compensation of electricity providers affected by the down-regulation. The compensation only applies to 95% of lost revenue (plus the additional expenses and minus the expenses saved).[99]

[92] § 14 EEG 2014.
[93] § 14 (1) p. 1 no. 2 at end EEG 2014.
[94] SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 11, p. 7.
[95] VERGOßEN, J. *Das Einspeisemanagement nach dem Erneuerbare-Energien-Gesetz*. Nomos 2012, p. 115 ff.; SALJE, P. *EEG 2012. Kommentar*. 6th edition. Carl Heymanns Verlag, 2012, Introduction, § 11, p. 21.
[96] Cf. FISCHER, J., LORENZEN, O. Zum Netzanschlussanspruch regenerativer Anlagen bei Auslastung der Netzkapazität. *RdE*. 2006, p. 132 ff.
[97] Cf § 13 (2a) p. 1, EnWG.
[98] See SCHMIDT-PREUß, M. *Festschrift für Peter Salje*. p. 397, p. 412 ff.
[99] § 15 EEG 2014.

2. Privileged status of electricity-intensive companies

Not so small conflicts arise when it comes to the citation of electricity-intensive companies to co-finance the promotion of renewable energies. To free electricity-intensive companies (completely or partially) from the financial burden is required, in particular for competition policy considerations to keep these companies well positioned in the international competition against competitors from other locations where they are not charged with a levy for the cost of renewable electricity. From an industrial point of view the likely risk exists that without the exemption the energy-intensive industries will move to other more cost-effective locations, which are unencumbered by the costs of promoting renewable energies. Quite the contrary can be derived from an ecological point of view, namely that in particular the electricity intensive companies should be financially involved in the restructuring of the promotion of electricity generation from environmentally beneficial renewable sources. Moreover, the cost reduction for some industrial enterprises requires a redistribution of the expenses to non-privileged electricity consumers, i.e. private customers or not current intensively managed companies, which causes them additional costs. The German legislature took the fundamental decision to (partially) exempt electricity-intensive companies from the cost burden of the levy for the promotion of renewable energies. During the revision of the 2014 EEG amendment the abolishment of these privileges was considered, but ultimately rejected. The decisive factor was the potentially negative impact on the German labour market and the proportionally low cost reduction that could be achieved in the short term by cutting privileges for the remaining electricity consumers.[100] The content of the EEG 2014 amendment was refined by close arrangement with the EU Commission. For reasons regarding the compatibility of the exemption clause with the new guidelines of the European State aid[101] – which came into force on the 7th of January 2014 – the EU Commission insisted that electricity-intensive companies have to pay 15% of the promotion cost for the development of renewable energies themselves and may be exempt from any further costs. The compromise regarding the State aid, negotiated with the European Commission, further provides that the minimum contribution for companies from specific sectors and industries may be reduced even further. With that Germany has implemented the potential for company discounts on the cost burden for the promotion of renewable energies in its legislation. These discounts should be compatible with the requirements stipulated by the law of the European Sate aid.

3. Economic efficiency of conventional power plants and capacity management

A particular challenge is to ensure the efficiency of conventional power plants with the increasing supply of electricity from renewable sources. Diverse market effects are at the expense of the conventional power supply as a consequence of the promoted energies. The growing offer of electricity from renewable sources does not only lower the demand

[100] § 60 EEG 2014.

[101] Commission Communication, ABl. 2014 no. C 200/1; also MACHT, F., NEBEL, J. Das Eigenverbrauchsprivileg des EEG 2014 im Kontext des EU-Beihilfeverfahrens und der Umwelt- und Energiebeihilfeleitlinien 2014–2020. *NVwZ*. 2014, p. 765, p. 767 ff.

for conventionally generated electricity. The promoted supply also leads to lower prices. The profitable operation of conventional power plants is being hampered by the generation of electricity from renewable sources. While the operating costs for renewable energy plants are almost zero and they only need to refinance the capita cost, the conventional power plants need to cover the fuel costs in addition to the cost of capital. The amount of electricity sold from conventional production regresses due to an increased supply of electricity from renewable sources; this also decreases the utilization of the power plants. The contribution margin for the fixed costs is reduced and the full cost can no longer be generated.

The promotion of renewable energies essentially leads to a displacement of conventionally generated electricity and economically necessary to a lower profitability of existing or new conventional power plants. Especially new low CO2-producing and energy-efficient plants come under increasing pressure to produce efficiently but not the (fiscally amortized) brown coal power stations or the fossil generated plants, recently fired by cheap hard coal, regardless of their adverse environmental impact.[102]

The conventional power plants are, on the other hand, indispensable for the transitional period. They are needed to fulfil the back-up function in the interests of the conversion of electricity generation to renewable energies, which is essential for a reliable power supply in times when the wind does not blow and the sun does not shine. Transmission system operators require continuous balancing energy to bridge any supply shortfalls, which currently can only be reliably provided by conventional power plants. The extreme pressure of profitability does not just threaten to decommission power plants that are affected by the base load, but also to abandon future-securing investments in conventional power plants.[103]

The legislature of the German Energiewende has not yet mastered the challenges of the economic efficiency of conventional power plants. So far only regulations to improve the framework conditions were enacted to ensure security of supply in the power plant sector based on the experienced problems with maintaining a secure electricity supply in winter 2012/2013.[104] They include, inter alia, binding obligations to display the decommissioning of power plants with adequate notice, an opportunity for network operators and authorities to temporarily prevent the decommissioning of systemically relevant power plants against reimbursement of costs as well as the hedging of gas consumption from systemically relevant power plants.[105]

The broader question concerning a proper market design[106] and the creation or promotion of so-called capacity markets[107] is so far merely being debated. Capacity markets

[102] PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP*. 2013, p. 150, p. 158.
[103] SCHMIDT-PREUß, M. *Festschrift für Peter Salje*. p. 397, p. 415 ff.
[104] §§ 13a – c EnWG.
[105] Cf. the details of the Reserve Power Plant Regulation from the 27th of June 2013, BGBl. (Federal Law Gazette) 2013-I, p. 1947.
[106] Cf. PIELOW, J. C. Die Energiewende auf dem Prüfstand des Verfassungs- und Europarechts. *EurUP*. 2013, p. 150, p. 158 ff.
[107] Cf. exemplary BÖCKERS, V., GIESSING, L., HAUCAP, J., HEIMESHOFF, U., RÖSCH, J. *Braucht Deutschland einen Kapazitätsmarkt für Kraftwerke*. Düsseldorfer Institut für Wettbewerbsökonomie, Düsseldorf, 2012, p. 4 ff.

would, in the interests of security of supply, ensure the willingness to invest in power plants and secure a reliable supply of electricity. The conceptual basis for the creation and design of such capacity markets has not yet been specified; concrete models are still lacking.

V. CONCLUSION

Germany has made its way to assume a pioneering role for the renewal of the energy industry and the regulatory framework for the integration of renewable energy in an industrial environment. This role has its price. It is a price that includes not only economic but also political, social and legal costs. The steps on the path of the Energiewende in an industrial society that is committed to the concept of sustainability, the integrity of creation and the responsibility towards future generations, have not yet been tested to any great extent. Accordingly, the course and direction of the development are still experiencing a number of teething troubles, cause significant learning costs and are associated with significant legal risks.

The expanded promotion of green electricity in the course of the Energiewende might be a major step towards the fulfilment of the climate protection objectives, which are urgently required in the interest of the general public. Responsible energy policy will have to combine this objective with other objectives, apart from environmental objectives other objectives on an economic and social nature must be considered and fulfilled. The conversion of energy through the accelerated phase-out of conventional power generation and the move to climate-protecting energy production from renewable sources is the major target of the German Energiewende that, at the same time, must not lose sight of the security of supply, economic affordability and social justice for the various affected energy consumers. So far these complex objectives have not been achieved.

The reform from the heart of Europe is, because of its objectives, not only important for the energy industry and national economy of Germany. It has a pan-European dimension, not only because of its effect on cross-border competition, but also in terms of whether it is possible to develop an exemplary Europe-wide reform. Experience proves that the reform cannot succeed without economic support. Coping with the thereby resulting national conflicts between the affected stakeholders and the tension in the cross-border areas is one challenge of national energy policy that often receives little consideration. It requires an extensive effort from all participants at Member State level and at the level of the European Union.

The German Energiewende, and the thereby established legislation, is an ongoing process and not yet completed. In the struggle to achieve a legal order that is appropriate for the complex objectives, a proper coordination of market and regulatory elements is needed. There is an increasing move towards a more competitive and less regulative conception of the development of renewable energies. A master plan and a road map are not yet developed; the legal framework will be further modified and adapted in the ongoing evaluation process of the gathered experiences.