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# Renewable Energy Policy in the EU: A Contribution to Meet International Climate Protection Goals?

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# Renewable Energy Policy in the EU: A Contribution to Meet International Climate Protection Goals?

## A. Introduction

The legal and political interrelations between national and EU energy policy competencies and the actual policies are multifaceted. In order to really understand those interrelations one has to analyse both the formal competencies of the EU as enshrined in the Treaty and the actual EU policies with direct and indirect impact on the choice of energy sources.

Member States have some freedom in defining a suitable national energy mix, which however is bound to the general EU rules in the areas of the internal energy market and environment policies, namely EU climate policies. The Lisbon Treaty has introduced new provisions for an energy competence, which - as we will show in detail - has only incrementally changed the limited EU role in steering directly national energy policies. The EU impact on the national energy mix is predominantly indirect, yet powerful.

So even if in the sphere of energy policy considerable national leeway persists, which can be used for organizing a national energy transition towards a renewable energy based electricity system like the one in Germany, the success of such an energy transition depends very much upon a supporting EU policy framework, especially as regards climate mitigation, special conditions for renewable energy and dedicated infrastructure development. Such a supporting EU framework is emerging, but it is far from being stable and consistent in the view of the long term requirements for a low carbon economy.

Our overall argument is that easy fixes do not work. Considering the different national preferences on the energy mix, it is premature to ask for a full-fledged EU energy competence leading to a harmonised support system for renewables. And nevertheless the emerging climate and renewables policies could also be a driver for deepened energy integration – rather as a bottom-up than a top-down process.

The chapter is divided in two parts: Part B contains a legal analysis of the new allocation of competence between Member States and the EU under the Lisbon Treaty, Part C contains the analysis of the emerging EU policy framework for decarbonisation and renewable energy.

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## B. Allocation of EU and Member State Energy Policy Competence under the Treaty of European Union

If EU energy policies – which until now have mainly been an outgrowth of European environmental and internal market policies – are poised to take on a life of their own thanks to the Lisbon Treaty, it is undeniable that energy and environmental policies are inextricably linked with each other, particularly when it comes to climate protection. This situation raises a number of issues concerning horizontal competency overlaps and the corresponding issue of vertical competency delimitation in terms of the leeway allowed to Member States to set their own energy policies. What this mainly boils down to is where Brussels' sphere of responsibility leaves off and where Germany's starts.

### I. Spheres of EU authority in Energy Policy

#### 1. Introduction

Whenever the EU exercises authority over a particular matter, the EU's overarching statutory competence principle known as the subsidiarity principle (pursuant to Article 5 of the Treaty on European Union (ex Article 5 of the Treaty establishing the European Union) must be taken into account. This Article lays out the fundamental principles for all actions taken by the EU and is thus the lynchpin of all decisions concerning the exercise of EU authority. The principles of limited authority known as (paragraphs 1 and 2), subsidiarity (paragraph 3), and proportionality (paragraph 4) in Article 5 of the Treaty on European Union constitute a legal code for all exercise of authority by the EU. It therefore follows that the EU only has authority to act insofar as such authority has been formally vested in the EU, the matter at hand involves a cross-border problem that can best be resolved by the EU, and the measures taken leave the Member States as much leeway as possible[1].

Insofar as one of the rare cases that falls solely within the EU's authority does not come into play (see Articles 2 and 3 of the TFEU), the Member States also retain authority for any matter that falls within the purview of the EU, until such time as the EU exercises its authority by enacting a concrete measure (this is referred to as the prohibitive effect).

The "old" Treaty establishing the European Community (TEC) contained no special provision concerning regulatory authority over the energy sector, whereby the competence to take measures in this regard was based on environmental competence (ex Article 175 TEC), authority over internal market harmonisation (ex Article 95 TEC), and authority over trans-European electricity grids (ex Article 156 TEC). It was not until the "new" Treaty of Lisbon entered into force on 1 December 2009 that the EU gained a special authority in the field of energy policy. Nevertheless the mentioned competences were for the largest part transferred to the Treaty on the Functioning of the European Union (TFEU) whilst retaining their original meaning.[2]

[1] *Calliess*, Subsidiaritäts- und Solidaritätsprinzip in der Europäischen Union, 2. ed. 1999, p. 69 ff. and p. 240 ff.
[2] In the interest of brevity, this treaty is referred to in the remainder of this document by its standard acronym, TFEU, or as "the Treaty."

## 2. Environmental Policy Authority Pursuant to Article 192(1) and (2) of the TFEU

Article 192(1) of the TFEU lays out the spheres of authority for EU actions that aim to realise the goals of Article 191. The Lisbon Treaty defines "promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change" as the goal of Community environmental policy, pursuant to Article 191(4)(indent 4) of the TFEU, and contains all other environmental policy provisions of the Lisbon Treaty.

In principle, environmental policy measures normally require a majority vote of the Council, and are also subject to a European Parliament co-decision procedure. However, in derogation of this practice and on policy-related grounds, Article 192(2) of the TFEU enumerates a series of specific types of actions that are of particular importance to the Member States and that are therefore subject to "the Council acting unanimously in accordance with a special legislative procedure." Article 192(2) of the TFEU is relevant for energy in two respects.

First, pursuant to Article 192(2)(a), policy instruments that take the form of tax incentives (i.e. "provisions primarily of a fiscal nature") are subject to a unanimous vote of the Council. In line with the narrow interpretation of the concept of "derogation" that prevails in the literature, such instruments here refer solely to taxes in the narrow sense of the term; and thus all other fees, charges and others such as eco-fees in the guise of special fees and user charges fall within the scope of paragraph 1 and are therefore not subject to the unanimous vote rule[3]. The word "primarily" means that the environmental measures must have a taxation focus; this is why for example tax deductions for low emission motor vehicles do not fall within the scope of paragraph 2. Against this backdrop, some authors have incorrectly claimed that the greenhouse gas emissions trading directive should have been adopted by a unanimous vote since issuance of the certificates for a fee constitutes a fee regulation within the meaning of paragraph 2(a)[4]. However, a unanimous vote was required on a proposed 1992 directive concerning a tax on carbon dioxide emissions and energy harmonisation.

Secondly, pursuant to Article 192(2)(c) of the TFEU, "measures significantly affecting a Member State's choice between different energy sources and the general structure of its energy supply" are subject to a unanimous vote and to an ensuing Member State veto. "Significantly" here means that the unanimous vote requirement only applies to final measures that affect the general structure of a Member State's energy supply[5]. Hence there was considerable opposition to the envisaged directive concerning government subsidies for renewable energies, as this was regarded as a significant interference in the Member States' energy supplies.

Although this wording of Article 192(2) of the TFEU lays down special procedural requirements for energy-related environmental measures, it implicitly states that as a rule such measures fall within the scope of Article 192 of the TFEU. Thus, this provision forms the

[3] *Kahl*, in: Streinz (Hrsg.), EUV/AEUV, 2. ed. 2012, Art. 192 para. 21.
[4] *Kirchhof/Kemmler*, Einstimmigkeitserfordernis im Rat bei der Beschlussfassung über eine europäische Richtlinie zum Handel mit Treibhausgasemissionsberechtigungen, EWS 2003, p. 217.
[5] *Kahl*, in: Streinz (ed.), EUV/AEUV, 2. ed. 2012, Art. 192 para. 34f.

basis for EU authority to adopt environmental policy measures, even in cases where such measures infringe on Member States' freedom of action[6].

## 3. Authority over Approximation of Laws Pursuant to Article 114(1) TFEU

Numerous energy policy measures, particularly those concerning establishment of the European internal electricity market (relating to this, the European Parliament recently spoke in terms of full "ownership unbundling," i.e. the separation of power companies' generation assets from their transmission networks in the electricity market), were based on the general harmonisation authority pursuant to Article 95 of the Treaty establishing the European Union (now Article 114 of the TFEU)[7], which stipulates that the relevant proposed legislation must relate to the establishment and functioning of the internal market. This criterion is deemed to be met insofar as a particular measure aims to eliminate either obstacles to basic freedom of action or discernible distortions of competition[8].

## 4. Trans-European Grid Authority Conferred by Article 172(1) TFEU

Brussels' authority in the sphere of renewable energies takes on outstanding importance when it comes to trans-European electricity grids. For example, equal amounts of solar energy and hydro power cannot be generated in all Member States owing to differences in climatic and topographical conditions. This in turn means that solar energy needs to be generated in southern Europe or North Africa, while hydro power mainly comes from Scandinavian and Alpine countries. But in order for this electricity to reach high-demand regions, an efficient grid structure is necessary; and this is where the energy and environmental policy significance of Article 172 TFEU comes in.

The EU's competence concerning the trans-European network (TEN-E) is derived from Articles 170 and 171 TFEU, which expands on the application domain of Article 172, which confers the requisite authority; whereby in this context the term "trans-European" indicates that the networks that are to be established or expanded exhibit a specific cross-border attribute and that, by extension, infrastructure projects of solely local or regional nature are not the EU's responsibility. Nonetheless, the concept of a trans-European network (TEN) also includes infrastructure projects that solely relate to the specific interests of individual Member States[9].

Article 170 of the TFEU contains a complete list of TEN goals that the EU is authorised to pursue ("promotion"). Contrary to the previous practice whereby Member States planned and constructed their networks in accordance with national standards, under the TFEU "action by the Union shall aim at promoting the interconnection and interoperability of national networks" – which means that former border or peripheral regions develop to focal points of the internal market by virtue of not only geographic and economic factors, but also oftentimes

[6] *Epiney*, Umweltrecht in der Europäischen Union, 2. Aufl. 2005, S. 60; *Pernice*, Umweltschutz und Energiepolitik, in: Rengeling (Hrsg.), Umweltschutz und andere Politiken der EG, 1993, p. 105 (110);
[7] *Calliess*, Entflechtung im europäischen Energiebinnenmarkt, 2008.
[8] *Kahl*, in: Calliess/Ruffert (ed.), EUV/EGV, 4. ed. 2011, Art. 114 para. 22.
[9] *Koenig/Scholz*, Die Förderung transeuropäischer Netzinfrastrukturen, EWS 2003, p. 223 (223 f.); *Bogs*, Die Planung transeuropäischer Netze, 2002, p. 49 f.;

owing to national defence or military infrastructure elements. Hence the Treaty also stipulates that the Union (a) "shall take account in particular of the need to link island, landlocked and peripheral regions with the central regions of the Union;" and (b) harmonise the Member States' diverse technical standards. The goal here is to establish the interoperable trans-European network called for by Article 170 ff of the Treaty, with a view to enabling the networks of neighbouring states to interconnect, thus filling any gaps resulting from network construction or expansion and efficiently interconnecting autonomous national networks in the interest of the functionality of the system as a whole.

Article 171 TFEU enumerates the following measures and other actions that the EU is authorised "to achieve the objectives referred to in Article 170": establishing guidelines; ensuring network interoperability; and providing financial support for projects of common interest. The fact that this constitutes a complete list is signalled in the German version of the treaty, by the absence of the term "in particular"[10].

While the EU has discretion to provide financial support or not, it is obligated to establish guidelines and ensure network interoperability, although there is no ranking relationship between these latter two types of actions. Hence guidelines can also be established in cases where no interoperability measures have been promulgated[11].

Viewed in this light, such EU guidelines are legally binding frameworks that Member States are required to implement. Article 4(3) of the Treaty on European Union stipulates that Member States are to "refrain from any measure which could jeopardise the attainment of the Union's objectives."[12]. The trans-European network guidelines were initially laid down in Decision No. 1254/96/EC amending Decision No. 1741/1999/EC. In addition, Decision No. 96/391/EC lays down a series of actions aimed at improving the conditions for expansion of the trans-European network in the energy domain. The list of categories defined in this decision and the ensuing Decision No. 1229/2003/EC concerning priority projects of common interest that are worthy of support was expanded by Article 8 of Decision No. 1364/2006/EC concerning projects of European interest, which are to be given (a) "appropriate priority" when "selected under the budget for the trans-European networks"; and (b) "particular attention" when "selected under other Community co-financing funds."

These objectives and priorities are to be supported by harmonised procedural principles aimed at their effective implementation. To this end, Article 8 of Directive 680/2007/EC lays down "general rules for the granting of Community support" that are to be fleshed out by the European Commission via its annual and multi-annual work programmes[13].

In its Green Paper "Toward a secure, sustainable and competitive European energy network"[14], the European Commission calls for far-reaching expansion of support (including

[10] *Schäfer/Schröder*, in: Streinz (ed.), EUV/AEUV, 2. ed. 2012, Art. 170 para. 3.
[11] EuGH, RoC 1996, I-1689, para. 26 – Parliament/Council.
[12] *Schäfer/Schröder*, in: Streinz (ed.), EUV/AEUV, 2. ed. 2012, Art. 171 para. 7.
[13] Beschluss der Kommission zur Festlegung des Arbeitsprogramms 2008 für Finanzhilfen für transeuropäische Netze – Bereich Energieinfrastrukturen –16 April 2008, K (2008) 1360, ABl. C 160,26 April 2008, p. 33.
[14] European Commission, Green Paper: toward a secure, sustainable and competitive European energy network, COM (2008) 782 final, 13 November 2008.

support) for the trans-European network, in its capacity as a key factor for the achievement of EU climate protection objectives.

## II. The New EU Authority over Energy Policy Introduced by the Lisbon Treaty

After the Lisbon Treaty came into force in 2009, the EU's authority over energy policy discussed above was completed by a specific energy policy competence pursuant to Article 194 TFEU, wherein authority to implement the energy policy objectives in Article 194(1) is granted by Article 194(2)(1). Article 194(2)(2) contains derogations concerning the relevant application domain, while Article 194(3) calls for a special legislative procedure for energy taxes.

### 1. EU Energy Policy Objectives, Particularly Those Laid Down in Article 194(1)(c) TFEU

The four energy policy goals laid down in Article 194(1) TFEU are as follows: (a) ensure the functioning of the energy market; (b) ensure security of energy supply in the Union; (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and (d) promote the interconnection of energy networks.

These objectives are subject to the following three guiding principles: EU energy policy is to be carried out (a) "in a spirit of solidarity between the Member States; (b) "in the context of the establishment and functioning of the internal market; and (c) "with regard for the need to preserve and improve the environment." These vague objectives are essentially the same as those laid down previously by the EU on the basis of its prior "statute law". The objective laid down in Article 194(1)(c) of the TFEU ("promote energy efficiency and energy saving and the development of new and renewable forms of energy") is particularly relevant for energy and environmental policy. However, the extent of the environmental policy authority granted by Article 192(2) of the TFEU (ex Article 175(2) of the Treaty establishing the European Union) is unclear – particularly as to whether all renewable energy matters are now to be governed by Article 194. Most authors who have addressed this matter (albeit in a somewhat cursory manner) have concluded that Article 194 is a *lex specialis*[15]. Although this would theoretically meet the goal – pursuant to the EU's new sphere of authority – of folding the EU's current energy policy competence into a new energy regulation[16], there are also persuasive arguments against such a reading of the provision, namely the following:

First, Article 194 speaks in terms of promoting not renewable energies but rather the development of such energies – by which, it is safe to assume, only technological development could possibly be meant[17]. Likewise inconsistent with a blanket lex specialis reading of the provision is the stipulation that the EU's authority to act is "[w]ithout prejudice to the application of other provisions of the Treaties." Paragraph 2(2) supports this concept as

[15] *Britz*, Klimaschutzmaßnahmen der EU und der Mitgliedstaaten, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 71ff.; *Heemeyer*, Kompetenzordnung eines zukünftigen europäischen Verfassungsvertrags, 2004, p. 228 f.; *Trüe*, JZ 2004, p. 779 (786f.).
[16] Draft of the Treaty Establishing a Constitution for Europe: Dok CONV 727/03, Annex VII, p. 110.
[17] *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 21 (60).

well in that it limits the EU's energy competence to situations involving a measure's "choice between different energy sources and the general structure of its energy supply," albeit "without prejudice to Article 192(2)(c)" of the TFEU. But this non-prejudice clause only makes sense if Article 192 of the Treaty applies in all cases in conjunction with Article 194.

Hence the EU's newfound authority over energy policy solely empowers it to promote the technological development of renewable energies, whereby any economically or ecologically motivated support henceforth is governed by environmental regulations.

## 2. Authority Granted by Article 194(2) TFEU

Article 194(2)(1) empowers the EU to "establish the measures necessary to achieve the objectives in paragraph 1" – an extremely vague formulation, which, coupled with other EU authority, makes its energy policy jurisdiction seem all-encompassing at first glance, while mandating a far reaching limitation on this authority to the effect that such policy measures "shall not affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, without prejudice to Article 192(2)(c)."

Although this limitation is similar to the aforementioned environmental policy provision pursuant to Article 192(2)(c) of the Treaty, it goes considerably further for the following three reasons:

(1) The requirements laid down in Article 192(2) do not have to be met cumulatively ("or"), unlike in Article 194 ("and"), they can be met alternatively.

(2) There is no requirement that the measures must have a "significant" effect on the areas subject to derogation. Article 192(2)(2) TFEU should be interpreted narrowly as a derogation[18], which thus does not apply across the board irrespective of the intensity of the measure in question[19]. It then follows that a measure can be deemed to affect a Member State's energy supply solely in cases where, for example, it relates solely to energy supply related details such as technical matters[20]. Nonetheless, in the absence of an expressly defined significance threshold, the derogation clause grants the Member States considerable sovereignty vis-à-vis Community energy policy.

(3) Unlike the procedure stipulated by Article 192(2)(c) of the Treaty[21], its Article 19(2)(2) lays down a genuine restriction on EU energy policy authority, for the formulation "without prejudice to Article 192(2)(c)" should by no means be regarded as a mere procedural-law allusion to the unanimous Council vote provision of paragraph 3. Unlike the environmental policy measures governed by Article 192(2)(c) of the Treaty, energy policy measures with no environmental implications that could potentially infringe the Member States' sovereign right

[18] *Calliess*, in: Calliess/Ruffert (ed.), EUV/EGV, 4. ed. 2011, Art. 192 para. 28; *Käller*, in: Schwarze (Hrsg.), EU-Kommentar, 3. ed. 2012, Art. 192 para. 12; *Tiefenthaler*, Planning in Europe – The Impact of European Union Law on National Planning Systems and Territorial Transnational Cooperation, JEEPL 2011, p. 115 (119).
[19] *Ehricke/Hackländer*, Europäische Energiepolitik auf der Grundlage der neuen Bestimmungen des Vertrags von Lissabon, ZEuS 2008, p. 579 (599).
[20] *Neveling*, Der Europäische Verfassungsentwurf, Grundlage für eine erweiterte Energiepolitik der EU?, ET 2004, p. 340 (343);
[21] *Tiefenthaler*, Planning in Europe – The Impact of European Union Law on National Planning Systems and Territorial Transnational Cooperation, JEEPL 2011, p. 115 (128ff).

to adopt such measures are not subject to the unanimous Council vote provision of paragraph 3, since in fact the Council has no authority in such matters[22]. This concept is supported by two factors. First, paragraph 3 calls for a unanimous Council vote on energy tax measures only – *and* "without prejudice to paragraph 2"[23]. Secondly, such a reading runs counter to the process that gave rise to the provision[24].

### 3. The Unanimous Council Vote Provision of Article 194(3) TFEU

The derogation in Article 194(2(2) substantially limits the EU's jurisdiction over Community energy policy, which is further limited by the procedural rule laid down in paragraph 3, which – in keeping with Article 192(2)(a) of the TFEU (ex Article 175 2(a) of the Treaty establishing the European Union) and the tax derogation provisions in other treaties – requires a unanimous Council vote "after consulting the European Parliament" in matters that are "primarily of a fiscal nature." Notwithstanding the necessarily narrow reading of this restriction, it shows that Member States still regard energy law as a highly sensitive issue when it comes to their national sovereignty.

### 4. Interplay between Article 194 of the TFEU and Other Areas of EU Jurisdiction

The relationship between Article 194 of the Treaty and the EU's environmental policy authority was discussed above. Other issues regarding the scope of EU authority in this domain are raised by Articles 114, 122, and 222 of the TFEU.

#### a) Interplay between Article 194 TFEU and Article 114 TFEU (Concerning Approximation of Laws)

In relation to Article 114 of the TFEU (ex Article 95 of the Treaty establishing the European Union), Article 194 is a *lex specialis*[25]. This reading is supported by the wording of Article 194, whose paragraph 1(a) expressly mentions the energy market, and, historically speaking, by the convention presidium's intention of aggregating energy policy authority[26]. Hence the controversy about the admissibility of future-oriented approximation of laws is superfluous, by dint of the fact that pursuant to Article 194 of the TFEU it is admissible beyond the shadow of a doubt[27].

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[22] *Ehricke/Hackländer*, Europäische Energiepolitik auf der Grundlage der neuen Bestimmungen des Vertrags von Lissabon, ZEuS 2008, p. 579 (599).

[23] *Ehricke/Hackländer*, Europäische Energiepolitik auf der Grundlage der neuen Bestimmungen des Vertrags von Lissabon, ZEuS 2008, p. 579ff.

[24] Draft of the Treaty Establishing a Constitution for Europe: Dok CONV 725/03; *Calliess*, Sinn, Inhalt und Reichweite einer europäischen Kompetenz zur Energieumweltpolitik, in: Cremer/Pielow (Hrsg.), Probleme und Perspektiven im Energieumweltrecht, 2010, p. 20ff.

[25] *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (Hrsg.), Europäisches Klimaschutzrecht, 2009, p. 21 (46);

[26] Draft of the Treaty Establishing a Constitution for Europe: Dok CONV 727/03, Annex VII, p. 110.

[27] *Neveling*, Der Europäische Verfassungsentwurf, Grundlage für eine erweiterte Energiepolitik der EU?, ET 2004, p. 340 (343); *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (Hrsg.), Europäisches Klimaschutzrecht, 2009, p. 21 (51).

### b) Interplay between Article 194 TFEU and EU Authority over the Trans-European Network Pursuant to Article 172 TFEU

It is unclear whether Article 194 TFEU (ex Article 156 of the Treaty establishing the European Union) is a priority regulation in its capacity as a more specific regulation[28]. Although the contention that Article 172 is a more specific provision than Article 194 of the TFEU would appear to be plausible at first glance, it is negated by the fact that Articles 170, 171 and 172 TFEU relate to all Member State networks and access thereto, while Article 194 solely governs energy networks. Hence, in view of the lesser statutory scope and application domain of Article 194, it is in fact the more specific provision. However, the application domain of Article 194 still remains to be determined, since Article 172 remains fully applicable in tandem with Article 194.

The issue here is whether the EU's new authority over support for energy network interconnection measures also includes jurisdiction over support for the trans-European network and interoperability of the various Member States' energy networks pursuant to Article 170(2) TFEU. This would appear to be the case since interconnection is by definition the umbrella term in this context, i.e. interoperability is a subset of and is subsumed by interconnection. Interoperability refers to the technical ability of two systems to interact with each other, a process that chiefly involves common or at a minimum non-mutually exclusive standards. "Interoperability of national networks" refers to the preconditions for trouble-free interconnection of national networks and the components thereof, particularly when it comes to establishment of a trans-national network[29].

The purpose of such a network is to compensate for the technical incompatibility of individual national networks (e.g. line voltage differences) by harmonizing the relevant technical standards or developing purpose-built technical equipment. In the latter case, it is crucial to ensure from the outset that the relevant technical standards are compatible with each other. Interoperability likewise encompasses the organisational realm, which means that harmonisation measures should also lay the groundwork for economically optimal networks that deliver the best possible security of operation. To this end, both statutory regulations and the applicable EU and industry-organisation standards should be adhered to[30].

Interconnection (in a technical system) has a broader meaning, on the other hand, insofar as it refers to the interconnection of physical network structures by establishing the relevant standards and installing the relevant equipment at the interconnector and transfer points. However, in economic terms interconnection refers to a scenario where technically and logically interconnected networks are also used. Hence the term interconnection covers a broad range of scenarios, in that in a general sense it refers to market-actor access to a network used in common by all such actors. For electricity networks it refers to interconnection of the electricity networks of various states. Hence interconnection is used as a catch-all term – for example in a European Commission communication titled "Recent

[28] *Trüe*, JZ 2004, p. 779 (786f.); *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 21 (60).
[29] *Erdmenger*, in: von der Groeben/Schwarze (ed.), EUV/EGV, 2003, Art. 155 para. 19.
[30] *Calliess*, in: Calliess/Ruffert (ed.), EUV/EGV, 4. ed. 2011, Art. 194 para. 16.

progress with building the internal electricity market"[31], which states as follows: "[A]greement has been reached to analyse existing bottlenecks in terms of interconnectors between systems."

Hence the EU's authority to "promote the interconnection of energy networks" pursuant to Article 194(1)(d) TFEU goes beyond the scope of that provided by current legislation, since this authority is limited by Article 172 of the Treaty in the following ways:

(1) Pursuant to Article 171(1)(indent 1) of the Treaty, the EU has the authority to enact mandatory guidelines – which however are solely intended to coordinate the relevant measures[32];

(2) The authority granted by Article 171(1)(indent 2) of the Treaty is limited solely to measures that "may prove necessary to ensure the interoperability of the networks," i.e. existing networks only; and

(3) Pursuant to Article 171(1)(indent 3), the EU is only allowed to "support projects of common interest supported by Member States"[33]. In contrast, Article 194 of the Treaty empowers the EU to undertake interconnection projects of its own; it also applies to projects that solely have a bearing on the interests of individual Member States. Although the EU can require Member States to carry out such projects, it cannot stipulate attendant implementation methods (e.g. specific power line routes) by virtue of the fact that the EU lacks the authority to plan such implementation (Article 5(2) of the Treaty on European Union)[34] and of the subsidiarity principle as well (Article 5(3) of the Treaty on European Union). Thus, authority over such matters is left to the Member States[35].

Hence the question arises as to the actual scope of the application domain under Article 172 of the Treaty, since the trans-European network provisions of Article 170(1) of the Treaty still apply to energy policy. It is possible that Article 172 empowers the EU to enact basic general regulations across multiple domains, while Article 194 allows for the adoption of regulations that apply specifically to energy networks. It would also probably be necessary to interconnect with other third state networks (pursuant to Article 172), owing to the fact that, unlike Article 194, Article 171(3) states that "The Union may decide to cooperate with third countries to promote projects of mutual interest and to ensure the interoperability of networks."

[31] Mitteilung der Europäischen Kommission an den Europäischen Rat und das Europäische Parlament: Die jüngsten Fortschritte bei der Schaffung eines Elektrizitätsbinnenmarktes, KOM(2000) 297 endg. Vom 16.05.2000.

[32] *Härtel*, Handbuch Europäische Rechtsetzung, 2006, § 13 Rn. 13; *Trüe*, Das System der Rechtsetzungskompetenzen, 2002, p. 109.

[33] *Voet van Vormizeele*, in: Schwarze (ed.), EU-Kommentar, 3. ed. 2012, Art. 172 para. 9.

[34] *Tiefenthaler*, Spacial Planning in Europe – The Impact of European Union Law on National Planning Systems and Territorial Transnational Cooperation, JEEPL 2011, p. 115 (124f.).

[35] *Rodi*, in: Vedder/Heintschel von Heinegg (ed.), EUV/AEUV/Grundrechte-Charta, 1. ed. 2012, Art. 194 para. 8.

## III. Foreign Policy Concerning Energy

According to European Court of Justice rulings, the EU has implicit authority to enter into international treaties that correspond with EU authority over internal matters[36]. Hence the EU has authority over all foreign relation matters, including the intra-Community aspects of such matters. This means that EU Member States are prohibited from entering into any third-state treaty insofar as the EU has assumed its internal responsibility to enact regulations for the matter in question.

Of particular significance in this context is Article 191(1)(d) TFEU, which calls for the "promotion of measures at international level to deal with regional or worldwide environmental problems" and aims according to the Lisbon Treaty now explicitly to fight global warming in a manner that promotes the achievement of Community environmental goals. In case of uncertainty, this provision also allows for the conclusion of EU energy and environmental policy treaties based on a number of legal principles.

## IV. Scope of the EU's New Energy Policy Competence under Article 194 TFEU

Opinions in literature vary concerning the EU's new energy policy authority granted by Article 194 TFEU. Concerns have been expressed that this new authority will prompt the EU to adopt additional regulations, since the vaguely worded objectives of Article 194 appear to grant the EU blanket authority over all energy policy matters[37]. However, most authors feel that the change will merely result in amalgamation of the EU's current authority derived from its authority in the field of environmental policy, infrastructure policy and internal market policy[38].

As noted above, the coming into force of Article 194 TFEU following adoption of the Lisbon Treaty merely expanded the EU's policymaking authority over the interconnection of energy networks. Hence Article 194 grants the EU no genuinely new authority for such interconnection, but instead merely expands the scope of its existing authority.

In view of the fact that, as we have seen, Article 194 TFEU does not endow the EU with all-encompassing new authority, its significance is largely political in nature – apart, that is, from the greater legal certainty and clarity created by the measure[39]. Thus, from now on EU energy

[36] EuGH, RoC 1971, 263, para. 15f.

[37] *Jasper*, Der Verfassungsentwurf des europäischen Konvents und mögliche Konsequenzen für das Energie- bzw. Atomrecht, ZNER 2003, p. 210 (211); *Classen*, The Draft Treaty Establishing a Constitution for Europe, GYIL 46 (2003), p. 323 (351); *Götz*, Kompetenzverteilung, in: Schwarze (ed.), Der Verfassungsentwurf des Europäischen Konvents, 2004, p. 43 (46).

[38] *Blanke*, Die Zuständigkeit der Union, ZG 19 (2004), p. 225 (232); *Görlitz*, Europäischer Verfassungsvertrag und künftige EU-Kompetenzen, DÖV 2004, p. 374 (381); *Rodi*, in: Vedder/Heintschel von Heinegg (ed.), EUV/AEUV/Grundrechte-Charta, 1. ed. 2012, Art. 194 para. 2; *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 21 (51).

[39] *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 21 (51f); *Neveling*, Der Europäische Verfassungsentwurf, Grundlage für eine erweiterte Energiepolitik der EU?, ET 2004, p. 340 (342).

policy will issue forth from "a single source"[40] in a manner that will allow for coherent harmonisation of policy goals and measures.

## V. Exercise of Energy Policy Authority by the EU

The manner in which the EU exercises its energy policy authority is governed by the stipulations of the EU energy regulations that are discussed above, as well as the general provisions concerning the exercise of power pursuant to the Lisbon Treaty (Article 5 of the Treaty on European Union).

### 1. Meaning of the Energy Policy Solidarity Clause under EU Law

Article 194 TFEU stipulates that EU energy policy objectives are to be pursued "in a spirit of solidarity between the Member States." This clause is a statutory innovation under EU law, since it makes jurisdiction over energy policy subject to the overarching principle of solidarity among the Member States. Under EU law, application of this clause is to be governed by the general EU solidarity principle.

By adopting a solidarity clause concerning energy policy competence, the Member States have sent a clear signal that they regard energy as a sector involving their common interests; in other words, Member States have realised that when it comes to energy, they are all in the same boat. This solidarity principle gives rise to the two types of binding solidarity obligations referred to in Articles 194 and 222. First, the Member States are enjoined from taking any action in the name of national interest that would interfere with achievement of energy policy goals of common interest – although this applies only to areas that fall within the scope of EU energy policy authority. And secondly, Member States may be obligated to provide assistance to one or more states that are facing an energy policy emergency, particularly in connection with security of supply[41]. This latter aspect of the solidarity principle represents a mindset shift from one where security of supply, once regarded as a national matter, is now seen as a policy concern for the EU as a whole. The solidarity principle enables a Member State that is facing an energy supply shortage – occasioned by domestic policy conflicts or the like – to obtain the assistance of another Member State. At the same time, it sets the stage for application of the EU's general subsidiarity principle, which is a precondition for joint action that the EU is required to demonstrate it has undertaken. The energy policy solidarity clause acts as a corrective to the subsidiarity principle by presupposing that the objectives of energy policy measures cannot be adequately governed at national level alone and can be governed more efficiently in Brussels. In effect, the solidarity clause shifts the burden of proof to the sphere of a collective procedure.

At first glance, the energy policy solidarity clause has no direct implications for energy and environmental law, since the clause's main focus is security of supply. But measures in this sphere can also have an impact on environmental policy, one example of this being the EU

[40] *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 21 (51).

[41] Mitteilung der Europäischen Kommission an den Europäischen Rat und das Europäische Parlament, Eine Energiepolitik für Europa, KOM(2007) 1 final,10 January 2007; *Ehricke/Hackländer*, Europäische Energiepolitik auf der Grundlage der neuen Bestimmungen des Vertrags von Lissabon, ZEuS 2008, p. 579 (595).

European Commission's *Energy Security and Solidarity Action Plan* (2008), which contains measures aimed at promoting development of the combined heat and power (CHP) sector.

### 2. Stipulations of Article 11 TFEU

The Treaty's Article 11 – the likes of which are not to be found in any Member State statute – stipulates that "Environmental protection requirements must be integrated into the definition and implementation of the Union policies and activities, in particular with a view to promoting sustainable development," whose requirements stem from the EU environmental policy objectives and principles laid down in Article 191(1) and (2) of the Treaty. Thus, this clause means that all measures that are governed by Article 194 of the Treaty must be realised in a sustainable and environmentally compatible manner.

## VI. Remaining Competences of the Member States

The entirety of the EU's energy and environmental policy competence is governed by principle of shared competences pursuant to Article 4(2)(i) TFEU[42], whereby the Member States "exercise their competence to the extent that the Union has not exercised its competence" (Article 2(2) TFEU) – in which case the Member States are free to exercise their own policymaking competence, subject to the principle of loyal cooperation with the EU.

### 1. Unilateral Action by Member States

Like ex Article 176 of the Treaty establishing the European Union, Article 193 TFEU allows individual Member States to introduce more stringent environmental protection measures under Article 191 of the TFEU. Article 194 of the Treaty contains no such provision in the energy policy realm, and thus not for energy law either. This lack is sometimes regarded as a structural shortcoming that works to the detriment of environmental protection in the EU, particularly in the realm of energy efficiency measures and technical development of renewable energies[43]. Financial aid for the furtherance of renewable energies falls within the scope of environmental rather than energy competence, as has always been the case.

It has been suggested, in light of the non-prejudice clause of Article 194(2) of the Treaty, that Article 193 be applied *mutatis mutandis* to energy and environmental law[44] – a dubious proposition, as it would set the stage for an unintended statutory loophole. Such a reading of the non-prejudice clause would also be inadvisable in light of the uniqueness of energy and environmental law, whose limited aims and measures necessitate special "reconciliation" provisions between EU and national policy measures. The delicate balance of the European energy and environmental policy triad could be upended by national "go it alone" measures[45]. The lack of a clause allowing for the adoption of more stringent protective measures can thus

[42] *De Sadeleer*, Principle of Subsidiarity and the EU Environmental Policy, JEEPL 2012, p. 63 ff.
[43] *Britz*, Klimaschutzmaßnahmen der EU und der Mitgliedstaaten, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 71 (86); *Kahl*, Energie und Klimaschutz, in: Schulze-Fielitz/Müller (Hrsg.), Europäisches Klimaschutzrecht, 2009, p. 21 (61).
[44] *Britz*, Klimaschutzmaßnahmen der EU und der Mitgliedstaaten, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 71 (86).
[45] See *Gundel*, Nachhaltigkeit und Energieversorgung, in: Kahl (ed.), Nachhaltigkeit als Verbundbegriff, 2008, p. 443 (468) for a critical view of market differentiation resulting from such measures.

be viewed as the embodiment of the target and measure limits imposed by energy and environmental law.

### 2. Restrictions Imposed by Article 345 of the TFEU (ex Article 295 EGV)

The Treaty's Article 345, which is generally regarded as a provision that imposes limitations on competence[46], stipulates that "The Treaties shall in no way prejudice the rules in Member States governing the system of property ownership" – which has led some to conclude, for example, that the EU is prohibited from adopting property-related measures.

However, Article 345 of the Treaty was originally promulgated in order to assuage Member State fears that EU laws would result in privatisation and/or nationalisation[47]. Hence it follows from a historical reading of Article 345 that it aims to ensure that the EU remains neutral when it comes to basic issues concerning national economies; and thus the current prevailing view refers to the wording of Article 345, which concerns not property rights but rather property ownership[48] – which basically means decisions concerning nationalisation and privatisation.

## C. Advancing the EU Energy Policy Framework in Renewables

The EU has pivotal competences for a number of frameworks that relate to the expansion of renewable energies, to which end the EU has adopted the following interrelated policies and strategies in particular:

- EU climate protection policies in conjunction with mandatory objectives for greenhouse gas reduction; and a broad range of implementation instruments in this regard, notably emissions trading.
- EU energy policies, in particular those involving to some extent competing objectives as regards an internal European electricity market and expansion of renewable energy capacity.
- EU infrastructure policy, via the trans-European network.
- European energy research (not discussed in detail in this report).

In all four of these areas, relevant developments and discussions are occurring that improve the chances of successful implementation of renewable energy policies in the various Member States. Hence it is of crucial importance that these EU fields of endeavour unfold in a manner that promotes and institutionalises national strategies aimed at an all-renewable electricity supply. Achievement of ambitious national objectives will be greatly eased if the dynamic expansion path mandated by the Renewable Energy Directive[49] continues to unfold in the post-2020 period. In addition, such an expansion via a coordinated approach between the various Member States would be less cost-intensive than if each individual Member State

[46] *Klingreen*, in: Calliess/Ruffert (Hrsg.), EUV/EGV, 4. ed. 2011, Art. 345 para. 5.
[47] BT-Drs. 2/3440, Anhang C, p. 154.
[48] *Calliess*, Entflechtung im europäischen Energiebinnenmarkt, 2008, p. 27ff.
[49] 2009/28/EC

expands its own renewables[50]. Our analysis of the situation clearly shows that the EU has robustly set the stage for renewable energy expansion; whereby in light of this analysis there is good reason to believe that an EU framework conducive to development of renewable energies will be in place for the period after 2020 as well. This framework needs strengthening.

## I. Refinement of EU Climate Protection Objectives

The EU climate package of December 2008 – which calls for a triple target of 20 percent reduction of greenhouse gas emissions with a 30 percent contingent option; a 20 percent share of energy from renewable sources; and 20 percent greater energy efficiency relative to the current trend – could potentially pave the way for a transition to a climate neutral and largely or wholly renewable electricity supply. This package, whose elements include a reform of the EU emissions trading system and an amended directive concerning the furtherance of renewable energies, also constitutes a breakthrough after the prior long, drawn-out process of EU integration in energy policy, since the package grants the EU considerably greater climate policy authority than that wielded by the Member States[51]. This breakthrough from climate policymaking practices of the past was based on a relatively broad consensus in the EU concerning the importance of European climate policymaking in the realms of security, economic, and industrial policy.

However, this consensus has been greatly weakened by the economic crisis and the failure of the UN climate summits since Copenhagen – a phenomenon graphically demonstrated by the fact that the EU has as yet been unable to reach an agreement concerning a unilateral 30 percent greenhouse gas emissions reduction by 2020[52]. This goal, whose advisability is demonstrated by European Commission and other economic analyses[53], is also seen as a way to revitalise international energy policy[54] but no longer commands a majority within the European Commission or among the Member States – a fact demonstrated by this headline from *Ends Daily* of 10 June 2010: "30% $CO_2$ reduction goal put on the back burner."

[50] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (20.04.2010); *Czisch*, Möglichkeiten des großräumigen (transeuropäischen) Ausgleichs von Schwankungen großer Teile intermittierender Elektrizitätseinspeisung aus regenerativen Energiequellen in Deutschland im Rahmen einer 100% regenerativen Stromerzeugung mit dem Zeithorizont 2050, 2009, http://www.umweltrat.de/SharedDocs/Downloads/DE/03_Materialien/2010_MAT40_Czisch.pdf?__blob=publicationFile (19.12.2012).

[51] *Olivier* et al., Consequences of the European Policy Package on Climate and Energy, 2008; *Geden*/*Fischer*, Die Energie- und Klimapolitik der Europäischen Union, 2008; *Schreurs/Selin/VanDeveer* (ed.), Transatlantic Environment and Energy Politics, 2009; *Jordan* et al. in: Jordan et al., Climate Change Policy in the European Union. Confronting the Dilemmas of Mitigation Policy an Adaptation?, Cambridge 2010, p. 3 ff.

[52] *Geden* et al., EU-Energy Roadmap 2050 – Surrogat für eine ehrgeizige Dekarboniserungspolitik?, in: Energiewirtschaftliche Tagesfragen 62/10 (2012), p. 43

[53] Mitteilung der Europäischen Kommission an das Europäische Parlament und den Rat, und den Wirtschafts- und Sozialausschuss und den Rat der Regionen, Analyse der Option zur Verringerung der Treibhausgasemissionen um mehr als 20 % und Bewertung des Risikos der Verlagerung von $CO_2$-Emissionen, KOM(2010) 265 final 26 May 2010.

[54] Wissenschaftlicher Beirat Globale Umweltveränderungen, Climate Policy Post-Copenhagen, Berlin 2010.

This aside, the benchmark for medium term EU climate protection policy comprise the often-stated position of the European Council in this regard[55] and the roadmap to 2050[56], both of which place at least an 80 % greenhouse gas reduction by 2050 on the EU's policy agenda. In the view of the European Commission, only a minute proportion of these reductions can be achieved through implementation of flexible mechanisms outside the EU[57]. Later the Mobility and Energy General Directorates[58] of the European Commission[59] have elaborated strategies, scenarios and consultation documents further specifying the sectorial dimension of a low carbon economy.

Those roadmaps for the run-up to 2050, if politically supported and effectively implemented, would enable Europe to achieve the greenhouse gas reductions necessary to adhere to the 2 degrees Celsius goal[60], and thus be an indispensable yardstick for the climate protection policies of industrialised states. From the perspective of the EU's envisaged unilateral greenhouse gas reduction goal, such roadmaps also can be considered to be sensible instruments that are essential in order to establish guideposts for technological development and above all avoid technological lock-in effects whose reversal would exact a high economic cost if binding international climate policies came into force aimed at bringing about the requisite reductions[61].

So far however it has been difficult to form the necessary political consensus by Member States to anchor the overarching objective or respective sector targets more firmly in EU policy[62]. After difficult negotiations within the Environment Minister and the Energy Minister Councils, 26 of 27 Member States recognized that "under certain assumptions .. that decarbonisation of the energy sector on a EU wide scale is technically and economically feasible"[63]. So the roadmap has been accepted as "guidance in the further process" by a strong majority of Member States, without firmly incorporating the goal of decarbonisation and intermediate steps into an official and binding strategy.

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[55] Rat der Europäischen Union, Schlussfolgerungen des Vorsitzes, Tagung des Europäischen Rates 29/30 October 2009, 15265/1/09.

[56] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Roadmap for moving to a competitive low carbon economy in 2050, COM(2011) 112 final, 8.03.2011.

[57] Mitteilung der Europäischen Kommission an das Europäische Parlament, den Rat, und den Wirtschafts- und Sozialausschuss und den Rat der Regionen, Analyse der Optionen zur Verringerung der Treibhausgasemissionen um mehr als 20 % und Bewertung des Risikos der Verlagerung von $CO_2$-Emissionen, KOM(2010) 265 final, 26 May 2010, p. 6.

[58] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system. White Paper. Com (2011) 144 final, Brussels 28.3.2011

[59] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Energy Roadmap 2050. Com (2011) 885 final, Brussels, 15 December 2011.

[60] Sachverständigenrat für Umweltfragen, Umweltgutachten 2008.

[61] *Holm-Müller/Weber*, Plädoyer für eine instrumentelle Flankierung des Emissionshandels im Elektrizitätssektor, 2010, http://www.umweltrat.de/SharedDocs/Downloads/DE/06_Hintergrundinformationen/2010_06_Emissionshandel_Strom.pdf (19.12.2012); Sachverständigenrat für Umweltfragen, Weichenstellungen für eine nachhaltige Stromversorgung, 2009; Unruh, Understanding carbon lock-in, Energy Policy 2000, p. 817-830.

[62] *Geden* et al., EU-Energy Roadmap 2050 – Surrogat für eine ehrgeizige Dekarboniiserungspolitik?, in: Energiewirtschaftliche Tagesfragen 62/10 (2012), p. 41

[63] Council of the European Union, Presidency Conclusions on the Energy Road Map 2050, ENER 320, Brussels 18 June 2012.

Meanwhile proposals for sectorial roadmaps for the energy and the transport sectors exist that comply with the overall targets for the Low Carbon Economy Roadmap. It has to be emphasized that reduction targets are differentiated from sector to sector. In the electricity sector, reduction will have to be higher than for transport in order to achieve efficient reductions. Even the 80 percent goal would make it necessary to aim for full decarbonisation.[64] The case for target differentiation would be less evident for a 95% reduction, but the Commission did not opt for this more ambitious target[65].

## II. Roadmap 2030: Additional Expansion Objective for Renewable Energies

### 1. A Policy Feedback Approach to Renewable Energy Expansion in the EU

Different energy mixes are in principle available in order to achieve the sectorial climate protection goals discussed above – one such path being a massive pan-European expansion of renewable energies beyond the mandated 2020 goal, with the aim of achieving a wholly renewable electricity supply. The different scenarios calculated for underlying the technical and economic feasibility of the Energy Roadmap 2050 all assume a renewables share in the electricity sector in the range of 60% or more. That applies even for a scenario relying strongly on nuclear energy and another relying more on coal combustion with CCS. The Commission scenarios furthermore conclude that the overall cost of a low carbon energy system 2050 is not significantly higher than of a business as usual scenario. Moreover, technology choice is not a critical factor as regards cost – most scenarios result in similar cost levels. So next to energy efficiency, strong renewables growth beyond 2020 belongs to the no-regret options of a low carbon energy system. The only exception - due to a number of methodological shortcomings of the scenarios – is an electricity system being completely based upon renewable energy sources.[66]

The EU is already on the way towards such a predominantly renewables-based electricity system. Most Member State action plans for implementation of the Renewable Energy Directive call for a very significant renewable energy expansion – an evolution that would result in an EU electricity supply that is more than one third renewable in 2020. Achieving this will necessitate substantial growth in the renewable energy sector in all Member States, as well as the establishment of robust incentives for renewable energy development[67], grid expansion and other complementary measures. It is also likely that coalitions of economic and political actors will rise to greater prominence in all Member States. And thus, spurred by EU

[64] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012); *Jones*, A zero carbon energy policy for Europe, in: Fouquet et al., EU Energy Law, Vol. 3,3, Leuven 2010, S. 21-101; *Edenhofer* et al., RECIPE – The Economics of Decarbonization, Potsdam Institut für Klimafolgenforschung et al., 2009, p. 7; Öko-Institut/Prognos AG, Modell Deutschland – Klimaschutz bis 2050, Basel 2009.

[65] *Hey*, Low-carbon and Energy Strategies for the EU. The European Commisions´s Roadmaps: A sound Agenda for a Green Economy?, in: GAIA 21/1 (2012), p. 43- 47

[66] Communication from the Commission to the European Parliament, the Council, the European Economic and the Social Committee and the Committee of the Regions, Energy Roadmap 2050. Com (2011) 885 final, Brussels, 15 December 2011; *Hey*, Low-carbon and Energy Strategies for the EU. The European Commisions's Roadmaps: A sound Agenda for a Green Economy?, in: GAIA 21/1 (2012), p. 43- 47; *Matthes*, Langfristperspektiven der europäischen Energiepolitik- die Energy Roadmap 2050 der Europäischen Union, in: Energiewirtschaftliche Tagesfragen, 62/1-2 (2012), p. 50 - 53

[67] *Rathmann* et al., Renewable Energy policy Country Profiles, Köln 2009.

climate-friendly economic objectives, we are likely to see an altogether more favourable framework for renewable energy expansion in the post-2020 period.

Other pathways towards decarbonisation, relying more on nuclear energy or coal with CCS seem to be less realistic. This can be illustrated at the example of a number of scenarios, elaborated for or in close cooperation with leading power companies, which rely on massive expansion of nuclear power in the order of 200 GW and coal CCS amounting to some 120 GW and limit the share of renewable electricity to 40 %[68]. As such visions imply the massive reconstruction of 100 – 150 new nuclear power plants they have a limited chance to stand opposition in many Member States, andthe European Commission favoured an economically and politically more rational approach with much lower shares of nuclear or coal even in the respective pronuclear or pro-coal scenarios.

That said, we need to bear in mind that the EU's competence, when it comes to exercising a direct influence over Member State energy source choices, is limited, which means that any measures in this regard must stem from the EU's environmental competence pursuant to Article 192(2) TFEU, and must be adopted by unanimous consent of all 27 Member States for measures that have a major impact on national energy source policy. Hence any EU effort to fix the putative 2050 energy mix in stone would be premature at this point from both an institutional and political standpoint, regardless of whether a wholly renewable electricity supply (as we advocate for Germany) or a mix of nuclear, fossil and renewable energy is involved.

The relatively few actors that have come out in favour of a wholly renewable electricity supply are mainly found in environmental groups, the renewable energy industry and think tanks – plus the European Parliament, particularly in the parliamentary coalition known as the European Forum for Renewable Energy Sources (EUFORES)[69]. Only states such as Germany, Denmark, Spain and Portugal that are in the vanguard of the renewable energy movement are likely to push more strongly for a wholly renewable electricity supply; and the only Member State that has thus far recognised the need to establish a widely renewables electricity supply over the long term is Germany[70]. States such as Austria, Sweden and Lithuania with largely conventional renewable energy sources may also jump on the renewable electricity bandwagon, albeit with only measured enthusiasm – as is evidenced by the relatively slow pace of "new" renewable energy expansion in some of these states[71]. However, we are

[68] European Climate Foundation et al., Roadmap 2050: A practical guide to a prosperous, low-carbon Europe, Vol. 1, 2010, http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf (19.12.2012), p. 9 und 50; EURELECTRIC, Power choices: Pathways to a carbon-neutral electricity in Europe by 2050, Brussels 2010, p. 61ff.

[69] European Renewable Energy Council, RE-thinking 2050, A 100% Renewable Energy Vision for the European Union, Brussels 2010; PricewaterhouseCoopers et al., 100% renewable electricity, A roadmap to 2050 for Europe and North Africa, London 2010, http://www.pwc.co.uk/pdf/100_percent_renewable_electricity.pdf (19.12.2012).; *Müller-Kraenner* et al, A European Union for Renewable Energy – Policy Options for better Grids and Support Schemes: Heinrich-Böll-Foundation, Brussels, 2012

[70] Bundesministerium für Wirtschaft und Technologie, Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Energiekonzept für eine umweltschonende, zuverlässige und bezahlbare Energieversorgung, Berlin 2010.

[71] Communication from the Commission to the Council and the European Parliament. The Renewable Energy Progress Report: Commission Report in accordance with Article 3 of Directive 2001/77/EC, Article 4(2) of Directive 2003/30/EC and on the implementation of the EU Biomass Action Plan, COM(2005)628, COM(2009) 192 final, 24.04.2009.

unlikely to see support emerging for a *wholly* renewable electricity supply any time soon in the majority of Member States. Take France for example. Although the French have decided to ramp up the share of energy from renewable sources in their economy from its current level of 15.5 percent to 27 percent by 2020, the nuclear industry is still the major player in the French energy policy arena[72]. Another example is Great Britain, whose energy policy calls for a major off shore wind farm development program in conjunction with the construction of nuclear power plants and investments in carbon capture and storage (CCS) technology[73]. And as for most of the Central and Eastern Europe states, their electricity is mainly derived from large centralised nuclear power and/or coal power plants, and renewable energy development is still in its infancy[74]. In addition, major power companies will in all likelihood fiercely oppose efforts to establish a wholly or largely renewable electricity supply[75].

Against this backdrop, the European Commission's current advocacy of a technology-neutral approach towards decarbonisation would be perfectly understandable. This tendency toward technology neutrality on the part of an EU body that is often referred to as the "guardians of the treaties" – but that is nonetheless keeping the decarbonisation option open for the Member States – is also unavoidable at present, in view of the EU Treaty's restrictions on the EU's energy source policy competence. In short, the EU is very unlikely to take a system decision in favour of renewables-based electricity in the short run. However, the strategy documents of the Commission as well as first reactions of the Energy Council[76] suggest that in the context of a multi-source strategy towards decarbonisation, renewable energy sources receive privileged attention without making a clear-cut system decision as did Germany.

Instead, the European institutions tend to pursue a strategy which can be described on the basis of the policy feedback approach[77] This approach explains radical policy innovation by a sequence of incremental reform steps that each are suboptimal and insufficient but create conditions favourable for next reform cycles. This strategy engenders a new policy path that grows stronger with the passing years and whose initially inadequate institutional innovations

[72] *Koopman*, Französische Perspektiven in der Energie- und Klimapolitik, in: Braml et al. (ed.), Weltverträgliche Energiesicherheitspolitik, Jahrbuch Internationale Politik 2008, p. 196ff; *Mez/Schneider/Thomas* (Hrsg.), International Perspectives on Energy Policy and the Role of Nuclear Power, Brentwood 2009; *Pellion*, Renouveler la Production d´énergie en Europe: un défi environnemental, industriel et politique, Paris 2008. Guerry, Die Wirkung von Fukushima auf die Energiepolitik in Frankreich, in: ZNER 2012, 3 , p. 244 - 247

[73] Department of Energy and Climate Change, Draft Overreaching national Policy Statement for Energy (EN-1), Presented to Parliament pursuant to section 5(9b) of the Planning Act 2008, London 2009; HM Government, The UK Low Carbon Transition Plan. National strategy for Climate and Energy: Presented to Parliament pursuant to Sections 12 and 14 of the Climate Change Act 2008, London 2009; *Helm*, Großbritanniens nostalgische Energiepolitik, in: Braml et al., Weltverträgliche Energiesicherheitspolitik, Jahrbuch Internationale Politik 2005/2006, p. 204-209.

[74] *Barbu*, Investing in Renewable Energy Sources, Wirtschaftspolitik in Forschung und Praxis 2007.

[75] EURELECTRIC, Power choices: Pathways to a carbon-neutral electricity in Europe by 2050, 2010, p. 61ff.; *Lamprecht*, Strommärkte 2050: Smart, integriert und $CO_2$-neutral, ET 2009, 22ff.

[76] Council of the European Union, Council conclusions on Renewable Energy, in: 2304th Transport, Telecommunications and Energy Council meeting, Brussels, 3 December 2012. The Council invited the Commission to pred "the basis for the discussion for a post-2020 perspective for renewable energy sources " and taking note "that any of the scenarios of Europe's energy supply analysed would require a substantially higher share of renewable energy… beyond 2020, including in 2030."

[77] *Pierson*, When Effect becomes Cause: Policy Feedback and Political Change, World Politics 1993, p. 595ff.; *Jordan* et al., Governing the European Union: An Introduction, in: Jordan et al. (Hrsg.), Climate Change Policy in the European Union. Confronting the Dilemmas of Mitigation and Anptation?, Cambridge 2010, p. 29ff.; Prittwitz, Vergleichende Politikanalyse, p. 175f; 2007

and measures prompt calls for more extensive reform – thus creating a more robust underpinning for the path per se. The policy of incremental self-obligation[78], as the policy feedback paradigm is also called, has enabled the EU to institute reforms despite their initial unpopularity. The Renewable Energy Directives of 2001 started with legally non-binding goals for renewables, which proved to be insufficient. Inthe 2009 directive this deficiency has been addressed by making the targets legally binding. It seems that the Commission, supported by the Energy Council, now opts for such an incremental step by step approach on the way towards decarbonising the energy sector. This offers opportunities for a transition based upon renewable energy – but also may face backlashes or instability during that transition.

## 2. A Roadmap for Renewable Energy in 2030

Against this backdrop, a medium term European roadmap for the expansion of renewable energies in the run-up to 2030 would be needed in order to stabilize that transition. Also planning and investment stability for German and EU infrastructure development call for a more stable framework for renewables beyond 2020[79]. According to Article 24(9) of Directive 2009/28/EC, the European Commission is planning to issue a renewable energy development roadmap for the post-2020 period as late as 2018, which would not allow sufficient lead time to establish conditions conducive to planning certainty, particularly for network and storage capacity expansion for the post-2020 period. Hence the discussion concerning development objectives should get underway long before 2018. The Energy Ministers Council from December 2012 has invited the Commission to present a proposal for a post-2020 framework for renewable energy sources by 2014[80].

In order to establish international high-voltage direct current transmission (HVDC) networks or strategic regional networks in the North Sea, it is essential that clearly defined goals and guideposts be laid out concerning renewable energy capacity development, since otherwise the investment risks for such projects will be unduly high. Timely establishment of the requisite transmission grids is a key factor in terms of renewable energy capacity development[81]. Grid planning based solely on scenarios – the approach recommended by the European academies of science, among other actors[82] – will not get the job done in terms of establishing the requisite investment certainty.

A prime example of the importance of timely targets for renewable energy as basis for prospective grid planning is the pilot project for a ten year plan (2010–2020) devised by the

[78] *Eichener*, Das Entscheidungssystem der Europäischen Union. Institutionelle Analyse und demokratietheoretische Bewertung, Opladen 2000.

[79] European Environment and Sustainable Development Advisory Councils, Towards Sustainable European Infrastructures, Brüssel 2009; European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012), p. 9 und 28.

[80] See footnote 78

[81] European Climate Foundation et al., Roadmap 2050: A practical guide to a prosperous, low-carbon Europe, Vol. 1, 2010, http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf (19.12.2012), p. 16 and 58.

[82] European Academies Science Advisory Council, Transforming Europe's Electricity Supply, An Infrastructure Strategy for a Reliable, Renewable and Secure Power System, EASAC Policy Report, London 2009; *Wagner*, Erneuerbare Energien erfordern koordinierten Ausbau des europäischen Netzes, ET 2009, 54f.

European Network of Transmission System Operators for Electricity (ENTSO-E)[83], according to which transmission system operators need to undertake investment planning for the 2010–2020 period for more than 42,000 kilometres of transmission lines, half of which will be necessitated by renewable energy capacity expansion. But according to ENTSO-E's own calculations, the scope of the grid build-out will need to be even greater than this, since the national action plans for renewable energies, which had not been submitted as of June 2010, cannot be taken into account until the next ten year plan is issued in 2012. Against this backdrop, ENTSO-E also advocates that grid development objectives be set for a more extended period[84].

Development objectives are essential for the electricity sector in view of the pivotal importance of transmission networks for load balancing. The groundwork for the requisite planning of such networks can only be laid if sectorial development objectives are set – which, as called for by the Renewable Energy Directive, could also be added to and be one of the outcomes of national action plans. Inasmuch as the share of European electricity from renewables may well reach 35 percent in 2020, a share on the order of 50–70 percent in 2030 would appear to be well within reach[85].

## III. Subsidiarity and Support Instruments

The Renewable Energy Directive of 2009 – whose adoption was fraught with conflict from start to finish – represents a conscious decision on the part of the EU to leave renewable energy support policy to the Member States or to cooperative arrangements between groups of Member States[86]. This solution was preceded by a basic conflict over which support instruments are appropriate. Although a harmonised European quota trading system for renewables-based electricity can be more easily coupled with the Internal Market, national feed-in tariffs have by and large proven to be the more efficient and robust instrument thus far. The debate on this issue is still ongoing, however. The electricity and hydro power industry association known as Bundesverband der Energie- und Wasserwirtschaft (BDEW), as well as a number of large power companies, are still pushing for a harmonised European quota system of the type described in a 2010 study that was conducted for one such organisation by Cologne University's Department of Energy Studies (EWI)[87]. But there have also been calls in recent years for a European approach along the lines of Germany's Renewable Energy Act (EEG) or other feed-in tariff instruments[88] – an approach likewise

[83] ENTSO-E, TEN-Year Network Development Plan 2010-2020, Brussels 2010, p. 9ff.
[84] ENTSO-E, TEN-Year Network Development Plan 2010-2020, Brussels 2010, p. 9 (17).
[85] Europäische Kommission DG TREN, European Energy and Transport. Scenarios on energy efficiency and renewables, Luxembourg 2006; European Environment and Sustainable Development Advisory Councils, Towards Sustainable European Infrastructures, Brüssel 2009; European Renewable Energy Council, RE-thinking 2050, A 100% Renewable Energy Vision for the European Union, Brussels 2010.
[86] *Schöpe*, The new EU Directive on Renewable Energies from the Perspective of a Member State, in: Fouquet et al. (ed.), EU Energy Law, Vol. 3,3, Leuven 2010, p. 177-198; *Jones*, A zero carbon energy policy for Europe, in: Fouquet et al. (ed.), EU Energy Law, Vol. 3,3, Leuven 2010, p. 21-101.
[87] *Fürsch* et al., European RES-E Policy Analysis, Köln 2010; for EURELECTRIC's position see *ten Berge/Cross*, Renewable Energy and beyond: Delivering on the EU targets and defining pathway to a low carbon energy future, in: Fouquet et al. (ed.), EU Energy Law, Leuven 2010, p. 103-154.
[88] *Czisch/Schmid*, Mitigation Country Study for Germany, Human Development Report, Genf 2007/59; *Sensfuß* et al., Fortentwicklung des EEG zur Marktdurchdringung erneuerbarer Energien im deutschen und europäischen Strommarkt, Karlsruhe 2007.

advocated by EU Energy Commissioner Guenther Oettinger[89]. Also in that respect the European Commission – certainly in the view of the considerations below – has opted for a very soft approach: It will develop guidance on best practice on cost-effective, predictable and consistent national support systems, promoting cooperation on renewables support between Member States and market integration of renewables[90]. This guidance also intends to find a balance between the two partly conflicting European policy approaches: on the one side the completion of the internal market for Energy[91] – and on the other side the prevalence of national support schemes, which are necessary to implement the requirements of the renewables directive.

The call for a fully harmonized approach to renewables support holds that (a) such an approach would be a better fit with the internal European electricity market, since divergent national feed-in tariff systems could inhibit or distort cross-border electricity trading[92]; and (b) a large scale network would also open up relatively cost-efficient load balancing options and would greatly reduce storage capacity investment costs[93].

But it is also felt in some quarters that the current EU directive arrangements concerning bilateral and multilateral cooperation should remain in force in lieu of striving for European harmonisation[94]. The main argument against a harmonised quota system is the evidence that comparable national systems have enjoyed only limited success[95]. A problem with harmonised European feed-in tariffs is that (a) if they are unduly high they may engender considerable windfall profits in states with conditions more conducive to electricity generation; or (b) basing the tariffs on the lower costs in regions with better electricity generation conditions could result in a concentration of installations in regions that display such conditions[96]; and (c) thus would fail to incentivise the requisite investments in other regions. This in turn could provoke a conflict between EU designating optimised installation

[89] "Oettinger presses for European green electricity subsidies," Euractiv, 6 August 2010

[90] Communication from the Commission to the European Parliament, the Council, the European Economic and the Social Committee and the Committee of the Regions, Renewable Energy: a major player in the European energy market, COM (2012) 271 final, 6.6.2012; see also footnote 78.

[91] Communication from the Commission to the European Parliament, the Council, the European Economic and the Social Committee and the Committee of the Regions, Making the internal market for Energy work, COM (2912) 663, Brussels, 15.11. 2012

[92] *Fürsch* et al., European RES-E Policy Analysis, Köln 2010; *Sensfuß* et al., Fortentwicklung des EEG zur Marktdurchdringung erneuerbarer Energien im deutschen und europäischen Strommarkt, Karlsruhe 2007.

[93] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012); European Climate Foundation et al., Roadmap 2050: A practical guide to a prosperous, low-carbon Europe, Vol. 1, 2010, http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf (19.12.2012); *Czisch*, Möglichkeiten des großräumigen (transeuropäischen) Ausgleichs von Schwankungen großer Teile intermittierender Elektrizitätseinspeisung aus regenerativen Energiequellen in Deutschland im Rahmen einer 100% regenerativen Stromerzeugung mit dem Zeithorizont 2050, 2009, http://www.umweltrat.de/SharedDocs/Downloads/DE/03_Materialien/2010_MAT40_Czisch.pdf?__blob=publicationFile (19.12.2012).

[94] *Schöpe*, The new EU Directive on Renewable Energies from the Perspective of a Member State, in: Fouquet et al. (ed.), EU Energy Law, Vol. 3,3, Leuven 2010, p. 177-198; *Fouquet*/*Johansson*, European renewable energy policy at crossroads, Energy Policy 2008, p. 4079-4092. ); *Müller-Kraenner* et al, A European Union for Renewable Energy – Policy Options for better Grids and Support Schemes: Heinrich-Böll-Foundation, Brussels, 2012

[95] *Fouquet*/*Johansson*, European renewable energy policy at crossroads, Energy Policy 2008, p. 4079-4092.

[96] *Sensfuß* et al., Fortentwicklung des EEG zur Marktdurchdringung erneuerbarer Energien im deutschen und europäischen Strommarkt, Karlsruhe 2007, p. 54.

sites on one hand, and possible ambitious expansion plans in individual Member States on the other.

Regionally balanced renewable energy development that also takes account of cost differences is also realizable under the current regulation framework based on European objectives and national support instruments, in cases where the development objectives in regions with more favourable site conditions are more ambitious than those in regions with less favourable conditions. Applying such an approach would mean, for example, that Germany would place more emphasis on wind energy development, while Spain would focus more on photovoltaics.

The differences in the renewable energy development phases of the various Member States also need to be taken into account, and the attendant support instruments will need to be adapted to the conditions in each state.

A total of 21 Member States have instituted feed-in tariffs as a central or partial instrument of their energy mix, although the exact modalities of these instruments differ greatly from one state to another[97]. Any attempt at harmonizing these systems would inevitably engender high costs and serious conflicts, as partial modification of well-established long term investment frameworks would also be involved, whereby switching from Member State to EU level policy would set in motion a period of investment uncertainty that would temporarily put the brakes on renewable energy growth. Moreover, the resulting compromise, apart from the extensive negotiations it would undoubtedly entail, would probably result in a support system that is relatively impervious to policy innovation. This same problem of barely resolvable conflicts between the various national support systems and a harmonised European support framework would arise under a harmonised quota system, as it would necessarily replace national feed-in tariffs with flexible quota market prices.

Hence EU support frameworks for renewable energy should take honour of the subsidiarity principle and should enable EU Member States sufficient leeway for action that is also compatible with Community principles[98]. And in point of fact, a workable compromise for the foreseeable future in this regard was put in place by the Renewable Energy Directive of 2009. Also the more recent communications of the European Commission stick to this basic compromise.[99]

The Directive does two main things.

1. It lays down differentiated national contributions to the EU's 20 percent share of renewables goal, based on the extremely heterogeneous baseline electricity generation conditions and potential exhibited by the various Member States – a condition that will persist until at least the end of this decade. However, since all Member States are required to implement support measures for their renewable energy development goals, the directive stipulates that the gap between the support costs in the various Member States is to be kept within reasonable bounds. Against this backdrop, the aforementioned roadmap for 2030 is also indispensable, as it will – at least indirectly and despite any unavoidable cost differences

[97] *Rathmann* et al., Renewable Energy policy Country Profiles, Köln 2009.
[98] *Scharpf*, Governing in Europe: Effective and democratic?, Oxford 1999.
[99] See footnotes 78 and 93

– to some extent balance out the development, promote support cost harmonisation, and thus institute a modicum of convergence among the various Member State financing instruments[100].

2. Under the Directive, the Member States retain the right to optimise their support instruments and adapt these instruments to the specific renewable energy development phase the state happens to be in – an approach which, it would seem, makes good sense, particularly in terms of allowing for learning curve-driven optimisation of support instruments. The Renewable Energy Directive also stipulates that Member States may agree on and make arrangements for the statistical transfer of a specified amount of energy from renewable sources from a state that has exceeded its development objectives to one that has not (Article 6), for joint projects between Member States (Article 7) or for joint support schemes (Article 11)[101]. Competition resulting from electricity price differences can be avoided in particular via regional cooperation between neighbouring Member States.

Once an extensive trans-European network has been established – an event unlikely to occur before the 2020s – it will be necessary to consider further medium term europeanisation of support instruments in an electricity market where renewables may well be the dominant force by this time.

## IV. Development of the Trans-European Network

Key to the expansion of renewable energies in the EU is the development of a high capacity trans-European network, or supergrid[102], which would be overlaid on the existing grids and interconnectors (which would also need to be optimised) and would be chiefly composed of high-voltage direct current transmission (HVDC) lines, even if other technologies would be viable options. In order to establish this supergrid, it would be essential to expand North Sea grids, and in particular to also be able to leverage Norwegian and Swedish pump storage system potential[103]. According to the *Green paper towards a secure, sustainable and competitive European Energy Network*[104], an offshore wind farm grid and an energy ring in

[100] *Jordan* et al., Renewable energies: A continuing balancing act?, in: Jordan et al. (Hrsg.), Climate Change Policy in the European Union, Confronting the Dilemmas of Mitigation and Adaptatation, Cambridge 2010, p. 103 (115).

[101] *Schöpe*, The new EU Directive on Renewable Energies from the Perspective of a Member State, in: Fouquet et al. (ed.), EU Energy Law, Vol. 3,3, Leuven 2010, p. 177-198; *Ragwitz* et al., RE-Shaping: Shaping an effective and efficient European renewable energy market, p. 46ff; February 2012,

[102] *Czisch*, Möglichkeiten des großräumigen (transeuropäischen) Ausgleichs von Schwankungen großer Teile intermittierender Elektrizitätseinspeisung aus regenerativen Energiequellen in Deutschland im Rahmen einer 100% regenerativen Stromerzeugung mit dem Zeithorizont 2050, 2009, http://www.umweltrat.de/SharedDocs/Downloads/DE/03_Materialien/2010_MAT40_Czisch.pdf?__blob=publicationFile (19.12.2012); *Battaglini* et al., Linking Noth Africa´s Renewable Energy Resources to Europe, Potsdam 2008.

[103] *Woyte/de Decker/Van Thong*, A North Sea electicity grid [r]evolution, Brussels 2008; European Environment Agency, Europe´s onshore and offshore wind energy potential, Luxembourg 2009; *Lilliestam*, The creation of the pan-Nordic electricity market, Potsdam 2007.

[104] European Commission, Green Paper: Toward a secure, sustainable and competitive European energy network, COM (2008) 782 final, 13.11.2008.; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Offshore Wind Energy: Action needed to deliver on the Energy Policy Objectives for 2020 and beyond, COM(2008) 768 final, 13.11.2008.

the Mediterranean region are both crucially important projects for successful expansion of renewable energies.

In order to establish policies for a European infrastructure, or for the more limited trans-regional counterparts, we will need to find answers to the following key questions:

– Are the existing network-like and predominantly private sector cooperative arrangements sufficient; or do EU grid development policies need to be bolstered?
– In view of the growing share of wind and solar power being fed into the grid, do the current bottom-up grid planning processes get the job done, or are more robust and strategic planning goal and scenario based planning processes needed?
– To what extent can market driven grid expansion be stimulated? To what extent is public financing or at least risk mitigation measures necessary for such expansion?

## 1. Grid Development Players in the EU

Grid planning and development activities fall within the province of transmission system operators, which can be either private sector or public sector enterprises and for which the organisational structures, duties (most of which involve coordination activities) and oversight at the EU level are governed by the internal electricity market directive and by Directive 2009/72/EC (implemented in Germany as the Stromhandelszugangsverordnung (StromhandelZVO)).

The 42 transmission system operators that in December 2008 founded the European Network of Transmission System Operators for Electricity (ENTSO-E) are required under EU law to submit, at two year intervals, revised ten year Community grid development plans. These plans are not legally binding and indicate, among other things, scenarios and forecasts concerning the adequacy of electricity generation as well as areas where investments are needed (Article 8(10) of the StromhandelZVO law). As such plans take their cue from national ten year plans, they constitute the main national plan coordination instrument.

Organisations such as Nordel (Organisation for the Nordic Transmission System Operators) – one of the ENTSO-E entities in charge of developing a cross-border regional grid investment plan – act as an intermediary instrument in this regard (Article 12 of the StromhandelZVO law), while the Agency for the Cooperation of Energy Regulators (ACER) provides advice and carries out oversight activities (Directive 713/2009/EC; law titled *ACER Verordnung*). A network agency that arose from informal cooperation between national regulatory authorities, ACER and the latter's governing board, is composed of political appointees (named by the European Commission, the Member States, and the European Parliament) and oversees the activities of key regulatory decision makers, provides support and coordination for national regulatory authority measures aimed at implementing the objectives of the internal electricity market, has far reaching competence in areas such as access modalities for cross-border infrastructures, as well as work safety pursuant to Article 8 of the relevant regulation (*ACER Verordnung*) reviews ENTSO-E ten year plans, and draws up a statement of position containing any changes deemed necessary in such plans (Article 8(11) of StromhandelZVO). These statements of position are not legally binding, and ACER has no say in or veto over

their content. Although during the negotiating process concerning the internal European electricity market Directive it proved impossible to give ACER greater say in these matters[105], the European Commission has called for strengthening of ACER's competence in connection with the integrated energy market[106], and thus ACER's competence in this domain could potentially expand over time. In this regard, the StromhandelZVO empowers the national regulatory authority to jointly delegate decision making rights to ACER, which in some cases (such as incentives rules for interconnectors) is entitled to draw up proposed decisions for the European Commission. Hence ACER may assume a more important role going forward, particularly if the European Commission begins relying on ACER recommendations[107].

The EU's trans-European network (TEN-E) policies also constitute a key albeit weak grid development policy instrument, whereby the TEN-E guidelines, which the European Council and Parliament adopted at the proposal of the European Commission, comprise the main statutory European infrastructure policy instrument. First adopted in 1996, the guidelines, which were amended in 2003,and in 2006 (via Decision No 1364/2006/EC), with a new proposal for revision pending since late 2011 (COM 2011) 659 final), mainly serve the following purposes: formulate objectives (Article 3) and selection criteria for Community measures in the field of trans-European energy networks (Article 4); identify corridors of European interest (Article 6), priority projects (Article 7), "ensure the interoperability of electricity networks" (Article 4(2)); and adapt and develop networks "to facilitate the integration and connection of renewable energy production" (Article 4(2a)). The TEN-E guidelines are essentially a coordination and financing instrument for cross-border linkages, although they offer only very limited financial contributions to projects of common interest. According to Articles 6 and 9 of the guidelines, when it comes to projects of common interest, it is incumbent upon the Member States to facilitate and expedite their realisation (including the attendant approval procedures), to coordinate such projects, to submit completion schedules in their regard, and to report any delays in such completion. In this regard the TEN-E guidelines mirror current EU competences as laid down in Articles 170 to 172 TFEU (ex Articles 154 to 156 EGV), whose scope is limited to improved and trouble-free coordination of cross-border planning processes. In that respect the European infrastructure package proposed by the European Commission in October 2011 is a step forward. Among others this package contains new financing instruments and revised guidelines for the TEN-E which are based upon Art. 172 TFEU[108]. The new guidelines contain a number of new instruments and governance approaches, which intend to improve and speed-up the realisation of interconnectors. Among others, four priority corridors for electricity are identified which are considered projects of common interest and receive priority status in national permitting procedures (Art. 8). A project developer – normally a TSO or a consortium of TSO's, get

[105] *Hancher/de Hauteclocque*, Manufacturing the EU Energy Markets: The current Dynamics of regulatory Practice, EUI Working Papers RSCAS 2010/01.

[106] Europäische Kommission, Stock taking document: Towards a new Energy Strategy for Europe 2011-2020, Brüssel 2010.

[107] *Hancher/de Hauteclocque*, Manufacturing the EU Energy Markets: The current Dynamics of regulatory Practice, EUI Working Papers RSCAS 2010/01, p. 6.

[108] Proposal for a Regulation on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC, COM (2011) 658 final, Brussels, 19.10.2011; *Schmitz* et al, Regulierung des deutschen und des europäischen Energienetzes: Der Bundesgesetzgeber setzt Maßstäbe für den kontinentalen Netzausbau, in: NVwZ 2012, p. 336f

management and planning responsibility for the project, including keeping agreed schedules and reporting ( Art. 5). Progress is monitored and sanctions established for delays. In case of implementation difficulties, a "European coordinator" will be mandated to overcome any difficulties and hurdles (Art. 6). Permitting takes place according to the "one-stop-shop" principle by one central authority (Art. 9). According to Art. 10 minimum requirements for public participation and consultation are formulated. The new guidelines also contain rules on how to cover investment costs. As a principle, costs are covered on the basis of the "key beneficiary pays" –principle (Art. 13, 1). The different national Regulatory authorities are requested to find an agreement on how to share investment costs and revenue among the participating TSO's. Also provisions are created for projects which are considered to be especially risky (Art. 14) or for projects which may receive additional Community support (Art. 15). In total those new governance mechanisms offer an overall framework which may be helpful to speed-up investments in interconnectors. Factual implementation however will depend upon how national regulatory authorities and TSO's make use of the new instruments, on how potential conflicts may be settled and which resources and capacity the European Regulator may mobilize to overcome problems.

Despite those improvements in terms of coordination and enforcements of projects of common interest the EU has relatively little direct control to steer grid development, which, as it is mainly driven by the regulatory framework and the financial interests of transmission system operators, unfolds primarily as a bottom-up process; and thus only its coordination is under EU control. Hence grid planning at the EU level reflects the incentive and planning frameworks for national grid regulation including all their strengths and weaknesses. In view of the considerable investment risks and planning uncertainty entailed by the renewable energy development sector, such a bottom-up process only is likely to prompt private investors to plough large amounts of money into the development of high-voltage direct current transmission (HVDC) grids, where national frameworks offer long term predictability both for renewables deployment and related grid planning. In principle the same applies for the EU framework beyond 2020.

As there are various ways to strengthen the hand of European actors in the electricity grid development arena, expanding ACER's competence would appear to be the best option (in conjunction with a comitology procedure), including when it comes to folding scenarios into a high capacity transmission network plan[109]. To this end, key grid development needs should be laid down as soon as possible in amended TEN-E guidelines – although the success of this undertaking will be largely contingent on modifying the upstream needs analysis process.

## 2. Needs of Analysis and Project Selection

Electricity grid planning in Europe is mainly a needs analysis, project identification and bottom-up process involving information interchange and cross-border interconnection planning on the part of neighbouring states[110] which, in this process, mainly rely on network

[109] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012), p. 29.
[110] European Academies Science Advisory Council, Transforming Europe´s Electricity Supply, An Infrastructure Strategy for a Reliable, Renewable and Secure Power System, EASAC Policy Report, London 2009, p. 5.

development plans devised by transmission system operators[111]; whereby such plans ultimately form the basis for updated TEN-E recommendations. The remaining responsibilities are mechanisms of the regulated grid markets, which means that "the construction and maintenance of energy infrastructure should be subject to market principles" and that "Community financial aid for construction and maintenance should therefore remain highly exceptional, and such exceptions should be duly justified" (Recital 4, Decision No 1364/2006/EC); whereby exceptions include in particular high-voltage direct current transmission (HVDC) lines[112]. Projects are to be selected only insofar as a cost-benefit analysis indicates that they display "potential economic viability" (Article 5, Decision No 1364/2006/EC). The Commission Proposal for TEN-E guidelines contains improvements in that respect, that very risky projects and projects with considerable positive externalities receive special treatment on the basis of Art. 14 and 15[113].

By dint of this bottom-up planning process alone, it has been shown that the 2006 - TEN-E guidelines were in need of improvement when it comes to the development of grids for renewable energies, one example of this being that the 2006 guidelines do not contain a single mention of a high-voltage direct current transmission (HVDC) project of European interest[114]. According to a European Climate Foundation estimate, grid development between 2004 and 2009, which resulted in an aggregate European capacity increase of 12.6 GW, was considerably below the necessary development rate[115].

Nonetheless the old TEN-E guidelines, as well as UCTE (Union for the Coordination of Transmission of Electricity, the precursor of ENTSO-E) plans, contain grid development projects that clearly undermine Community objectives, one example being transmission lines linking Tunisia and Sicily that put a coal fired power station on line that was built mainly for the Italian market[116] (project 4.2.4 in Decision No 1364/2006/EC), with a view to avoiding the carbon certificate costs that would have been incurred had a new power plant been built in the emissions trading zone.

The European Academies Science Advisory Council (EASAC) – which has correctly pointed out that the current grid development planning process is highly unsatisfactory, particularly for the requisite renewable energy expansion process[117] – has recommended that the bottom-up planning process be paired with a scenario-based strategic planning process. Using this approach, EASAC says, more accurate estimates of network development needs and the robustness of specific future scenarios could be obtained based on various future scenarios. EASAC signals in this regard the exemplary practice of NORDEL (Organisation for the Nordic Transmission System Operators), whose Grid Master Plan 2008 is based on three

[111] See StromhandelZVO 2009; Union for the Cooperation of Transmission of Electricity, UCTE Transmission Development Plan – update 2009.
[112] See Article 17 of StromhandelZVO.
[113] See footnote 110
[114] *Holznagel/Schumacher*, Wüstenstrom aus der Sahara für die finnische Sauna, NuR 2009, p. 164 (168 and 170).
[115] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012), p. 28.
[116] Union for the Cooperation of Transmission of Electricity, UCTE Transmission Development Plan – update 2009, p. 42.
[117] European Academies Science Advisory Council, Transforming Europe´s Electricity Supply, An Infrastructure Strategy for a Reliable, Renewable and Secure Power System, EASAC Policy Report, London 2009, p. 5.

different scenarios – namely business as usual, climate protection and integration, and national focus – that allows for determination of both internal and external grid development needs[118]. In the same vein, the European Climate Foundation (ECF) *Roadmap 2050* calls for the grid development planning process to encompass a far longer period than is currently the case with a view to harmonizing in the medium term presumed renewable energy capacity development and grid development needs[119]. ENTSO-E has also indicated that in the absence of clearly defined long term climate protection and renewable energy capacity development goals, the organisation's members will simply be unable to elaborate electricity grid planning scenarios[120]. A far stronger and more target-oriented planning paradigm is needed in order for the EU to send robust signals that will promote grid development for renewable energies. The cause of strengthening planning certainty and greatly reducing investment risk would be served if the scenarios awaiting elaboration could be largely based on mandatory development targets for renewable energies. Such an approach would also call for the use of scenario design backcasting methods, which appear to be more suitable for target-oriented planning than conventional trend and policy scenarios.

Although amending the TEN-E guidelines[121] is a step in the right direction, it would not do enough to reduce the influence of the major market players on grid planning outcomes. Hence it is essential that the European Commission or a subsidiary body acquire the wherewithal to carry out an independent grid development needs analysis for 2020 and 2030 in light of the policy goal of expanding renewable energies, and that this analysis be harmonised with transmission system operator plans. Inasmuch as transitioning to a wholly or largely renewable electricity supply is a primarily policy driven undertaking, in keeping with EU Treaty tenets the EU's governing bodies need to acquire the competence to also evaluate market driven plans and to amend them in the light of the EU's renewable development policies.

### 3. Financing

EU subsidies cover only a minute proportion of the cost of electricity grid development for priority projects as well as possibly risky large scale projects such as those involving high-voltage direct current transmission (HVDC) lines; whereby such financing is particularly meagre for preliminary studies and for undertakings involving common structural policy. The €22 million annual trans-European network (TEN-E) budget for 2007 to 2013 can only be described as Lilliputian. Even though the "Connecting Europe" initiative, as presented by the Commission in October 2011[122] would be a major increase of available funds to 9.1 billion Euro for the period 2014–2020 , it is still minimal compared to the expected 140 billion Euro Investments for the High-Voltage Linkages only. Furthermore the Commission investment plan still is under scrutiny in the context of the very difficult negotiations on the multi-annual

[118] Organisation for the Nordic Transmission System Operators, Nordic Grid Master Plan 2008, Brussels 2008.
[119] European Climate Foundation et al., A practical guide to a prosperous, low-carbon Europe, Vol. 2, 2010, http://www.roadmap2050.eu/attachments/files/Volume2_Policy.pdf (19.12.2012), p. 29.
[120] ENTSO-E, TEN-Year Network Development Plan 2010-2020, Brussels 2010, p. 9 (45).
[121] *Holznagel/Schumacher*, Wüstenstrom aus der Sahara für die finnische Sauna, NuR 2009, p. 164 (170).
[122] Proposal for a Regulation of the European Parliament and the Council establishing the Connecting Europe Facility, COM (2ß11) 665, Brussels, 19.10.2011

budget for the forthcoming period. European Investment Bank (EIB) loans amounting to €1,135 million annually for 2007 to 2009 are more generous, however, as is cohesion-policy financial support of €223 million a year. There was also at one time a European economic stimulus program grant of nearly €4 billion that was partly used for grid infrastructures[123]. Despite the European Commission's view that grid infrastructure investments are mainly incumbent upon private sector network operators (i.e. investment decisions should be primarily market driven), the Commission nonetheless recognises the need for such investments to be supplemented by public funding for non-commercial objectives in projects such as underground cables for environmental reasons, and the incorporation of renewable energies into the electricity grid[124]. In the same vein, the European Parliament and Council have underlined the importance of robustly promoting investments in large scale infrastructures, particularly in view of the exceptionally high risk profile entailed by such investments (Recital 23 StromhandelZVO). It is for this reason that the said regulation exempts investors who are willing to invest in high-voltage direct current transmission (HVDC) lines from the differentiation requirements of the internal electricity market directive, subject to review by the agency. However, it is doubtful whether such a derogation – whose aim of course is to promote renewable energy capacity expansion investments by large investors – will be a sufficient incentive[125]. In the view of the European Commission, far more comprehensive public financing instruments and risk mitigation measures will be needed to promote grid expansion, particularly in the renewable energy sphere.

In the interest of establishing a high voltage overlay network, we recommend that public contracts be awarded, for point to point connections, to the bidder that offers the requisite investments in conjunction with the lowest grid charges over a 20 year period. This tendering procedure could also be used for cross-border connections between Member States, whereby measures that facilitate cooperation between Member States for the cost-sharing arrangements, as suggested by the Commission, would be particularly useful. It should also be determined whether set EU procedures containing a number of standardised elements aimed at expediting joint tenders for key cross-border connection contracts would also be useful and could help to expedite the process.

## D. Conclusions

Article 194(1) TFEU grants the EU competence as regards the following energy policy goals: (a) ensure the functioning of the energy market; (b) ensure security of energy supply in the Union; (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and (d) promote the interconnection of energy networks.

[123] Proprietary calculations, derived from Report from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, On the Implementation of the Trans-European Energy Networks in the Period 2007-2009, Pursuant to Article 17 of Regulation (EC) 680/2007 and Articles 9(2) and 15 of Decision 1264/2006/EC, COM(2010) 203 final, 04.05.2010.

[124] European Commission, Green Paper: Toward a secure, sustainable and competitive European energy network, COM (2008) 782 final, 13.11.2008, p. 12.

[125] *Holznagel/Schumacher*, Wüstenstrom aus der Sahara für die finnische Sauna, NuR 2009, p. 164ff.

In terms of renewable energies, Article 194(1) expands the scope of EU energy competence solely in respect to promoting technological development, and thus all remaining aspects of renewable energies still fall within the environmental competence laid down in the Treaty's Articles 192(1) and (2) – which are therefore also governed by the "more stringent protective measures" clause of the Treaty's Article 193, thus leaving the Member States leeway to institute measures as they see fit, despite EU legislation.

In view of the above, thanks to the EU's environmental competence pursuant to Article 192(1) and (2) TFEU, the EU is entitled to set requirements for Member States concerning the aspects of renewable electricity expansion capacity, but to the exclusion of the relatively minor and specialised sphere of promoting technological development. EU measures pursuant to Article 192(2)(c) TFEU reach their statutory procedural limit insofar as they significantly affect "a Member State's choice between different energy sources and the general structure of its energy supply," whereby such measures must be adopted by a unanimous vote of the European Council. This is the key change brought by the EU's new energy policy competence under Article 194(2)(2) – which, unlike the Treaty's purely procedural provisions in Article 192(2)(c), constitutes a genuine competence delineation. Consequently, the EU has no authority over non-environmental energy policy measures that fall within the competence of the Member States.

However, it is no easy matter to determine exactly which types of measures are governed by Article 192(2)(c) of the Treaty, particularly when it comes to the share of energy from renewable sources that are mandated for the various Member States. But any decision that institutes a durable all renewables electricity supply would in any case necessitate a unanimous vote. Under the provisions of Article 193 of the Treaty, the Member States are entitled to exceed the share of energy from renewable sources stipulated by the EU.

The EU's authority over the electricity transmission network expansion necessary for a wholly renewable electricity supply is expanded by Article 194 of the Treaty, particularly in terms of the interconnection of energy networks, whose expansion is one of the lynchpins of the internal European electricity market. The EU's competence for the promotion of grid interconnection is reaching further than the trans-European network competence accorded by Article 172 TFEU. Nevertheless the EU's network interconnection financing competence is limited to coordination measures for existing networks or to financing ongoing network projects that are already being subsidised by one or more Member States. Hence, save for cross-border network interconnections, the EU is prohibited from imposing on the Member States any measure involving transmission network expansion exceeding the scope of that which is in the pipeline in the Member States at any given time. However, this restriction also has an upside – namely that the EU can use guidelines as an instrument to coordinate and finance measures aimed at expansion of cross-border networks, and can thus further the cause of expanding such networks to the requisite degree. As a result of this situation, network expansion is mainly the legal responsibility of private transmission system operators. Carrying out such planning at the European level is not mandatory, but instead mainly allows for coordination and consultation, and in some cases information-related revision, of Member State transmission network plans from a European perspective. Bolstering EU policies with a view to promoting network expansion will need to mainly focus on successfully

interconnecting the various national networks – a goal that will, however, open up considerable Member State leeway.

Article 194(1)(c) of the TFEU endows the EU with far reaching (albeit not new) authority over promoting energy efficiency and saving energy. The extent to which Article 194 TFEU empowers Member States to adopt more stringent energy efficiency policies than those mandated by the EU is open to question. In our view, however, the Member States are not entitled to adopt "more stringent protective measures" in this regard within the meaning of Article 193 TFEU.

The statutory grounds for energy efficiency provisions, measures and programs have traditionally been Article 175(1) ECT (now Article 192 TFEU) or Article 95 ECT (now Article 192 TFEU), both of which empower the Member States to introduce "more stringent protective measures." However, the Member States are not empowered to do so under Article 194 TFEU, which lays down the EU's new competence for energy efficiency.

This problem can only be resolved by either applying the more stringent protective measures clause of Article 193 TFEU (ex Article 176 of the Treaty establishing the European Union) in accordance with Article 194[126] or incorporating such a clause into future energy efficiency legislation. Such an application of Article 193 would probably be inadmissible, since the existence of a statutory loophole for an area in which the EU intends to find a definitive solution cannot be presumed. Hence EU energy efficiency regulations that are based on Article 194 TFEU should expressly empower the Member States to enact more stringent protective measures. One example of such a regulation in the realm of energy efficiency is the Energy end-use efficiency and energy services Directive (2006/32/EC), which expressly empowers Member States to set a higher national energy saving objective than that laid down in the Directive's 13th recital.

EU renewable energy support policy needs to develop within the framework of these competences. The key policy areas that come into play here are climate protection, meeting renewable energy development goals, and adapting the trans-European network in a timely manner to a higher proportion of renewables.

It is essential that renewable energy capacity expansion and the expansion of incentive and subsidy programs are keyed to statutory medium term EU climate objectives whose touchstone should be the position taken by the European Council in October 2009 and the European Commission's Decarbonisation Roadmap 2050, according to which greenhouse gas reductions of at least 80 percent in 2050 compared to 1990 levels are on the EU policy agenda. This is the only reduction target that is consistent with the global reduction of greenhouse gases needed to achieve the 2 degrees Celsius objective. In order to implement the reduction path necessary for this objective and at the same time avoid investment missteps in the run-up to 2020, a minimum 30 percent reduction target will be necessary for 2020.

The Renewable Energy Directive of 2009 will go a long way toward keeping renewable energy capacity expansion on track for the remainder of this decade and achieving partial convergence of renewable-energy support schemes; this policy should be extended beyond

[126] *Britz*, Klimaschutzmaßnahmen der EU und der Mitgliedstaaten, in: Schulze-Fielitz/Müller (ed.), Europäisches Klimaschutzrecht, 2009, p. 71ff.

2020. A European roadmap that lays down a framework for renewable-energy expansion up to 2030 should be developed, particularly in terms of national and European infrastructure development beyond 2030. Moreover, EU support schemes for renewable energy should take account of the subsidiarity principle and should enable EU Member States sufficient leeway, but in a manner that is compatible with Community principles. The Renewable Energy Directive sets an overall goal for the share of renewable sources to primary energy consumption which effectively will lead to a 35 percent share of electricity from renewable sources in 2020, while allowing for differences in the various Member States' contributions to achievement of this goal; in addition, the Directive allows, and indeed encourages Member States to enter into cooperative regional arrangements that could potentially resolve problems associated with cross-border electricity trading and joint infrastructure projects. The German government should make all-out efforts to forge such alliances.

Member state grid expansion should be accompanied by intensified needs planning at the EU level. Despite the indisputably key-European dimension of grid expansion in general and the development of high-voltage direct current transmission (HVDC) grids or equally high capacity technologies in particular, EU policy instruments in this domain are in need to be further strengthened. Grid expansion is chiefly market-driven and for the most part is realised by merging national ten year plans. Those plans mainly mirror national planning systems and the incentive effects of national market regulations and the interests of the various grid operators. Only exceptionally (e.g. in Germany) they reflect the need to transition to a wholly or largely renewable electricity supply over the long term. And while this approach to grid expansion planning may suffice for incremental development of the electricity supply, it cannot hope to bring about the requisite long term target-oriented transformation. On the other hand, continued renewable energy capacity expansion will make it indispensable to strengthen the policymaking hand of all supranational European players – namely the European Commission, the European Parliament, and the recently established European Agency for the Cooperation of Energy Regulators.

In this regard, Member State grid expansion programs should be strengthened via improved coordination, notably as regards cross-border expansion needs for renewables and high capacity long distance connections, whereby such efforts should focus on the following in particular:

- More tightly intermeshed coordination of renewable energy expansion and grid planning measures for the post-2020 period.
- The European Commission or its subordinate authorities should conduct dedicated needs analyses, based on information from transmission network operators, concerning expansion and optimisation of the trans-European grid, with a view to achieving efficient quality assurance for EU energy policy objectives.
- Cross-border cooperation for public contracts and notably for new cross-border high capacity long distance connections should be intensified.
- The groundwork should be laid for regional cooperation among grid operators notably in the North Sea and the Mediterranean.
- Government remuneration systems for renewable energies should be strengthened.