

Transformation to climate neutrality from a federal perspective – Distribution of powers and regional responsibilities under European law and in the German federal system

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ABSTRACT The transformation of societies and economies towards climate neutrality is a highly complex multi-sectoral and multi-level challenge. This paper examines the multi-level dimension of climate policy with particular reference to the European legal framework and the example of Germany. It analyses how regional and local governments are engaged and whether, in this regard, the existing arrangements of multi-level climate governance can be considered adequate and effective. In the light of the basic principles of federalism theory and in view of the – failed – German multi-level approaches to energy transition it is concluded, in particular, that federal climate governance must build not only on European and national objectives but also on regional and local climate targets and policy planning schemes as a means of both ensuring sufficient transformation efforts and preserving as much autonomy as possible for regional and local communities.

KEYWORDS autonomous regions; climate law; climate policy; competences; European Union; federalism; German climate policy; policy planning; multi-level governance; subsidiarity.

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1. Introduction

Climate change is a global problem and climate policy is, therefore, mainly driven by global and nation-wide greenhouse gas reduction targets, as proclaimed in particular in the UNFCCC Paris Agreement and by the nationally determined contributions.¹ However, in terms of implementation, the powers to regulate greenhouse gas emissions and to transform economies, technologies and infrastructure towards a climate neutral economy are regularly shared between the national, regional and local levels of government. The regional and local levels appear to be particularly important in transforming regional and local infrastructure, energy systems, land-use patterns and economies. After all, it is at the local level that concrete solutions, political will, public acceptance and capable actors have to be found in order to implement the transition targets. It is therefore of great interest to examine how powers in terms of climate governance are actually distributed, how regional and local levels are legally empowered and engaged to develop their own specific implementation pathways, and whether existing arrangements of multi-level climate governance can be assessed as adequate and effective.

This article addresses these questions with a special focus on Germany and the development of wind energy, with the intention of contributing to a European and comparative debate. This will be done through the following steps: first, in order to provide a theoretical basis and a yardstick for analysis, the criteria of “adequate and effective” distribution of competences are briefly considered (2). Second, we describe the various fields of action to be included in multi-level climate policy arrangements (3). Third, the basic structures of the German federal system and the constitutional distribution of competences in the relevant fields of climate action are explained with due account of the EU’s supranational context (4). We will then take a closer look at the climate governance system that is developing in German federal and state legislation in order to break down mitigation targets to sectors, states and regions and to involve the relevant government bodies (5). The area of wind energy development will serve as an instructive example of the barriers to transformation at the regional level and of how German legislation is attempting to overcome them (6). In particular, this example highlights the lack of regional climate policy targets and planning obligations as a means

1. See Streck et al., “The Paris Agreement”.

of determining and enforcing sufficient transformation efforts. Finally, with reference to the basic criteria of federal power distribution, it is argued that regulated policy targets and target-oriented policy planning regimes are needed as a means of cautious multi-level governance, not only in EU law vis-à-vis the Member States but also within the Member States and vis-à-vis their autonomous regional and local units (7).

2. Measures of the adequacy of the division of powers between regional and central governments: subsidiarity and functionality

In assessing the distribution of competences from a pragmatic perspective, our focal interest is not only to describe existing systems but also to assess whether these current arrangements are adequate and preferable compared to others. A fundamental question, then, is how to determine the adequacy of the distribution of powers or the “appropriate” level of government. What should be the decisive measure for the allocation of tasks and competences? In order to provide some basic guidance in this regard, a few lines shall be devoted here to the theory of federalism and the general reasons in favour of either decentralised or centralised and uniform decision-making.

First of all, it should be noted that decentralised government is widely regarded as a fundamental factor of collective and individual freedom, well-being and democratic immediacy.² Self-government allows local collectives to decide according to their individual priorities and thus to satisfy these preferences to a greater extent than would be possible in a larger collective. Both dynamic efficiency and democratic immediacy are enhanced by the fact that a decentralised government gives citizens a stronger voice to assert their

2. Watts, *Comparing Federal Systems*, 192; Isensee, *Subsidiaritätsprinzip*, 44; Lasok and Lasok, *Law and Institutions of the European Union*, 52 f. Economic theory widely supports the primacy of local autonomy following the famous argument of Charles M. Tiebout that decentralised governance provides more room for diverse individual/local preferences and thus generates more welfare than centralised systems: Tiebout, “A Pure Theory of Local Expenditures”, 416 et seq. Another economic argument in favour of decentralised structures points to the “dynamic efficiency” linked to the fact that decentralised structures give a multitude of local actors/communities the opportunity to develop different governance approaches, experiment and compete for the most efficient solution. See Dye, *American Federalism*. 14.

preferences, as well as the option to exit and embark elsewhere.³ In the light of modern liberty and democracy theory, these arguments clearly support the primacy of local government, implying that centralisation of power should be legitimised by a functional superiority for the sake of the common good. For these reasons, the primacy of local government can be found as a fundamental principle in most federal constitutions. The most prominent example is probably the European Union which, as is well known, has enshrined this principle through the concept of subsidiarity (of the EU) in Article 5 (3) of the EU Treaty as follows:

Under the principle of subsidiarity (...) in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level.

This formulation implies, on the one hand, a requirement to justify uniform (EU-level) regulation as a restriction of local autonomy by a probable functional advantage over regional or local action. On the other hand, the principle also legitimises and requires a centralised level of action to the extent that it can better achieve commonly agreed policy objectives. The legitimisation requirement applies in principle to each specific regulatory issue and, thus, implies a fine-tuned, very specific distribution of powers which cannot reasonably be achieved by an abstract allocation of exclusive thematic competences.⁴ Rather, subsidiarity and the functional division of powers presuppose a system of concurrent competences and require a prudent use of such competences, constrained by the requirement of specific functional justification.⁵

It is true that subsidiarity is only an EU principle and is not shared equally by national constitutions. However, the basic pragmatic intention behind it, namely to distribute competences and responsibilities according to the

3. A key argument for decentralisation in the US. Justice Brandeis in *State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932): 'It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory, and try novel social and economic experiments without risk to the rest of the country.'

4. Reese, "Distribution of Powers", 697; Alberton and Palermo, "Concluding Remarks", 525.

5. Reese, "Distribution of Powers", 692.

highest problem-solving capacity, can well be seen as a general measure of effective (and thus “appropriate”) multi-level governance.⁶ In the sense of a purely pragmatic approach to federal role sharing, subsidiarity can also be understood as a measure of effective multi-level climate governance below the EU level and within Member States in relation to their regions and municipalities.

Taking subsidiarity – in the above sense – as a measure of the distribution of competences, the crucial further question is: what are the reasons that might justify centralised powers; under what circumstances is the central government clearly the superior actor? While this is not the place for a detailed account of federal theory we can, nevertheless, easily draw the following answers from it:

Externalities and spillovers are the main reasons for the limited problem-solving capacity of a territorial unit since the causes of these externalities lie outside the limits of territorial sovereignty. Transboundary pollution and the depletion of transboundary (global) environmental resources are the most important examples of such externalities, which cannot be effectively managed by autonomous local units, but require common rules and a uniform central government.⁷ Even if all local governments agreed in principle that a global good – such as a stable climate – should be protected, it is unlikely that each unit will take sufficient action on a purely voluntary basis. Common rules and centralised enforcement are needed to ensure that efforts are evenly distributed and actually taken by each entity. Otherwise, the famous “prisoner’s dilemma” is likely to prevail, leading to the “tragedy of the commons” so well described by *Garret Harding*⁸ and *Elinor Ostrom*.⁹

As a result, climate policy will be characterised by a struggle for global and national greenhouse gas mitigation targets and a binding global enforcement framework. For the reasons outlined above, a clear case must be made for allocating national greenhouse gas budgets and mitigation targets. Top-down regulation of European and national targets is exactly what the EU has es-

6. For further details and references see Reese, “Distribution of Powers”, 697.

7. On this fundamental finding of the theory of fiscal federalism see Bretton and Scott, *The Economic Constitution*; Vaubel, “The Public Choice”, 227-249.

8. Harding, “Tragedy of the Commons”, 1243-1248.

9. Ostrom, *Governing the Commons*.

entially developed over the past two decades to the current effort sharing,¹⁰ emissions trading¹¹ and climate governance regimes.¹² In the light of this European development, it is interesting to ask whether this approach has also been adopted by the Member States in relation to their regional entities and governments. As will be shown in more detail below, this is not the case in German climate policy and can be seen as an important gap.

At the same time, climate policy is a vivid example of the fact that a functional division of tasks and responsibilities cannot be reasonably achieved through the exclusive allocation of an entire policy area. While it is clear that overall greenhouse gas mitigation targets and also national contributions cannot be effectively determined in a decentralised approach, it is equally clear that the central level cannot reasonably decide on all the diverse local measures needed to implement the mitigation targets. While there is a clear case for centralised target setting on the protection of global commons, this is not the case with regard to the local means of implementation, especially not in a highly diverse multi-sectoral and multi-actor field such as climate policy. With regard to the different sectors and means of implementation, a specific analysis is needed as to whether centralised decision-making is superior to national or regional agency. This requires a close look at the sources, measures and instruments involved.

In a federal market community, the need for centralised standards may also be motivated by the objective of avoiding trade barriers¹³ and creating a level playing field¹⁴ for cross-border competition. The removal of trade barriers is

10. Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030, OJ L 156, 26.

11. Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community, OJ L 275, 25.10.2003, p. 32.

12. Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, OJ L 328, 21.12.2018, p. 1-77; Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243, 9.7.2021, p. 1-17.

13. Vanberg, "Constitutionally Constrained and Safeguarded Competition in Markets and Politics", 10 et seq.

14. See Macey, *Using Federalism to Improve Environmental Policy*, 21.

one of the core foundations of European economic integration and the internal market, as expressed in the general prohibition of import restrictions and measures having an equivalent effect (Art. 26, 28, 35) and in the Union's competence to harmonise laws and standards according to Article 114 TFEU. This competence mainly concerns product standards (e.g., on the energy efficiency of energy-using goods), where divergent national regulations could constitute an obstacle to free trade. In the case of protective production standards, including on environmental protection, an open market risks creating competition for the lowest standard. States may be economically incentivised to undercut each other's level of protection in order to gain competitive advantages or to avoid disadvantages.¹⁵ Common minimum standards are, therefore, needed not only in relation to transboundary pollution but also as a means of preventing such a "race to the bottom" and ensuring an adequate common level of protection. As far as the environment is concerned, it is well known that the TFEU even mandates the EU legislator to ensure a *high* level of protection as a level playing field (Art. 192.2 TFEU), thus legitimising a rather far-reaching unification of environmental production standards. However, it should be noted that the "level-playing-field" motive, as well as the objective of preventing transboundary environmental damage, only require "minimum" standards – be it at a high level of protection – but do not legitimise a full harmonisation of production standards in the sense that Member States can be prohibited from exceeding the common (minimum) level of protection. Consequently, Art. 193 TFEU explicitly guarantees the right of the Member States to "gold-plate" and go further than EU environmental law based on Art. 192 TFEU.

Given the above motives for centralised legislation, purely local measures without environmental or economic externalities, instead, appear to be the area where local levels of government are best placed. Local infrastructure and regulation of urban development and regional land-use are the most important examples of such local matters.

15. This argument has served as a key motivation for federal environmental regulation not only in the EU. In the United States, the "topos" of level-playing-field was essentially used by the US Supreme Court in order to derive federal competences from the "commerce clause" of Article 1 (8.3) of the US Constitution. See Paddock and Bowmar, "Environmental Governance in the US", 49, regarding US Supreme Court adjudication.

Of course, the question of which level of government is best suited depends not only on the issue at hand, but also on the particular shape of the federal system and its territorial units and governments – the “federal hardware”, so to speak.¹⁶ These structures are, to a large extent, the result of historical contingencies, victories, defeats and political compromises, and so they vary considerably from country to country and never fully reflect the requirements of subsidiarity and functional distribution of tasks. The fact that the institutional settings vary considerably across federal states complicates comparative assessment and requires careful recognition of both the institutional structure and the division of tasks and responsibilities within that particular structure.

In the case of climate policy, the complexity of multi-level governance is multiplied by the breadth and diversity of the issue, which touches almost all sectors of the social and economic system. Obviously, the question of (adequate) distribution of competences needs to be assessed specifically with regard to these different sectoral challenges and their specific federal context. It is therefore useful to briefly outline the complexity of the climate policy challenges before assessing the specifics of the German example. Moreover, it is necessary to take into account the far-reaching EU competences and interventions which have a considerable impact not only on climate policy as such but also on the (further) distribution of tasks. In the following chapter, these precepts of multi-level climate policy cannot be depicted in detail but can at least be sketched in broad outlines.

3. The different areas of climate policy – in light of the above criteria and the influence of EU legislation

In our fossil- fuelled societies, greenhouse gas emissions are pervasive and mitigation policies need to be implemented in all sectors, in particular: energy production, industry (including products and the circular economy), transport, buildings and agriculture. Policy options include both overarching and sectoral approaches.

16. Reese, “Distribution of Powers”, 678.

3.1. Overarching approaches

At the top of the overarching approach are the global, European and national greenhouse gas mitigation targets and cross-sectoral governance mechanisms (implementation and enforcement). In the EU, two overarching approaches have been used to promote greenhouse gas mitigation across sectors and levels: on the one hand, the policy planning regime as provided for in the EU's Climate Law¹⁷ and Governance Regulation¹⁸ and, on the other hand, the Emissions Trading Scheme (ETS), which covers large parts of the energy and industrial sectors and is planned to be extended to the transport and buildings sectors.¹⁹

The multi-level governance system provided for in the European Climate Law and Governance Regulation establishes a comprehensive policy planning, reporting and review system. The key instruments are the National Integrated Climate and Energy Plans and the Long-Term Strategies, which Member States are required to adopt in order to identify, assess and review the national policies and measures they intend to put in place to achieve the European 2030 and 2050 greenhouse gas reduction targets, as well as the development of renewable energy development, energy efficiency and grid interconnection. This approach of regulated policy planning is accompanied by extensive monitoring and reporting requirements and a mandate for the EU Commission to monitor implementation and recommend amendments where necessary.²⁰

The targets and policy planning obligations are addressed to the Member States, thus creating a special responsibility of national governments to meet these European requirements. This, in turn, provides a rationale for adopting a similar governance approach internally and extending the planning, assessment and reporting obligations to the regional entities where they have the relevant competences and capacities to contribute to the achievement of mitigation, renewable energy and efficiency targets. However, the target and planning approach essentially leaves it to Member States to determine their

17. *Supra* note 12.

18. *Supra* note 12.

19. *Supra* note 11.

20. Schlacke and Knodt, "The Governance System", 323-339.

internal allocation of climate policy competences and responsibilities and in no way restricts the choice of measures and instruments at either level.

In contrast to this, the ETS implies a fundamental choice in favour of this market-based instrument. In principle, the cap-and-trade is not compatible with command-and-control approaches, which limit the scope for market-based allocation of abatement efforts and hamper the intended dynamic efficiency gains. Consequently, greenhouse gas emissions are excluded from the permitting requirements for industrial installations under Art. 9 of the Industrial Emissions Directive.²¹ Thus, the ETS can also be seen as a cancellation of more decentralised approaches to regulating greenhouse gas emissions and sources.

3.2. Energy

The energy sector is clearly the most important in terms of reducing greenhouse gas emissions, and the main challenge is to shift from fossil fuels to renewable energy sources. The EU is tackling this challenge through a dual approach with the Emissions Trading System (ETS) pushing out fossil fuels and the Renewable Energy Directive²² providing the basis for national support schemes for renewable energy sources. In general, the EU policy framework remains rather open with regard to the choice of policies and instruments used to transform the national energy mixes towards renewable energy and climate neutrality, and as such, does not significantly interfere with the division of competences within the Member States. It is recognised, not least at EU level, that the development of (renewable) energy installations, grids and stable supply systems is a complex challenge of infrastructure and land-use development that is strongly influenced by local conditions and must therefore be mainly managed by regional and local actors. However, at least in Germany, there is quite some uncertainty about the most effective interaction between the national and regional levels, as will be shown below.

21. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions, OJ L 334, 17.12.2010, p. 17–119.

22. Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, OJ L 328, 21.12.2018, p. 82–209.

3.3. Industry: production, products & waste

In the industry sector, there are two target areas: production processes and industrial installations on the one hand and products and their life cycle on the other hand. Both areas are heavily influenced by harmonised legislation, even at the European level. Emissions and energy efficiency of industrial installations and production processes are regulated more or less exhaustively by the ETS for installations covered by the ETS Directive and by the Industrial Emissions Directive including BREF standards for the rest. However, both the ETS and the Industrial Emissions Directive are based on Art. 192 TFEU, thus implying the right of Member States to adopt more stringent protective measures in accordance with Article 193 TFEU. However, more stringent regional emission standards are not consistent with the market-based efficiency approach of the ETS and can only lead to additional abatement effects if a proportionate amount of emission allowances is cancelled (as has been possible since the adoption of Directive 2018/410 amending the ETS Directive²³) in order to avoid the so-called “waterbed effect”.

With regard to product-related standards, the functional federalism perspective basically suggests a central competence for any market union, as divergent standards would severely distort trade and competition between the territorial units. Consequentially, EU product standards are regularly based on the harmonisation competence of Art. 114 TFEU, and national deviations are only permitted under the restrictive conditions of that article. As a result, there is little room for individual regional requirements (e.g., on the energy efficiency of energy-using products or the labelling of such products) as far as these are covered by the EU Eco-design Regulation. In a recent proposal,²⁴ the Commission intends to significantly extend this regulation to cover more products and environmental aspects, thus limiting the scope for national or even devolved regional competences in this respect.

What remains as regional and local instruments of climate-oriented industrial policy is basically limited to structural and location policy through spatial planning, infrastructure development, and fiscal support. As a result,

23. OJ L 76, 19.3.2018, p. 3–27.

24. Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, COM (2022), 142 final.

local industry policy is mainly concerned with attracting and furthering climate-friendly industries rather than regulating and banning greenhouse gas-intensive production.

In addition to energy efficiency, resource efficiency and the circular economy are other important requirements for decarbonisation. Accordingly, a key objective of the – extended – Ecodesign Regulation is to promote the circular economy and ensure that products have a long lifetime and can easily be recycled and reintroduced into the value chains. Again, there is a clear trend towards centralised European product and producer responsibility standards, which is also clearly supported by the principles of subsidiarity and functional federalism.²⁵

However, in addition to these product-related approaches, resource-efficient waste management is highly dependent on the existence and use of advanced collection, treatment and recycling infrastructures. Again, the main waste management standards and obligations have long been regulated at the EU level and, most notably, in the Waste Framework Directive.²⁶ The WFD sets out a five-step waste hierarchy according to which waste should be prevented as far as possible and only disposed of unless it cannot be recycled or recovered in the first place. EU legislation also provides environmental standards for the disposal and recycling of major waste types and streams of waste. However, these European waste management standards are based on Art. 192 TFEU and, therefore, do not preclude more stringent national or regional requirements. However, it is not the regulation of waste management standards but the development of advanced (public) waste management infrastructure that is the responsibility of the regional and local governments. Again, this responsibility lies mainly in the fiscal areas of public infrastructure development. In this respect, the regional/local competence appears to be advantageous from the perspective of functional federalism, as waste management infrastructure must be tailored to local conditions and the particular composition of local waste management structures does not have significant externalities as long as the European and national waste management standards are complied with.

25. See EU Commission, *A new Circular Economy Action Plan*, 98 final.

26. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, OJ L 312, 22.11.2008, p. 3–30.

3.4. Transport

Transport accounts for about 20 % of the total EU's greenhouse gas emissions.²⁷ The main approaches to mitigating these emissions are (1) regulating vehicle emissions (2) providing low-carbon transport infrastructure and (3) developing low-traffic settlement structures.

As in other areas of product policy, the regulation of vehicle emissions has long been established as an EU competence. This is clearly justified in terms of the subsidiarity principle by the fact that vehicles are not only traded in the single market but also driven across European borders. The recent 2035 ban on combustion engines²⁸ is just the latest expression of European dominance in this field, leaving little room for national and regional regulation.

With regard to infrastructure development, the situation is, of course, different. Here the functional allocation of competences is linked to the scale of the infrastructure in question. Regional and local transport infrastructure, including transport networks, public transport, and e-mobility infrastructure, must be developed according to the local conditions and needs. The choice of how to develop these local infrastructures towards climate neutrality has no significant externalities. It should, therefore, remain in the hands of the regional and local governments, and, indeed, this seems to be the case almost everywhere. Last but not least, the same applies to the development of low-traffic settlement structures, which is mainly a regional/local challenge of spatial planning, zoning and permitting.

While in principle the division of competences in transport policy between vehicle-related standards (EU/central) and infrastructure development (according to scale) seems clear, doubts may arise with regard to the possible instruments of local traffic bans and restrictions on certain types of vehicles. Such bans have been imposed in certain heavily polluted urban canyons (for example, on diesel vehicles), in order to meet EU air quality standards.

27. European Environmental Agency (EEA). <https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases/transport-emissions-of-greenhouse-gases-12>.

28. European Parliament, Press release of 14 February 2023, <https://www.europarl.europa.eu/news/en/press-room/20230210IPR74715/fit-for-55-zero-co2-emissions-for-new-cars-and-vans-in-2035>.

Different cities have introduced different models of city access bans, restrictions or charges in order to alleviate the pollution situation and incentivise environmentally-friendly modes of transport. With regard to the division of competences this raises the question of whether and to what extent the regions and municipalities should be entitled to exclude certain types of vehicles from parts of their transport network, even though these vehicles comply with European and national emission standards.²⁹ This question may be answered differently in different countries, and a comparative assessment seems interesting.

3.5. Buildings

Residential and commercial buildings are another major source of greenhouse gas emissions and a crucial area for action.³⁰ Similarly to the field of transport policy, a general distinction can be made between general energy efficiency standards as a primary responsibility of the central government and local planning and development as a responsibility of local communities. Once more, the question arises as to whether local governments should be empowered to adopt more stringent requirements (e.g., for energy efficiency, use of renewable energy, connection to district heating, etc.). Again, comparative research on this question appears interesting but so far scarce.

3.6. Finance & others

When discussing the distribution of powers and, in particular, the competences of local governments, the importance of finance and fiscal powers must not be overlooked. In this context, key issues of competence include the definition of State aid and green finance criteria and the extent to which regional and local governments have the means to support local decarbonisation projects. As is well known, the area of State aid and green finance (criteria) is increasingly being regulated by the EU because of its obvious relevance for the common market and the huge funds that the Union is managing under

29. This competence conflict has been subject to a decision of the German Federal Administrative Court of 27. February 2018, ECLI:DE:BVerwG:2018:270218U7C26.16.O.

30. See International Energy Agency, *2019 Status Report for Buildings and Construction*.

the auspices of the EU Green Deal and the Next Generation Recovery and Investment Programme.³¹

3.7. Adaptation

Adapting to the impacts of climate change involves a number of challenges that are mainly local in nature, such as improving flood protection, adapting buildings and urban structures to increasing precipitation, heat and droughts, building resilient water infrastructures for periods of drought, changing agriculture and horticulture to more resilient crops, etc.³² As far as regional and local structures, infrastructures and land-use arrangements are concerned, this is clearly the responsibility of regional and local authorities. However, where the climate resilience of buildings or technical structures, for example, can be generally improved by adapted technical standards, there may also be a case for uniform regulation at central levels.

Similarly to the global target and governance regime for mitigation policies, there may be a supra-regional interest in ensuring that regions and municipalities take the challenges of climate adaptation seriously and act accordingly. This can be achieved, inter alia, through federal requirements to conduct vulnerability assessments and to develop regional and local adaptation plans.

3.8. Interim chapter conclusion

The brief assessment of the various challenges of climate policy confirms that this is a highly complex and multifaceted policy area, where the question of an appropriate and functional distribution of responsibilities cannot be answered in a general way. Rather, it needs to be carefully assessed on a sector-by-sector-specific basis. From the above, it can also be concluded that the criteria of subsidiarity and functional division of competences basically support a distinction between:

31. See Jendroska et al., “Environmental Law in Transformation”, 6-12.

32. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022*.

- Product-related regulation (e.g., on energy efficiency and recyclability) where uniformity in the market community appears to be necessary;
- Production-related regulation where minimum standards (e.g., on energy efficiency and greenhouse gas emissions) are necessary to ensure a level playing field; and
- Infrastructure, urban and land-use development, where responsibilities should be commensurate with the scale of the structures involved – which is mostly at the regional and local level.

It can be further concluded that the EU's climate policy has evolved towards a high regulatory intensity and mostly follows the path of functional federalism described above. However, the market-based approach of the ETS goes much further in relation to greenhouse gas emissions from production, as it basically precludes further national and regional regulation within the scope of the scheme.

Finally, it should be clear from this overview that the measure of functional allocation of responsibilities does not always provide clear solutions but also entails ambiguities, in particular with regard to the relationship between central product regulation and regional/local efforts to further restrict the local use of such products in order to promote the decarbonisation of the region.

With these preliminary conclusions in mind, we will now turn to the example of Germany and look at how competences are distributed in this country and, in particular, how the regions are empowered and engaged in the different areas of climate policy.

4. The German federal system and constitutional powers in the relevant areas of action

The federal distribution of competences in German climate policy is, of course, primarily shaped by the general – constitutional – structures of the German federal system as will briefly be explained below. At the outset, it should be emphasised, that the German federal system is an example of so-

called “administrative” or “executive” federalism, in which legislation is the predominant domain of the federal level while the federal regional states (Länder) are mainly responsible for the implementation and enforcement of the (federal) laws. According to the provisions of Article 74 of the German Basic Law (Grundgesetz – GG), the federal level has concurrent legislative powers in almost all of the above-mentioned areas of climate policy and is therefore entitled to enact federal laws that take precedence. In principle, the federal states have only subordinate legislative powers, and the state parliaments can only regulate matters that are not (exhaustively) covered by federal laws, or where federal laws explicitly allow for regional legislation. In contrast to the EU approach, the German Constitution does not even grant the Länder the right to pass more stringent laws. In order to relax this uniform approach somewhat, some exceptions to the far-reaching federal powers have been introduced for selected areas of legislation, including nature conservation and spatial planning (see Article 72 (3) GG). In these areas, the Länder are allowed to enact deviating state laws, which in some respects may be important for the development of renewable energy structures in particular. On the whole, however, state legislation has little say in climate policy.

Instead, the main role of the regional states lies in their general executive and fiscal powers. Within these executive powers, the most important areas of regional decision-making are spatial planning and public infrastructure development. State-wide and medium-scale regional planning and infrastructure are regularly in the hands of the (regional) state administration. Local spatial planning, zoning and infrastructure development are largely the responsibility of municipalities. Municipalities have a constitutional right to regulate their local affairs autonomously according to Article 28 (2) GG. However, this provision also ties municipal autonomy to the framework of the federal and state laws and makes it clear that federal and state legislatures have the right to regulate the general objectives, principles, standards and procedures of spatial planning and infrastructure development within their respective areas of competence.

This legal framework for regional and local planning is mainly provided by federal legislation, namely in the Federal Spatial Planning Act (Raumordnungsgesetz – ROG) for state and regional planning, and in the Federal Building Code (Baugesetzbuch – BauGB) for local spatial planning and urban zoning. Both laws provide for uniform planning instruments and procedures and regulate the interaction between the different planning scales.

Both laws also define the general objectives and overriding public interests that planning authorities must pursue and take into account in all planning decisions. Climate change mitigation and adaptation are among these regulated planning objectives. Both the ROG and the BauGB were amended more than ten years ago to include these objectives and to adapt the planning instruments accordingly. Section 2 No. 6 ROG stipulates that spatial planning must take account of the “spatial requirements of climate protection including both measures to mitigate global warming and measures to adapt to climate change”. Spatial planning has to create “the spatial conditions for the development of renewable energy structures for efficient use of energy and for the conservation and restoration of natural carbon sinks.” Similarly, Section 1 (5) and Section 1a (5) BauGB stipulate that urban spatial plans and zoning shall take into account both greenhouse gas mitigation and climate adaptation in urban development.

The above-mentioned federal laws establish greenhouse gas mitigation and climate adaptation as key objectives of regional and local spatial planning. However, these climate-related objectives come alongside – and not above – a range of other social, economic and environmental objectives that are also proclaimed in these planning laws. It is, therefore, largely up to the relevant planning authorities to set concrete priorities and decide how (and to what extent) to pursue the climate-related development objectives within the given spatial context.

Moreover, there is hardly any top-down control and, in particular, no regular monitoring by the federal government of whether the federal laws are effectively implemented by state authorities and whether the statutory planning objectives are adequately taken into account and complied with in the given context. Although the federal government is in principle entitled under Article 86 (4-6) to supervise and enforce full implementation of its legislation by the states, this constitutional mandate is never actually used, and it is not backed up by regular procedures and federal enforcement bodies. In relation to the federal government, the regional planning authorities are basically free to pursue their own priorities and they can even disregard the legal requirements without facing any effective top-down enforcement. In summary, regional authorities in Germany enjoy a high degree of autonomy with regard to spatial planning and regional development.

With regard to municipal spatial planning and zoning, downstream enforcement of the federal planning objectives is equally weak. The BauGB provides for two levels of municipal planning: firstly, an overarching municipal spatial plan (Flächennutzungsplan, Section 5 BauGB) which roughly classifies the municipal areas according to general types of urban land-use and determines major infrastructure, and secondly, the small-scale zoning plans which precisely determine the permissible use of the individual plots of land. According to Section 6 BauGB, the overarching spatial plan must be reviewed for its legality and approved by the state authorities. No such approval is required for more specific urban zoning plans if the area is covered by an overarching plan. However, it is at the zoning stage where most of the relevant and externally binding decisions are made; for example, on energy supply and efficiency and the climate-proof location and design of buildings.

In addition to spatial planning and zoning, federal laws also regulate responsibilities and general standards for public infrastructure and services (esp. energy, transport, waste, water, flood protection). In many respects, these infrastructure laws have been amended in the past years to include principles and obligations related to climate change mitigation and adaptation which are beyond the scope of this publication. In general, however, it should be noted that the intensity of federal directives on climate protection and adaptation is similarly weak in infrastructure law as is the case in spatial planning law: they are mainly limited to mentioning climate protection and adaptation as general objectives of infrastructure development among many others. As a consequence, federal infrastructure laws still leave a wide margin of discretion to the competent authorities as to how (and to what extent) infrastructure and services should be developed in line with climate policy objectives.

In summary, it can be concluded that in Germany, despite the strong legislative competence of the federal government, the Länder and municipalities still have a high degree of autonomy in spatial and infrastructure development. Unfortunately, as practice has shown and as will be shown below with regard to the development of renewable energies, this autonomy does not always work as a driver for climate protection. Instead, when it comes to managing the trade-offs, for example, between renewable energy structures and conflicting land-use interests, the latter often prevail over the global interest of climate protection. This is particularly the case in local and regional politics where actors are particularly tied to local interests and stakeholders.

The current debate in Germany is, therefore, more about strengthening federal action rather than about regional autonomy.

However, it should not be hidden that on the federal level, too, the above-mentioned trade-offs and conflicts are not always resolved in favour of climate protection and, in particular, energy transition. Federal (and European) nature conservation requirements, for example, have been a major obstacle to the planning and realisation of wind turbines and solar power plants. Similarly, federal regulations for planning and permitting renewable energy plants have been seen as too bureaucratic to allow rapid development.³³ However, the solution to these problems of the federal framework is not to abolish federal action and to leave these matters to the regions. Rather, as will be shown in Chapter 6, the way forward is to make improvements to federal legislation in order to provide a faster track for the deployment of renewable energy across the country.

Before extending further on this example, however, we must explain the overall approach that Germany is using to coordinate its climate policies across sectors and levels and to implement the EU's climate targets and governance regime.

5. The German approach to climate governance: the German Climate Law

It is clear that Germany, like any other country, can only meet its mid- and long-term decarbonisation commitments if it develops and implements adequate mid- and long-term policy programmes for all sectors and levels. As mentioned in Chapter 3 above, the EU Climate Law and Governance Regulation require national energy and climate plans (NECP) as well as 2050 long-term strategies. In order to fulfil these planning obligations, the German government has adopted a National Climate Protection Plan with a 2050 perspective and a National Energy and Climate Plan with a 10-year perspective in accordance with the EU Governance Regulation. In addition, a Federal Climate Protection Act (*Klimaschutzgesetz*) was adopted in 2019,

33. See German Advisory Council on the Environment, *Klimaschutz braucht Rückenwind*; Kment, "Eine neue Ära beim Ausbau von Windenergieanlagen", 1153.

which sets out national climate policy targets and mandatory contributions from all relevant sectors, including energy, industry, transport, buildings, agriculture and waste/other. These sectoral contributions are also broken down into annual emission budgets and the relevant federal ministries are declared responsible for these sectoral budgets. If the annual budgets are exceeded, the responsible ministry must draw up short-term action plans to further reduce emissions.

The federal climate and energy plans and climate protection law also recognise that the climate targets require a multi-level effort with significant contributions from regional states and municipalities. However, neither the plans nor the law set out specific targets or emission budgets for the Länder. The federal framework does not oblige the Länder or municipalities to draw up their own climate and energy plans to complement the national policy plan. Section 14 of the Climate Protection Act merely states that the Länder “may enact their own climate laws” and that “the Federal Government and the Länder shall cooperate appropriately to achieve the objectives of this Act”. Some of the regional states have, indeed, adopted their own climate laws and established regional climate policy programmes. However, in many respects, it remains unclear how these regional laws and plans relate to the federal and EU policy levels.

Without going further into detail, it can be concluded that cooperation between the federal and regional levels in Germany is rather poorly regulated. The target oriented top-down governance approach established under the EU Climate Law and the Governance Regulation is not transferred to the German federal system and not extended to the regional states. The federal level has, so far, refrained from imposing regional targets and policy planning obligations on the Länder. However, recent experience shows – as will be illustrated by the example of wind energy below – that the Länder do not tend to use their autonomy to promote decarbonisation, but rather to delay the necessary transformation processes.

To some extent, however, federal and EU regulations have also hampered local infrastructure transformation by imposing complicated planning schemes and strict requirements, particularly with regard to nature conservation.³⁴

34. See supra note 33.

This raises the question of what the federal government can do to support and enforce developments on the regional and local level. The next chapter briefly discusses this in relation to the important example of wind energy development.

6. The example of wind energy development

Wind energy is an important pillar of the European and German energy transition.³⁵ To meet its target of 80 % of total electricity consumption from renewables by 2030, Germany needs to double its wind energy capacity by then. While a development push is needed, the pace has been very slow in recent years. The reasons for this are many and varied and can be found at the European, federal and regional levels. The EU level has mainly been blamed for setting overly strict nature and species conservation standards (through the Habitats and Birds Directives³⁶), which have created high legal hurdles and uncertainties for wind energy projects.³⁷ The federal level added further obstacles by essentially tying wind turbines to specific “go-to” zones which have to be determined by state and regional planning.³⁸ In addition, the federal framework for financial support was changed to an auctioning system, which appeared much less attractive to investors than the previous feed-in tariff approach.

However, very significant barriers have also emerged at the local and Länder level concerning the identification and designation of suitable sites for wind energy development. At the local level, further expansion of wind energy has become increasingly contentious, acceptance of further wind farms has declined significantly, and projects have faced increasing local opposition and NIMBY reactions. As a result, local and state politicians have become increasingly reluctant to push through wind farms in the face of this growing

35. See German Advisory Council on the Environment, *Klimaschutz braucht Rückenwind*.

36. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, p. 7–50; Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20, 26.1.2010, p. 7–25.

37. Karabas, “Wohnumfeld- und Artenschutz”, 400, with further references also to the rich body of adjudication on the issues of nature and species conservation.

38. German Advisory Council on the Environment, *Klimaschutz braucht Rückenwind*.

opposition. Based on an opening clause in the federal planning law, Länder legislators have even adopted further restrictions, especially regarding the distance between wind turbines and residential areas. Bavaria, for example, was the first state to adopt a standard requiring the distance between wind turbines and residential areas to be at least ten times the height of the propeller. This made it very difficult to find any suitable development sites.

In response to this stalled development, the German government adopted a series of measures in 2022.³⁹ With the encouragement of the European legislator (through the REPower Directive), the federal legal framework was significantly amended to ease obstructive procedural and substantive requirements, on the one hand, and to exert legal pressure on the Länder to provide sufficient space and to facilitate the approval processes, on the other hand. In order to ease the legal permitting requirements, it has been established that renewable energy installations are generally considered to be of “overriding public interest” and, therefore, regularly qualify for exemptions from nature conservation and water protection standards. As these standards are mainly routed in EU legislation, in particular the Birds and Habitats Directives, the EU legislator has made parallel changes.⁴⁰ In addition, the German federal legislator has concretised species protection requirements – in particular, the ban on killing – and adopted application standards to support a lenient interpretation and provide legal certainty for investors and authorities.⁴¹

In order to not only facilitate but also enforce further development of renewable energy, the German government has also adopted binding minimum targets for the allocation of land for wind energy development. According to the new law, a total of 1,4 % of Germany’s territory must be dedicated as binding go-to areas for wind energy by 2027 and 2 % by 2032. This national target is broken down into state contributions that vary according to the particular potential of each region. The go-to areas must be designated by formal means of spatial planning and ensure that wind turbines are, in principle, permitted within these areas. It is still up to the regional states to define these areas and to set specific minimum distances. However, this planning autonomy must

39. For details see Kment, “Eine neue Ära beim Ausbau von Windenergieanlagen”, 1153.

40. Via Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy, OJ L 335, 29-12.2022, pp. 36.

41. See § 45 c of the German Nature Conservation Act (Bundesnaturschutzgesetz – BNatSchG).

not hinder the achievement of the binding targets for the total area of go-to zones. If progress reports show that a state is not meeting these targets, it will lose its right to determine regional distance requirements.

Whether these new federal interventions will ultimately turn the tide and spur a wave of new wind energy projects remains to be seen. Nevertheless, the example illustrates that German regional states and municipalities have considerable autonomy in spatial and infrastructure development. Federal legislation is mainly limited to providing uniform planning procedures and standards to protect conflicting interests such as healthy living conditions, nature or water quality. Depending on the priorities they express, these legal reservations can only slow down or impede infrastructure development. However, they do not proactively promote the transformation of local infrastructure but leave the level of action largely to the autonomy of the regions and municipalities.

However, the German experience described above shows – in my view – that regional and local authorities are unlikely to achieve the necessary infrastructure transformation on the basis of such “undirected regional autonomy” and a purely voluntary approach. Like the European Member States within the EU, the regional governments, too, need to be guided by binding targets and burden-sharing commitments. In principle, the reasons why it is necessary to enforce the EU decarbonisation commitments through binding burden sharing, national targets and policy plans apply equally to regions and local communities, and here even more so, as deciders at these levels are much closer and more susceptible to the conflicting interests of their constituents. In the area of wind energy development, this has become very clear in Germany and, therefore, this is the area where we are now seeing the first emergence of binding federal development targets, albeit very cautious and limited to the minimum dedicated area quotas.

7. Conclusion: The need for regionalised transformation targets and policy planning (law) as a means of federal sustainability transformation

Looking again at the overall picture of the distribution of responsibilities in the EU and in Germany, especially with regard to regional climate policy, it can be summarised as follows:

- The German federal system presents an example of administrative federalism in which legislation is primarily the responsibility of the central government, while the Länder and local municipalities have their domain in the executive and fiscal matters and, as part of this, have strong powers in spatial planning and infrastructure development. The latter is of great importance for the transformation towards renewable energy supply and carbon-neutral infrastructures and land use.
- The regulatory powers of the federal level are strongly influenced by EU legislation as the growing body of EU climate and energy legislation covers many areas of climate policy. EU policies and legislation, thus, restrict the scope for autonomous decision-making not only of Member States as such, but also for their federal units and local authorities. This is particularly true for product (efficiency) standards, but also for legislation on greenhouse gas emissions and energy efficiency of production processes, such as the EU Emission Trading Scheme (ETS). In addition, the protection of human health, safety and other environmental goods is widely regulated by EU and national standards that constrain regional and local development of low-carbon structures. Recently, however, both EU and national legislation have significantly expanded the possibilities for granting exemptions from conflicting environmental standards in order to provide more room for renewable energy development at the local level.
- Despite the broad legislative powers of the EU and federal levels the executive powers of the regional states and municipalities imply far-reaching powers in the crucial areas of spatial planning and (infrastructure) development.
- Although the Länder and municipalities have these crucial planning and development powers, they have not yet been included in a target-oriented governance regime of the kind established at the EU level by the Climate Law and Governance Regulation. The German federal government has not set regional greenhouse gas budgets and reduction paths, nor has it obliged the regional states to provide meaningful long-term policy programmes to complement the national planning required by EU law.
- Recent experience – particularly in the field of wind energy development – shows that this lack of regional (state) targets and binding policy

planning is a fundamental gap in the current German approach to the federal division of roles and responsibilities.

The main thesis of this paper is, therefore, that a regulated system of target-oriented governance – as established at the EU level by the EU Climate Law and Governance Regulation – is a fundamental institutional prerequisite for an effective multi-level climate policy, not only in the European Union and vis-à-vis its Member States, but also in relation to regional states and autonomous regions and communities. Essential elements of such a multi-level governance system include:⁴²

- binding regional targets on greenhouse gas reduction, energy efficiency and infrastructure transformation based on fair burden-sharing between the regions;
- the obligation to develop and regularly review target-oriented policy plans and programmes of measures;
- continuous monitoring of the implementation of the above programmes and the progress towards the climate policy targets based on meaningful indicators; and
- effective compliance mechanisms and means of enforcement.

All these elements are part of the current EU climate governance regime, and it seems that they should also be applied within the Member States and towards their autonomous territorial units. The need to guide not only Member States but also their autonomous regions and municipalities through binding targets and policy planning schemes is strongly supported by the principle of subsidiarity and the related criteria of the functional division of powers presented in the second chapter of this article. The principle of subsidiarity – as explained earlier – proclaims that the lower (local/regional) units of the federal system should retain as much autonomy as possible, and that this local autonomy should be restricted by the central government and uniform legislation only to the extent necessary to realise common interests

42. A recent comprehensive account of these key elements of programmatic governance is provided by Braaksma, *The Programmatic Approach*.

and protect common goods (more effectively than it could be achieved by undirected local decision making). It is true that subsidiarity is only an EU principle and not equally shared by national constitutions. However, the pragmatic intention behind it, namely, to prioritise local autonomy and distribute responsibilities according to the highest problem-solving capacity, can well be seen as a general measure of effective and “appropriate” multi-level governance. As such, this pragmatic approach can also be seen as a measure for effective multi-level climate governance within the Member States and in relation to their federal units and local authorities.

When it comes to protecting the global climate by curbing greenhouse gas emitting activities and transforming existing economies and infrastructure, it is obvious that undirected regional governments would be caught in the famous “prisoner’s dilemma” and tend to externalise the burden to other regions. Therefore, the federal government and common laws are basically needed to ensure sufficient and equitable contributions from all units according to their respective areas of autonomy. However, the intervention of the common central government should also be prudent and leave as much autonomy to the sovereign units as possible.

The latter is precisely what is achieved by the target-based policy planning approach described above. Binding targets need to be set to ensure sufficient and equitable contributions from each unit. Planning, monitoring and compliance systems are needed to ensure effective implementation and enforcement, while the decisions on ways and means are largely left to regional and local decision-making.⁴³ This cautious target-oriented approach may not be sufficient where coherent product or production standards are needed to facilitate common markets and a level playing field. For spatial and infrastructure development, however, the target-based approach seems both sufficient and necessary as a means of multi-level climate governance.

One recommendation that can be drawn from the above is that Member States should join the EU in developing a target-based “policy planning law” and extend this approach to their regional and local units. In Germany, this development has only just begun. From a comparative perspective, it would

43. For more details on this target-oriented governance approach, see Reese, “Distribution of Powers”, 697.

be interesting to examine whether and how other countries have already gone further in this direction.

Bibliography

- Alberton, Mariachiara, and Francesco Palermo. "Concluding Remarks". In Mariachiara Alberton, and Francesco Palermo, eds., *Environmental Protection in Multilayered Systems*, 503-528. Leiden/Boston: Martinus Nijhoff, 2012.
- Braaksma, Lolke. *The Programmatic Approach in Environmental Law. Towards a Legal Design in the European Union and the Netherlands that Pursues Sustainability*. Alblasterdam: Ridderprint, 2023.
- Bretton, Albert, and Anthony Scott. *The Economic Constitution of Federal States*. Toronto: University Press, 1978.
- Dye, Thomas R. *American Federalism: Competition among Governments*. Lexington, Mass.: Lexington Books, 1990.
- EU Commission. *A new Circular Economy Action Plan*, COM(2020) 98 final.
- . *Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC*, COM (2022), 142 final.
- German Advisory Council on the Environment (Sachverständigenrat für Umweltfragen-SRU). *Klimaschutz braucht Rückenwind: Für einen konsequenten Ausbau der Windenergie an Land*. Stellungnahme, February 2022. https://www.umweltrat.de/SharedDocs/Downloads/DE/04_Stellungnahmen/2020_2024/2022_02_stellungnahme_windenergie.pdf?__blob=publicationFile&v=22.
- Harding, Garret. "Tragedy of the Commons". *Science* 3859 (1968): 1243-1248.
- Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Working Group II Contribution to the Sixth Assessment Report. https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_Full-Report.pdf.
- International Energy Agency. *2019 Status Report for Buildings and Construction towards a zero-emission, efficient and resilient buildings and construction sector*. https://iea.blob.core.windows.net/assets/3da9daf9-ef75-4a37-b3da-a09224e299dc/2019_Global_Status_Report_for_Buildings_and_Construction.pdf.
- Isensee, Joseph. *Subsidiaritätsprinzip und Verfassungsrecht*. Berlin: Duncker&Humblodt, 1969.
- Jendroska, Jerzy, Moritz Reese, and Lorenzo Squintani. "Environmental Law in Transformation – Key developments under the European Green Deal". In S. Tilling, ed., *Environment & climate change law and regulations 2023: A practical cross-border insight into environment and climate change law*, 6-12, 19th ed. International Comparative Legal Guides (ICLG), London, 2023.
- Karabas, Sinan. "Wohnumfeld- und Artenschutz als Dauerprobleme bei der Zulassung von Windenergieanlagen". *Zeitschrift für Umweltrecht* (2022): 400-408.

- Kment, Martin. "Eine neue Ära beim Ausbau von Windenegeanlagen". *Neue Zeitschrift für Verwaltungsrecht* (2022): 1153-1159.
- Lasok, K.P.E., and D. Lasok. *Law and Institutions of the European Union*. 7th Edition. Butterworths, 2001.
- Macey, J. R. *Using Federalism to Improve Environmental Policy*. Washington DC: AEL Press, 1996.
- Oates, Wallace E. *Fiscal Federalism*. New York: Ashgate Publishing Company, 1972.
- Ostrom, Elinor. *Governing the Commons*. Cambridge: Cambridge University Press, 1992.
- Paddock, LeRoy, and Jennifer Bowmar. "Environmental Governance in the US". In Mariachiara Alberton, and Francesco Palermo, eds., *Environmental Protection in Multi-Layered Systems*, 33-54. Leiden: Martinus Nijhoff, 2012.
- Reese, M. "Distribution of Powers". In Emma Lees, and Jorge Vinuales, eds., *Oxford Handbook of Comparative Environmental Law*, 678-702. Oxford: Oxford University Press, 2019.
- Schlacke, Sabine, and Michele Knodt. "The Governance System of the European Union and Climate Action". *Journal for European Environmental & Planning Law* 1 (2019): 323-339.
- Streck, Charlotte, Paul Keenlyside, and Moritz von Unger. "The Paris Agreement: A New Beginning". *Journal for European Environmental & Planning Law* 13 (2016): 3-29.
- Tiebout, Charles M. "A Pure Theory of Local Expenditures". *The Journal of Political Economy* 64 (1956): 416-424.
- Vanberg, Victor J. "Constitutionally Constrained and Safeguarded Competition in Markets and Politics". *Journal des Economistes et des Etudes Humaines* 4 (1993): 3-27.
- Vaubel, Roland. "The Public Choice Analysis of European Integration. A Survey". *European Journal of Political Economy* 10 (1994): 227-249.
- Watts, Ronald. *Comparing Federal Systems*. 3rd edition. Kingston, Ontario: Queen's University Press, 2004.

Legislation

- Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, OJ L 328, 21.12.2018, p. 82-209.
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions, OJ L 334, 17.12.2010, p. 17-119.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20, 26.1.2010, p. 7-25.
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, OJ L 312, 22.11.2008, p. 3-30.

- Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community, OJ L 275, 25.10.2003, p. 32.
- Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, p. 7–50.
- Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy, OJ L 335, 29-12.2022, pp. 36.
- Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243, 9.7.2021, p. 1–17.
- Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030, OJ L 156, p. 26.
- Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, OJ L 328, 21.12.2018, p. 1-77.
- German Nature Conservation Act (Bundesnaturschutzgesetz – BNatSchG).