Article

The German Climate Verdict, Human Rights, Paris Target and EU Climate Law

Felix Ekardt [1,2]*, Marie Bärenwaldt [1]

[1] Research Unit Sustainability and Climate Policy; mail@sustainability-justice-climate.eu
[2] Rostock University; felix.ekardt@uni-rostock.de
* Correspondence: felix.ekardt@uni-rostock.de; Tel.: +49-341-49277866

Abstract: The German Constitutional Court's climate verdict provides a re-interpretation of liberal- democratic core concepts and is highly relevant for liberal constitutional law in general – including EU and international law. The verdict accepts human rights as inter-temporal and globally applicable; it applies the precautionary principle to these rights and frees them from the misleading causality debate. However, the court fails to address the most important violations of human rights, and it categorised climate policy as a greater threat to freedom than climate change. And the court does not make it clear that the Paris 1.5-degree limit implies a radically smaller carbon budget. Furthermore, little attention has so far been paid to the fact that the ruling implies an obligation for more EU climate protection, especially since most emissions are regulated supranationally. To be effective, the EU emissions trading system demands a reform, which should go well beyond the existing EU proposals to enable societal transformation to sustainability.

Keywords: climate change; Paris Agreement; human rights; IPCC; climate policy; Climate Litigation; precautionary principle

1. Introduction

Since political majorities so far only to a limited extent have adopted policies which are in line with the 1.5 degree target from Article 2(1) of the Paris Agreement [1,2], more and more supreme courts are discussing possible obligations of the political majorities regarding the climate catastrophe (for cases worldwide see the Columbia Law School database, Sabin Centre for Climate Change Law, http://climatecasechart.com/climate-change-litigation/) [3,4]. The climate verdict of the German Federal Constitutional Court (FCC) of 24 March 2021, published on 29 April 2021, is a German example [5] (for an analysis see [6-12]). The ruling is arguably (one of) the most far-reaching ruling(s) on climate protection ever passed by a supreme court worldwide; in any case, the public perception of the ruling took place on a global scale.

The FCC verdict Göppel et al. was issued in 2021 in response to four constitutional complaints [13-16]. The first constitutional complaint was initiated and funded by the Solar Energy Support Association Germany (SFV) in 2018 and filed together with individual complainants such as the former Christian Democrat member of the German Bundestag Josef Göppel, and Friends of the Earth Germany. The complaint was legally represented by Felix Ekardt and Franziska Heß and prepared on the basis of multiple legal opinions written by Felix Ekardt since 2010 (see [17]). These legal opinions are based on the postdoctoral thesis of Felix Ekardt which has been further developed in several editions and is dedicated, among other things, to the relationship between freedom and sustainability (and especially climate protection). For a long time, the idea of such a constitutional complaint was not taken

 doi:10.20944/preprints202306.0645.v1

seriously by the public, politicians and legal experts – until the constitutional complaint was accepted for decision by the FCC in August 2019 [18] (see abridged and updated in English [19]). This constitutional complaint was followed by further constitutional complaints in January 2020 (following the name of one of the complainants who joined only in 2020, some – in a slightly misleading way – call the FCC decision "Neubauer et al"). All constitutional complaints argue that Germany has to do better in terms of climate protection. In particular, the complaints demand more ambitious targets than the one in the German Klimaschutzgesetz which requires minus 55 percent emission reductions by 2030 compared to 1990 (KSG/ climate protection act). This is because Germany has already received around 15 percent emission reduction through the German reunification in the 1990's and the collapse of the East German industry – and that the remaining emission reductions are merely considered emission shifts to developing countries (see in detail [20,18,19]). Against this background, this article analyses statements, justifications, weaknesses and political – especially European – consequences of the FCC ruling.

The German Constitutional Court's climate verdict is highly relevant for liberal constitutional law of other nation states and EU and international law as it provides a new interpretation of liberal-democratic core concepts – especially freedom including its intertemporal and global dimensions, defensive and protective freedom, the precautionary principle, separation of powers, legislatory balancing limits, and dealing with uncertain facts. Furthermore, the ruling discusses core issues of the 1.5 degrees Celsius limit based on Article 2(1) of the Paris Agreement which is the guiding star of global climate policy. Our contribution analyses insights and drawbacks of the verdict. This article is structured as follows: The article starts with an analysis of the major findings of the verdict (Ch. 2), followed by critical remarks on the FCC's concept of freedom and human rights (Ch. 3.1) and with regard to Paris Agreement and IPCC budget (Ch. 3.2). Furthermore consequences regarding the protection level and policy measures (Ch. 3.3), especially with regard to EU climate policy and emissions trading, are discussed (Ch. 4), followed by short conclusions (Ch. 5).

2. Materials and Methods: Findings of the German Constitutional Verdict

Methodologically, this article provides a legal interpretation of human rights in German constitutional law and of their reading by the FCC. Legal norms are interpreted grammatically, systematically, teleologically, and historically, i.e., according to their literal meaning, their relation to other legal norms, their purpose, and their evolution. Usually, grammatical and systematic interpretation is applied since the other two approaches are prone to several problems. In the Anglo-Saxon legal sphere, case law would also serve as a source of interpretation, implying a case (like the FCC case) would as such be seen as a source of law which cannot reasonably be. This is different to the continental legal sphere we are based in. Therefore, the FCC verdict will also be subject to criticism in the following on the basis of an interpretation of the human rights as such. A (very long and) detailed analysis of all court rulings on climate change, the 1.5 °C target and human rights is presented elsewhere [8]. Nota bene: Regarding the epistemological background, legal interpretation is—like ethics—normative science, not empirical science; law and ethics make statements of ought rather than statements of being. Therefore, legal interpretation does not require collecting data and facts, i.e., legal interpretation is not a case study as a case study empirically describes a process (see in detail [18–19]—also on the criticism of empiricism in epistemology that, since the 17th century, sometimes suggests that science can only deal with facts, not with norms).

First of all, this section discusses the numerous important points of the German verdict [5] (on the following [6,7,10,11,21]). The FCC ruled in favour for more environmental protection in Germany's first successful climate lawsuit: The German legislator has to strengthen the emissions reduction targets, which are laid down in the German KSG; measurable interim goals also post-2030 have to be defined; and a sufficient development pressure and planning certainty to shape the transition to a post-fossil stage as freedom-friendly

 doi:10.20944/preprints202306.0645.v1

as possible must be provided (similarly also the Irish Supreme Court in the case Friends of the Irish Environment v. Ireland, [22]). In doing so, the legislator must distribute the remaining carbon budget for meeting the Paris climate target fairly between generations (see also [23-27]), i.e. a proportionate distribution of freedom opportunities over time implying a more ambitious climate protection level (a similar conclusion was reached by the Administrative court in the French climate case, France had to increase its emission reduction targets as a result [28]). Consequently, the verdict goes further than the world-famous Dutch Urgenda ruling that only prohibited lowering a (low) climate protection level once it had been established by the government (see also Leghari v. Federation of Pakistan [29]). The FCC furthermore finds that parliament – not government – has to take essential climate policy decisions.

In the verdict, climate protection and net-zero-emissions target are justified by human rights and an overall state objective – or mission statement – to protect the environment (Article 20a of the German constitution, the so-called Basic Law), as proposed already in the first constitutional complaint [13]. Human rights demand a comprehensive protection of freedom as well as the elementary preconditions of freedom [1,2,18,19,30,31]. Thus, the FCC recognises life and health, and ultimately the minimum subsistence, as human rights (mentioned in Article 2(2) of the Basic Law) in terms of climate protection (in the case of Leghari v. Federation of Pakistan the focus was on fundamental rights) [18-19,23,32-38]. In this context, the FCC attributes human rights to have an intertemporal and global, cross-border effect (Paras. 175 and 182 of the verdict) (see also [39]). The court does not give a reason for this – although reasons are available in literature and offered especially in the first constitutional complaint (cf. on this already [18] § 4; [19] Ch. 3.2-3.4). The most important argument – possibly relevant for all liberal-democratic constitutions – is that freedom should be effective in any situation where it is threatened – and today, unlike centuries ago, this threat often extends over great distances and periods of time (on intertemporality at an early stage of the German debate also [40]; on globality in the German debate [41]; see in over-view also [37,42]).

Moreover, the FCC applies its usual approach on the legislature's scope of decision-making on climate policy – in which the role of a constitutional court is to make sure that legislation stays within its balancing limits (in more detail [19] Ch. 3.6; partly similar at the time [36,43]). These substantive requirements to legislatory balancing are complemented by the procedural requirement that the parliament should take the essential climate policy decisions (As a basis in the German debate: [44,45], also [18] Ch. 3.7; Similar with regard to the Urgenda verdict see [3]). As a basis for the substantive and procedural requirements, the FCC observes that climate protection is about freedom rights as a whole (Para. 127 of the verdict) – in two contradictory ways (cf. also [25,34]; furthermore [30]): Both, climate change and climate protection can impede freedom (double threat to freedom) (On the basis in the German debate [46] and – without liberal but with Marxist intentions [47]; taken up in detail by [18] § 4 A; [19] § 3.2.; in party similar [48]). Therefore, the (substantive and procedural) limits of the legislator's scope of decision-making must be examined in both directions. When addressing protection of freedom from negative effects caused by climate change, the court had access to four perspectives applicable under liberal-democratic constitutions since the first constitutional complaint: *(1) an argument on the right to the elementary preconditions of freedom to life, health and minimum subsistence as a protection right obliging the state to protect individuals against their fellow citizens causing climate change; (2) an argument on the same fundamental rights as a defensive right against a state-permitted climate change (by having harmful subsidies, state permissions for coal-fired power plants, cars, etc.); (3) an argument on freedom as a whole in connection with the state objective of environmental protection* [13] (In a similar form in the three constitutional complaints filed later; see also [49]). In the verdict, the FCC follows the first and the third argument (and completely ignores the second one). However, the court finds that although climate policy is criticised for being weak, it is still justifiable under constitutional law. This is because the legislature is seen as having a far-reaching discretion in concretising the required environmental protection level under the first and third argument (even though the legislator or the government cannot lower a level

 doi:10.20944/preprints202306.0645.v1

of protection once it has been chosen – this is a parallel to the Urgenda verdict) (also [50]; unclear at [51], the reasoning of the Irish Supreme Court in the case Friends of the Irish Environment v. Ireland also goes in the direction of preserving the margin of discretion).

However, the FCC recognises that the political agreement on the Paris target is binding under international law (Similarly also the Administrative court in the French case Notre Affaire à Tous and Others v. France; for a legal interpretation of Article 2 Paris Agreement see also [30,52]). According to the court, the Paris target aims to limit the temperature increase to 1.5 degrees Celsius – rather than merely to far below 2 degrees Celsius or even to 2 degrees Celsius. Yet, the Court still finds that as a concretisation of Article 20a Basic Law, the limit of well below 2 degrees seems to suffice (Para. 235 of the verdict; See also [30]). *In contrast to all this, the real climate protection obligation is deduced from the (4) argument which is based on the protection of freedom as a whole against climate-policy measures, also aiming at a balance of freedom over time. The FCC argues that the legislature has not done this so far because it has failed to account for the urgent climate policy after 2030, which would be highly freedom-endangering given that sooner or later radical freedom-encroaching climate policy measures become likely*. This distinction between "protection from climate change vs. protection from climate policy" remains unaddressed in the scholarly analyses of the FCC verdict.

As regards procedural requirements, the FCC not only argues that parliament (not government) must take the essential climate policy decisions, but that politics must be based on the current state of empirical scientific knowledge such as climate science (similar to the Urgenda decision, cf. also [53]). The verdict finds that facts must be carefully examined, even if there are knowledge gaps. Furthermore, knowledge development must be monitored in the future and, if necessary, new political decisions have to be made on this updated knowledge basis. In the past, the FCC had asserted such fact-finding rules rather vaguely and only occasionally (Relatively precise before only ruling of the constitutional court at [54]; see also [55] and [19] Ch. 3.7). Overall, these procedural aspects were also admonished in the constitutional complaints.

Despite the court refuses to clearly accept that a low climate protection level (and not only "too much climate policy") violates human right, the FCC makes some very important points on climate protection and human rights (i.e. on the arguments one and three mentioned above). The court accepts an overall constitutional obligation (based in protection rights and state objective) to protect the climate – intertemporally and globally. Furthermore, the FCC applies the precautionary principle to human rights (For further explanations on the precautionary principle in international law see also [27] p. 89; [1,2,31]; [19] Ch. 3.7; [56-59]) and thereby follows the arguments of the first constitutional complaint (Paras. 129 et seq. of the verdict; with an unchanged critical opinion on this [60]; The precautionary principle has also been recognised in the Urgenda decision, cf. State v. Urgenda para 73; [3]; furthermore [30,19,56-58]), i.e. not only present violations of the complainants' hu-man rights but also cumulative, uncertain and long-term violations of fundamental rights are relevant. This is convincing because the fundamental rights would otherwise be meaningless in the case of imminent irreversible damage. This is exactly what the FCC recognises (cf. as a basis [19] Ch. 3.3; [7]). In the past, the precautionary principle was mostly read in terms of objective law (i.e. obligations of public authorities that nobody can base a lawsuit upon), not of human rights, and assigned to norms such as Article 20a Basic Law or Article 191 TFEU alone (cf. for instance [61,62]). In contrast, the FCC now consequently argues that human rights are affected even if, as in the case of climate change, many people are affected. The court thus adopts the arguments of the first constitutional complainant (Para. 110 of the verdict; with an unchanged critical opinion on this [60]), and as a consequence, the discourse on causality in climate protection from the international arena is rendered moot. This again seems convincing - because why should the violation of my human rights be trivial just be-cause other people are also being violated. Similarly, the discussion on the attribution of damage is overruled by the FCC by finding a legislative duty to act regardless of whether other states also act – climate protection is an international concern in which all states have to participate (Paras. 199 et seq. of the verdict; on the debate about causation and attribution in climate litigation see [63]).

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 8 June 2023 doi:10.20944/preprints202306.0645.v1

The FCC verdict is revolutionary – even from a global perspective. Nevertheless, considerable criticism could remain, and consequences have to be pointed out more clearly, as we will analyse in the following.

3. Results

3.1. Biased Understanding of Freedom?

Since legal literature has so far failed to discuss the distinction between "protection from climate change vs. protection from climate policy", one of the central weaknesses of the FCC verdict has hardly been discussed: Contrary to what the court insinuates, the greater danger to freedom and its preconditions is politically accepted or favoured climate change – not delayed and then radical climate policy. Climate change may turn food and water supply into a precarious resource in some parts of the world. Natural disasters will become more likely, which could lead to major migratory movements, wars and civil strife. Moreover, according to conservative estimates, dealing with the consequences of inaction on climate change is expected to be around five times more expensive – or possibly significantly more – than action on climate change through ambitious climate policy (Besides to the IPCC reports on this subject see from the literature that does not even take the most expensive aspect (climate wars) into account [64], also [33,65], furthermore [66,67]). The court does not address these aspects. For example, the court discusses adaptation instead of mitigation as partly permissible strategy for human rights protection against climate change (Para. 181 of the verdict), even though e.g., climate wars might hardly be controllable by climate change adaptation.

The FCC verdict arrives at a peculiar compromise: On the one hand, there is an obligation to more climate protection based on the fundamental rights of intertemporal protection of freedom (see also [27]), including the state objective of environmental protection. On the other hand, the restrictive doctrine of the protective dimension of fundamental rights is maintained without even discussing the criticism provided in detail in the constitutional complaints. Instead, the FCC repeats its own restrictive judgements on the protective dimension of human rights. *If the FCC had taken a look on human rights as defensive (!) rights against the state actively causing climate change, for example with regard to the allocation of emission certificates or the approval of coal-fired power plants and open-cast mines (the above-mentioned argument two), the court could have viewed climate change as the most important human rights problem.* Instead, as described above, the FCC considers the (initially delayed and then later) foreseeable radically rapid reduction of emissions as the problem that ultimately triggers the unconstitutionality of climate policy – which provides a conceivably paradox derivation of a "human right to climate protection".

This finding seems even more paradox given arguments against a strongly protective human rights (= obliging public powers to protect freedom and its preconditions against our fellow citizens) are not convincing under liberal-democratic constitutions: Human rights law considers the defensive and protective dimensions as equally – e.g., in Germany, in Article 1(1) sentence 2 and in Article 2(1) of the Basic Law, in the EU, in Articles 1 and 52(1) of the Charter of Fundamental Rights (More detailed on the following [19] Ch. 3.4, 3.6; early critical voices on this in the German debate were also [36,68,69], [18] §§ 4 C., 5 C.). Further-more, the FCC does not take into account that claims for protection do not necessarily come with a "claim to some specific legislation". Rather, as in the case of defensive actions, the sole purpose (as argued by the complainants) of a claim can be to set an outer boundary through a judicial finding - i.e., "not like this" instead of "do exactly that". When discussing the separation of powers, the protection of human rights against the state (defensive dimension) and the protection of fundamental rights against fellow citizens by the state (protective dimension) may therefore not differ at all. The role of a constitutional court is the same, i.e., to not prescribe concrete policy instruments, but to define the limits of legislative leeway and to demand compliance with these limits.

This argumentative approach creates a strange imbalance in the FCC's decision. On the one hand, the court emphasises Article 20a of the Basic Law and protection rights against

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 8 June 2023 doi:10.20944/preprints202306.0645.v1

climate change under the heading of protection of freedom as a whole. On the other hand, the court finds that even the present less ambitious German Klimaschutzgesetz to still be compatible with protection rights and Article 20a Basic Law. However, the finding that a state objective (not protection rights!) has little practical impact and is largely left to legislative concretisation is quite consistent. State objectives have fewer structures than human rights. In case of human rights, the balancing limits (in substantive and procedural terms) of the legislature's action scope can be derived from those very rights – may these limits be called, e.g., the four levels of proportionality or be subdivided more precisely and named rules or limits to balancing. Thus, for example, if rights to the elementary preconditions of freedom (regardless of whether they are understood as defensive or protection rights) collide with the economic freedom of occupation, action and ownership of entrepreneurs and consumers living here and now, no one may be deprived of more freedom than necessary to in-crease the freedom of others (the so-called principle of appropriateness and necessity). Likewise, no balancing results are allowed that threaten to undermine the physical preconditions of future democratic balancing processes (as a sub-aspect of the rule of appropriate-ness). In the present case, the latter could have plausibly justified a decision to demand more ambitious climate policy: due to lacking climate protection and not because of a threatening rushed climate policy.

In other words: In the case of Article 20a Basic Law, it remains generally open how a concrete standard of protection is to arise from the general requirement that the state protects the basis of life. In the verdict, the FCC argues that Article 20a of the Basic Law (just as human rights) is a legal principle (fundamentally, [70]; see also [71-73]). Therefore, questions would have to be asked (a) whether the scope of protection is impaired and then (b) whether the impairment is justified by other legal interests within the framework of balancing limits. Since there is no legal standard for (b) in the German constitution (in contrast to human rights that provide balancing rules by interpreting especially the concept of freedom and other hints in the constitutional wording), the result of the FCC is unsurprising: Ultimately, there is no violation despite very unambitious climate protection policies. The question is also not answered by the FCC's reference to adapting natural scientific findings (cf. [10,11,49]), because facts alone do not provide normative criteria; rather, they provide subsumption material (also [50] notes that the FCC in the climate ruling – and the commenting literature – often does not clearly separate questions of facts from legal interpretation). And even a normative duty (which is equally obvious for human rights and a state objective) to carefully examine the natural data alone does not provide any action guidance as long as it is unclear which normative standard is to be used to determine if the legislator has protected the environment sufficiently or not. Without such a standard, the FCC's view that the legislature can more or less just choose the protection standard seems not very surprising with regard to balance of powers. Still, the court then discusses a potential solution that was also outlined by the complainants: An interpretation referring to Article 2(1) of the Paris Agreement may be used to determine the protection standard (see also [74]). However, this approach would have been even better suited to contouring the human rights of (defense or protection of) life, health and subsistence, where, as seen above, balancing limits would have been available – which the court mentions in parallel to the protection of freedom against postponed and then radical climate policy (for example in para. 246 of the verdict). The FCC could have also taken a closer look at the Paris target, as also submitted by the complainants, and arrive at different legal interpretations of this norm and of fundamental rights (and/or the state objective of environmental protection):

3.2. Paris Target and IPCC Budget?

The FCC recognises the binding nature (at least under international law) of the political agreement on the Paris target as a global climate target, i.e., making efforts to limit global-warming to 1.5 degrees. The FCC understands Article 2 PA as a concretisation of the constitutional level of climate protection and as a binding for the legislature itself (Paras. 235 and 242 of the verdict; on the Paris target in detail [2,1,30]). Furthermore, the court points

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 8 June 2023 doi:10.20944/preprints202306.0645.v1

out that Article 2(1) of the Paris Agreement does not only refer to keeping temperature below "two degrees" (Unlike most of the literature; cf. for example without justification [75] Article 2 paras. 2.17 et seq.). Instead, states must attempt to comply with 1.5 degrees Celsius warming.

To underpin the 1.5-degree Celsius limit,, the FCC adopts the approach of the Intergovernmental Panel on Climate Change [76] and – building on it – the German government's Council of Environmental Experts (SRU) (cf. [77]) both of which calculate a greenhouse gas budget to stay within the 1.5-degree Celsius limit. This again seems convincing in principle, but the FCC ignores the weaknesses of the IPCC budget which result from the IPCC being a consensus body that works with optimistic assumptions (E.g. on climate sensitivity and tipping points; on all empirical criticisms [1,30,78-80]). The FCC refers rather generically to the fact that the greenhouse gas budget could be calculated too high or too low – despite the verdict making a strong case for policymakers to carefully consider scientific evidence (Rather determined insofar the ruling FCC at [54]; fundamentally [55], [18] § 5 C. II. 2 and [19] Ch. 3.7). The FCC also ignores legal criticism of the IPCC budget, which is intended to concretise a legal norm, i.e., Article 2(1) of the Paris Agreement (On this and the following with further references [1,2,30,81]; the latter means that the IPCC's figures of [82] do not change the essence of the criticism; the following points are passed over at [75] Article 2 n 2.1 et seq., except for the legally binding nature denied without justification). Article 2(1) of the Paris Agreement is legally binding [1,30,83-85] as the court itself presupposes (that this is true can be learned from Article 3 and 4(1) of the Paris Agreement [1,30]). However, against this background, it is insufficient to aim at 1.5 degrees Celsius with only a 67 percent probability.

Revising the compliance probability to 83 percent as done in the sixth assessment report of the IPCC in 2022 (AR6) would decline the budget to 300 GtCO2 globally as of 01.01.2020 (For a closer review on the figures of [76,82] see [30]). On a per capita basis, the remaining German budget is 3 GtCO2 for Germany [88]. Given the large annual emissions of Germany, more than half of this budget has already been used up by mid-2020. This would leave Germany with a carbon budget for only two (!) years, not around ten as the FCC presupposes. The remaining budget decreases further if a higher probability was adopted or other problems of the budget addressed, such as the base year or the unequal distribution of the budget towards countries of the Global South. According to its wording, Article 2(1) of the Paris Agreement refers to the comparison with the pre-industrial level. For this purpose, however, a year in the second half of the 19th century cannot be chosen as the base year – as done by the IPCC – because industrialisation started gradually from around 1750. The fact that only estimates and no measured data are available for the first hundred years of industrialisation does not rule out this argument (See therefore also [89]). The IPCC budget de-creases even further if a temporary overshoot was excluded and more cautious empirical assumptions were taken, e.g., with regard to tipping points or climate sensitivity. This is be-cause new scientific findings – which, as seen, must always be carefully taken into account by the legislator – show with increasing certainty that climate change is progressing even faster and has more dramatic consequences including a collapse of the Gulf Stream which is vital for Europe (see currently [90]).

Having said all this, it is pretty surprising that the FCC erroneously states that the complainants never criticised the IPCC budget (they did, especially the first constitutional complaint) (Para. 223 of the verdict). Another budget question concerns whether or not each human being on Earth should be allocated an equal share of the remaining emissions budget ("one human, one emission right"). On the one hand, distributional issues in liberal democracies do not usually require a strict equal distribution. On the other hand, the distribution of climate emissions could be a case to at least aim at an equal distribution over longer periods of time. The FCC correctly points out that Article 2(2) and 4(4) of the Paris Agreement tend to argue for an unequal distribution at the expense of industrialised states (para. 225 of the verdict). These standards are based on capability and historical causation. If these aspects were taken into account, the German or European budget would have already been used up – or implied an obligation to contribute massively to emission

 doi:10.20944/preprints202306.0645.v1

reductions outside Europe to compensate emissions outside the budget (In more detail with further references [19] Ch. 3.8; [1,30,43,91]).

Overall, if the FCC took its own parameters seriously – the duty to carefully ascertain the facts, the carbon budget concept, the binding nature of the 1.5-degree Celsius target under international law at the very least (and the associated interpretation of the Basic Law in a way that is intended to accommodate international law), the necessity for an unequal distribution of the budget towards the Global South – a consistent reading of the FCC's decision must lead to a significantly smaller carbon budget.

3.3. Protection Level and Policy Measures

The far-reaching effect of the FCC ruling addresses public authority as a whole, i.e., not only legislature but also administration and judiciary (and their interpretation of administrative law, civil law, etc.). They all have to strive for climate neutrality and intertemporal protection of freedom (see also [40,32,25,27]). This includes federal legislator and federal government, regional legislators and subordinate authorities, local governments and courts – and indirectly the EU level (see next chapter).

The double threat to freedom implies an obligation under climate constitutional law for an ambitious budget. This obligation is linked to an obligation to create planning perspective and certainty, to carefully determine the natural scientific basis and to respect the requirement of parliamentary approval. In doing so, the legislature must carefully review facts over and over again. It must also take into account that the criticism of the IPCC budget and the arguments for a globally unequal distribution of the remaining budget (along the lines of capability and historical causation) demand a significantly smaller carbon budget, as shown above. These findings result from a legal interpretation of core terms of liberal-democratic constitutions and are therefore highly relevant for other jurisdictions nationally and transnationally.

These commitments imply a comprehensive fossil-phasing-out strategy in all sectors, i.e., industry and energy, transport, buildings and agriculture. Furthermore, livestock farming has to be reduced substantially soon. This needs to be supplemented by safe measures for negative emissions such as forestry and peatland management to compensate for residual emissions from industry and agriculture (On negative emissions [92,93,2]). However, while the FCC mistakenly emphasises the emerging burdens of future climate policy, it forgets that avoiding climate warming promises to be economically far more favourable than climate catastrophe and, when seen in this light, cannot be portrayed as mere burden (traditionally and unchanged to this [64]; more carefully [94]).

Even if the FCC only addresses targets or protection levels, the verdict has also implications for policy measures because climate protection strongly depends on policy measures. Still, based on balancing leeway and separation of powers, it will remain difficult to sue parliament for a specific policy measure in the constitutional court. However, the court can assess the extent to which policy measures adopted by legislature are within the limits set by the established protection level, the necessity for planning perspectives and the obligation to carefully ascertain the facts (including natural sciences and insights in the effectiveness of different policy measures). Staying within the temperature limits of the Paris Agreement requires phasing out fossil fuels in all sectors (electricity, heat, mobility, agricultural sector, cement, plastics, etc.), strongly reducing livestock farming and having compensation for residual emissions. Furthermore, the legal competences and the facts regarding the effectiveness of different policy levels could imply that a national government and parliament have to push for effective solutions especially at the EU level (see next chapter).

The general character of the problems and the liberal-democratic legal interpretations imply further proceedings at the FCC – on the protection level and on the framework conditions for effective policy measures. The same applies to the ECtHR and constitutional courts in other countries (cf. [95]; see for more cases in other countries also [96,97]). And even if the ECJ continues to pursue its narrow understanding of the action for annulment

 doi:10.20944/preprints202306.0645.v1

under Article 263(4) TFEU, it will most likely be confronted with the question of whether it will give EU primary law an interpretation similar to the one presented here. This would be plausible since EU primary law also constitutes a liberal-democratic constitutional order. Likewise, the UN Human Rights Council adopted a (non-binding) resolution in October 2021 which recognises a right to a clean environment prospectively [98]. However, given the unclear content of such a right on the one hand and the clearly identifiable content of traditionally recognised human rights with regard to climate on the other hand, such an initiative appears less promising.

4. Discussion: EU Legislation and Emissions Trading

The FCC emphasized that Germany must push climate protection internationally and must not claim that others do not push (paras…). The reasoning – beyond the fact that unilateral inaction also makes inaction by other states more likely – is only discussed rudimentarily but is clear nevertheless (in more detail, e.g. [20] and [19] Ch. 4.4). Firstly, climate warming cannot be solved in Germany alone. Global warming is a global issue (pars pro toto [99]). Secondly, purely national climate policy threatens to trigger sectoral and spatial shifting effects (the well-known keyword carbon leakage refers to its spatial component), which would be ecologically counterproductive and could undermine the acceptance of climate protection as a whole due to competitive disadvantages (An EU climate policy could also trigger shifting effects, at least outside Europe, but these can be avoided at EU level by means of border adjustments because of the customs competence that lies there; on this, in principle, [19] Ch. 3.8 – and below this section). Thirdly, purely national climate policy is already legally impossible due to the legal competences of the EU: Many emissions are fully regulated under EU law, for example in EU emissions trading (once again, these aspects and the following arguments seem to also apply for other liberal-democratic jurisdictions). Therefore, the first constitutional complaint explicitly requested the FCC to declare that Germany had not sufficiently pushed for climate protection at the EU level.

However, the FCC does not mention that most emissions are not regulated by German legislation alone, but by EU legislation. In view of the acknowledged obligation to transnational climate protection, to observe the facts carefully (including the most effective policy level for climate protection) and in light of the described impossibility of tackling climate protection while neglecting the EU level, the following applies, nevertheless, even without an explicit statement by the FCC: Public authorities such as the German Federal Government must also try to enforce their domestic (in this case climate) constitutional requirements in votes – such as legislative procedures – at the EU level. A nation state is obliged to push for more effective EU climate protection.

The ambitious protection level and the factual findings on the primarily promising (EU) policy level as well as on the effectiveness of various policy instruments point towards focusing on optimising the EU emissions trading, given that some findings of recent research are true (see in the following). This can be seen as an implication of the FCC verdict if the factual situation at least almost inevitably demands this instrument. Given recent research findings, a further expanded and restructured (!) EU emissions trading system offers the best guarantee for compliance with the required protection level, can avoid governance problems if it is designed differently and best meets the requirement of a freedom-preserving transition to post-fossilisation (in detail on the following aspects [19] Ch. 4.5-4.8; [100-103]; see also [104]): *Setting ambitious caps, addressing easily detectable governance units (such as fossil fuels or animal products at the level of slaughterhouses and dairies) on a sectoral and geographically broad scale (i.e. at the EU level plus climate clubs with other countries plus border adjustments)* may avoid governance problems such as enforcement, rebound, shifting effects and problems of depicting better than any other governance instrument (the existence of which is both empirically proven and derivable from motiva-

 doi:10.20944/preprints202306.0645.v1

tional analysis on human basic characteristics [19] Ch. 4.5-4.8, [100,101]). In contrast, according to the respective scientific findings, regulatory law focuses on individual products, activities or facilities and is thus exposed to rebound and (sectoral and spatial) shifting effects as well enforcement problems that can undermine the desired reduced ecological footprint or, in the worst case, turn it into its opposite. Furthermore, research demonstrates that quantity governance may encourage more consistency, resource efficiency and frugality as sustainability strategies: If the cap is not achievable purely technologically, addressees will inevitably switch to frugality (see in detail [19] Ch. 4.5-4.8, [100,101]).

There are further effects discussed in scientific literature that cannot be discussed here in detail [19] Ch. 4.5-4.8; [100-105]. Cap-and-trade approaches may comprehensively address the motivational situation of the citizens. This not only includes monetary self-benefit, but also conceptions of normality – like "going by car and having a big piece of meat every day is normal" – and emotional factors such as convenience and denial. In addition, quantity governance is also particularly compatible with basic principles of liberal democracies because it maintains the greatest possible degree of freedom of consumers and enterprises while at the same time effectively defending the physical preconditions of freedom against the double threat to freedom. Furthermore, quantity governance may be combined well with – national or transnational – social distributive measures (as compensation for the distributional effects of climate change on the one hand and climate policy on the other hand): This is because the fixed cap of an ETS prevents redistribution from undermining the ecological effects of the system, something that cannot be ruled out for environmental fees with revenue redistribution [102-104].

All these aspects are rarely taken into account. Instead, the focus is usually on cap-and-trade systems' promise to achieve a sustainability goal very efficiently, i.e., "at particularly low cost". Given that the findings quoted above are convincing, the FCC statement in favour of factual accuracy speaks in favour of a stronger regulatory focus on cap-and-trade schemes. Choosing central drivers of diverse environmental problems (climate change, bio-diversity loss, disturbed nutrient cycles, pollution of air/ soils/ water) such as fossil fuels, animal products or pesticides as governance unit of cap and trade systems, they may lead to an integrated solution to most environmental problems [100,101,92,93]. However, this statement only applies if the quantity governance is designed as described (= setting ambitious caps and addressing easily detectable governance units on a sectoral and geo-graphically broad scale).

The EU emissions trading system to date does not meet these criteria [102]: For example, the cap does not correspond to the 1.5-degree Celsius limit, and the system does not cover all sectors. Furthermore, there are loopholes, large quantities of old certificates, and livestock farming is not covered at all. Lastly, there is no sufficient protection against emissions shifting outside the EU. And indeed, in order to achieve the legally binding greenhouse gas neutrality agreed on in the European Green Deal (so far, however, only by 2050), the EU Commission presented a series of legislative proposals "Fit for 55" on 14 July 2021 (see on the following [105]). The aim is to include fossil fuels almost completely into the system, to tighten the cap and to introduce a border adjustment. A social compensation mechanism supplements the system. These proposals are roughly in line with the findings above. Effective EU climate policy – also in the sense of the FCC's requirements – presupposes that a kind of global climate club is formed simultaneously with as many other states as possible that take similar measures. Furthermore, carbon border adjustments are to be introduced against those states that do not participate in the climate club to prevent ecologically problematic and economically disadvantageous shifting effects. If EU emissions trading is to have its potential effect – in the sense of the FCC's stipulation of a fair intertemporal balance of freedoms and of the 1.5-degree limit from Article 2(1) of the Paris Agreement being binding under international law in any case – Germany would arguably not only have to support the Commission's proposals, but urge for their improvement. An improvement includes an even stricter cap [106-109,30,8], based on a significantly smaller budget, cancelling most of the old certificates that the states used to give away to companies and that still relativise the effectiveness of the cap (in more detail

 doi:10.20944/preprints202306.0645.v1

[91]). Furthermore, a quantity governance approach is needed for animal products, according to recent scientific findings – that is designed in a way that remaining agricultural residual emissions can be compensated for by measures such as improved forestry or peatland management (in more detail to the proposal for separate emissions trading for animal products at the level of slaughterhouses and dairies [100]). However, land use as a whole, i.e., the entirety of agriculture, forests and peatlands, cannot be covered by a separate ETS due to its large heterogeneity; the problem of depicting emissions opposes peatland certificates or humus certificates [92,93,110-112]. Instead, the ETS which addresses the drivers of peatland and forest destruction (especially fossil fuels and animal husbandry) combined with subsidy and regulatory law may seem more promising (this and the insufficient LULUCF framework has been discussed in detail elsewhere) [92,93,110-112].

5. Conclusions

The German Constitutional Court's climate verdict calls for a fair intertemporal balance of freedom opportunities. By demanding more climate protection and not just prohibiting a lowering of an already low climate protection standard, the court's decision clearly goes beyond the Urgenda ruling. Fundamental rights are accepted as intertemporal and globally applicable; it understands those rights the light of the precautionary principle and freed from the misleading climate causality debate. So far, however, the verdict is rarely understood. For example, the court fails to address the most important violations of human rights, and it misleadingly categorised climate policy as a greater threat to freedom than climate change itself. Furthermore, little attention has so far been paid to the fact that the ruling indirectly imposes an obligation for more EU climate protection, especially since most emissions are regulated at the EU level. The effectiveness of the reformed EU emissions trading system will play a key role and its reform should go well beyond the existing EU proposals. Overall, the court recognises that at the centre of effective climate policy is the legally-binding 1.5-degree Celsius limit from (the mostly misunderstood) Article 2 of the Paris Agreement. However, the court did not make it clear that Article 2 of the Paris Agreement implies a radically smaller remaining carbon budget. It will be interesting to see whether other constitutional courts and the ECtHR will move further in this direction.

Author Contributions: F.E. developed the underlying human rights and climate law perspective since 2000, conceptualised and drafted the article, and derived critical perspectives on the FCC ruling. M.B. contributed to the analysis, and edited the paper. All authors have read and agreed to the published version of the manuscript.

Funding: This research was partly funded by the Environmental Federal Agency of the German Federal Government as well as earlier fundings legal opinions by Felix Ekardt on climate litigation since 2010, especially by the Solar Radiation Promotion Association.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: We would like to thank Katharine Heyl for proofreading.

Conflicts of Interest: The authors declare that they have no competing interest.

References

1. Ekardt, F.; Wieding, J.; Zorn, A. Paris Agreement, Precautionary Principle and Human Rights: Zero Emissions in Two Decades? *Sustainability* **2018**, *10*, 2812.
2. Wieding, J.; Stubenrauch, J.; Ekardt, F. Human Rights and Precautionary Principle: Limits to Geoengineering, SRM, and IPCC Scenarios. *Sustainability* **2020**, *12*, 8858.

3. Verschuuren, J. The State of the Netherlands v. Urgenda Foundation: The Hague Court of Appeal upholds judgment requiring the Netherlands to further reduce its greenhouse gas emissions. *Review of European, Comparative and International Environmental Law* **2019**, 94-98.
4. Niska, T.K. Climate Change Litigation and the European Court of Human Rights – A Strategic Next Step? *The Journal of World Energy Law Business* **2020**, *13*, 331-342.
5. FCC, Order of 24 March 2021, 1 BvR 2656/18 et al.
6. Faßbender, K. Der Klima-Beschluss des BVerfG – Inhalte, Folgen und offene Fragen. Neue Juristische Wochenschrift 2021, 2085.
7. Calliess, C. Das Klimaurteil des Bundesverfassungsgerichts: Versubjektivierung des Article 20a GG? *Zeitschrift für Umweltrecht* **2021**, 355-357.
8. Ekardt, F.; Heß, F.; Bärenwaldt, M.; Hörtzsch, L.; Wöhlert, M. *Judikative als Motor des Klimaschutzes? Bedeutung und Auswirkungen der Klimaklagen*. UBA-Bericht. Dessau-Roßlau **2023**.
9. Ekardt, F.; Heß, F. Intertemporaler Freiheitsschutz, Existenzminimum und Gewaltenteilung nach dem BVerfG-Klima-Beschluss – Freiheitsgefährdung durch Klimawandel oder durch Klimapolitik? *Zeitschrift für Umweltrecht* **2021**, 579-585.
10. Schlacke, S. Klimaschutzrecht – Ein Grundrecht auf intertemporale Freiheitssicherung. *Neue Zeitschrift für Verwaltungsrecht* **2021**, 912.
11. Ruttloff, M.; Freihoff, L. Intertemporale Freiheitssicherung oder doch besser „intertemporale Systemgerechtigkeit"? – auf Konturensuche. *Neue Zeitschrift für Verwaltungsrecht* **2021**, 917.
12. Ekardt, F.; Heyl, K. The German constitutional verdict is a landmark in climate litigation. *Nature Climate Change* **2022**, 697-699.
13. www.klimaklage.com.
14. www.greenpeace.de/klimaschutz/klimakrise/zweite-klimaklage-verfassungsbeschwerde.
15. https://www.climatecasechart.com/wp-content/uploads/sites/16/non-us-case-documents/2020/20200113_11817_complaint.pdf.
16. www.duh.de/fileadmin/user_upload/download/Pressemitteilungen/Umweltpolitik/Klimaschutz/Verfassungsbeschwerde_Klimaklage_Yi_Yi_Prue_et_al_final_geschwärzt-Anhang_01.pdf.
17. www.sfv.de/publikationen/gutachten.
18. Ekardt, F. *Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel*; Nomos: Baden-Baden, Germany, 4th ed. 2021.
19. Ekardt, F. *Sustainability. Transformation, Governance, Ethics, Law*; Springer: Basel, Switzerland, 2019.
20. Peters, G.; Minx, J.; Weber, C.; Edenhofer, O. Growth in emission transfers via international trade from 1990 to 2008. *PNAS* **2011**, 8903-8908.
21. Eckes, C. Separation of Powers in Climate Cases. Comparing cases in Germany and the Netherlands. *VerfBlog*, 2021/5/10, https://verfassungsblog.de/separation-of-powers-in-climate-cases/, DOI: 10.17176/20210510-181511-0.
22. Sabin Center for Climate Change Law, Friends of the Irish Environment v. Ireland (2020) http://climatecasechart.com/non-us-case/friends-of-the-irish-environment-v-ireland/ (Accessed 13 December 2022).
23. Estrin, D.; Kennedy, H. *Achieving Justice and Human Rights in an Era of Climate Disruption*. International Bar Association Climate Change Justice and Human Rights Task Force Report, London, 2014.
24. Ganguly, G.; Setzer, J.; Heyvaert, V. If at First You Don't Succeed: Suing Corporations for Climate Change. *Oxford Journal of Legal Studies* **2018**, *38*, 841-868.
25. Ladores, I.M. In the Name of Climate Change: How Leghari v Federation of Pakistan Is Instrumental to the Pursuit of the Right to Life in the Philippines. *Groningen Journal of International Law* **2017**, *5*, 203-222.
26. Barritt, E.M.; Sediti, B. The Symbolic Value of Leghari v Federation of Pakistan: Climate Change Adjudication in the Global South. *King's Law Journal* **2019**, *30*, 203-210.
27. Leib, L.H. *Human Rights and the Environment - Philosophical, Theoretical and Legal Perspectives*. Martinus Nijhoff Publishers: Leiden, Netherlands, 2011.
28. Notre Affaire à Tous and Others v. France, http://climatecasechart.com/non-us-case/notre-affaire-a-tous-and-others-v-france/ (Accessed 13 December 2022).
29. Sabin Center for Climate Change Law, Leghari v. Federation of Pakistan (2018), http://climatecasechart.com/non-us-case/ashgar-leghari-v-federation-of-pakistan/ (Accessed 13 December 2022).
30. Ekardt, F.; Bärenwaldt, M.; Heyl, K. The Paris Target, Human Rights, and IPCC Weaknesses. Legal Arguments in favour of Smaller Carbon Budgets. *Environments* **2022**, *9*, 112.
31. Read, R.; Riordan, T. The Precautionary Principle Under Fire. *Environ.: Sci. Pol. Sustain. Dev.* **2017**, *59*, 4-15.
32. Bell, B. Does Anthropogenic Climate Change Violate Human Rights? *Critical Review of International Social and Political Philosophy* **2011**, *14*, 99-124.
33. Peel, J.; Osofsky, H.M. A Rights Turn in Climate Change Litigation? *Transnational Environmental Law* **2018**, *7*, 37-67.
34. Pillay, A.G. *Economic, Social and Cultural Rights and Climate Change* in OC Ruppel, C Roschmann, K Ruppel-Schlichting, Climate Change: International Law and Global Governance; Nomos: Berlin, Germany, 2015, pp. 243-260.
35. Rajamani, L. The Increasing Currency and Relevance of Rights-Based Perspectives in the International Negotiations on Climate Change. *Journal of Environmental Law* **2010**, *22*, 391-429.
36. Calliess, C. *Rechtsstaat und Umweltstaat - Zugleich ein Beitrag zur Grundrechtsdogmatik im Rahmen mehrpoliger Verfassungsrechtsverhältnisse*; Mohr Siebeck: Tübingen, Germany, 2001.
37. Skillington, T. Climate change and the human rights challenge: extending justice beyond the borders of the nation state. *The International Journal of Human Rights* **2012**, *16*, 1196-1212.

38. Verheyen, R. *Climate change damage and international law: prevention, duties and state responsibility*; M. Nijhoff Brill: Leiden, Netherlands, 2005.
39. McAdam, J.; Limon, M. Human Rights, Climate Change and Cross-Border Displacement: the role of the international human rights community to effective and just solutions, *Policy Report*; Universal Rights Group, 2015.
40. Unnerstall, H. *Rechte zukünftiger Generationen*; Königshausen Neumann: Würzburg, Germany, 1999.
41. Giegerich, T. Grund- und Menschenrechte im globalen Zeitalter: Neubewertung ihrer territorialen, personalen und internationalen Dimension in Deutschland, Europa und den USA. *EuGRZ* **2004**, 758-777.
42. Knox, J.H. Climate Change and Human Rights Law. *Virginia Journal of International Law* **2009**, 163-200.
43. Winter, G. Armando Carvalho et al versus Europäische Union: Rechtsdogmatische und staatstheoretische Probleme einer Klimaklage vor dem Europäischen Gericht. *Zeitschrift für Umweltrecht* **2019**, 259.
44. Böhm, M. *Der Normmensch*. Materielle und prozedurale Aspekte des Schutzes der menschlichen Gesundheit vor Umweltschadstoffen; Mohr Siebeck: Tübingen, Germany, 1996.
45. Steinberg, R. *Der ökologische Verfassungsstaat*; Suhrkamp: Frankfurt am Main, Germany, 1998.
46. Kloepfer, M. *Langzeitverantwortung im Umweltstaat* in CF Gethmann, M Kloepfer, H Nutzinger, Langzeitverantwortung im Umweltstaat; Economica: Bonn, Germany, 1993, p. 22.
47. Bahro, R. *Logik der Rettung*; Weitbrecht: Stuttgart, Germany, 1987.
48. Winter, G. Von der Bewahrung zur Bewirtschaftung. Ein Kommentar zum zweiten Klimabeschluss des BVerfG. *Zeitschrift für Umweltrecht* **2022**, 215-221.
49. Zemel, M. The Rise of Rights-based Climate Litigation and Germany's Susceptibility to Suit. *Fordham Environmental Law Review* **2018**, *29*, 484-527.
50. Berkemann, J. Die Entscheidungsformel des Klima-Beschlusses des BVerfG vom 24. März 2021 – Eine Analyse. *Zeitschrift für Umweltrecht* **2021**, 585.
51. Hofmann, E. Der Klimaschutzbeschluss des BVerfG. Rezeption, Dogmatik, Kritik. *Neue Zeitschrift für Verwaltungsrecht* **2021**, 1587.
52. Rajamani, L.; Werksman, J. The legal character and operational relevance of the Paris Agreement's temperature goal. *Philosophical Transactions of the Royal Society* A 376 **2018**, 20160458.
53. Estrin, D. Limiting Dangerous Climate Change: The Critical Role of Citizen Suits and Domestic Courts - Despite the Paris Agreement. *CIGI Papers* **2016**, *101*.
54. FCC, Verdict of 1 March 1979, 1 BvR 532/77 et al (BVerfGE 50, 290).
55. Meßerschmidt, K. *Gesetzgebungsermessen*; Berliner Wissenschaftsverlag: Berlin, Germany, 2000.
56. O'Riordan, T.; Cameron, J. *Interpreting the precautionary principle*; Routledge: London, UK, 2013.
57. Sands, P.; Peel, J. et al. *Principles of international environmental law*; Cambridge University Press: Cambridge, UK, 2018.
58. Gardiner, S.M. A Core Precautionary Principle. *Journal of Political Philosophy* **2006**, *14*, 33-60.
59. Sunstein, C.R. *Laws of fear: Beyond the precautionary principle*; Cambridge University Press: Cambridge, UK, 2005.
60. Wegener, B. Menschenrecht auf Klimaschutz? Grenzen grundrechtsgestützter Klimaklagen gegen Staat und Private. *NJW* **2022**, 425-431.
61. Maurmann, D. *Rechtsgrundsätze im Völkerrecht am Beispiel des Vorsorgeprinzips*; Nomos: Baden-Baden, Germany, 2008.
62. Arndt, B. Das *Vorsorgeprinzip im EU-Recht*; Mohr Siebeck: Tübingen, Germany, 2009.
63. de Vilchez Moragues, P. *Climate in Court: Defining State Obligations on Global Warming Through Domestic State Litigation;* Edward Elgar Publishing: Cheltenham, UK, 2022.
64. Stern, N. *The Economics of Climate Change. The Stern Review*; Cambridge University Press: Cambridge, UK, 2007.
65. Centre for Research on the Epidemiology of Disasters. The Human Cost of Natural Disasters 2015: A Global Perspective. *EM-DAT* **2015**.
66. Adelmant, V.; Alston, P.; Blainey, M. Human Rights and Climate Change Litigation: One Step Forward, Two Steps Backwards in the Irish Supreme Court. *Journal of Human Rights Practice* **2021**, 1-23.
67. Maljean-Dubois, S. Climate change litigation' in Max Planck Encyclopedia of Procedural Law. halshs-02281274 2019.
68. Koch, T. *Der Grundrechtsschutz des Drittbetroffenen*. Zur Rekonstruktion der Grundrechte als Abwehrrechte; Mohr Siebeck: Tübingen, Germany, 2000.
69. Schwabe, J. Erwiderungen: auf Christian Calliess, JZ 2006, 321: Über Grundpflichtmythen, Abstraktionitis und Überproduktion in der Grundrechtsdogmatik. *JZ* **2007**, 135-137.
70. Alexy, R. *Theory of Fundamental Rights*; Suhrkamp: Frankfurt am Main, Germany, 1991.
71. Gassner, E. Rechtskonkretisierung zum Schutz der natürlichen Lebensgrundlagen nach Article 20a GG. *Natur und Recht* **2011**, *33*, 320-323.
72. Lorenz, L. Art. 20a GG in der Hand des Bundesverfassungsgerichts - Potential für einen Anspruch auf Gesetzgebung? *NuR* **2022**, *44*, 230-236.
73. Blasberg, D. *Inhalts- und Schrankenbestimmungen des Grundeigentums zum Schutz der natürlichen Lebensgrundlagen: Das Verhältnis von Article 14 Abs. 1 und 2 GG zu Article 20a GG*; Springer: Berlin, Germany, 2008.
74. Toussaint, P. Loss and damage and climate litigation: The case for greater interlinkage. *Review of European, Comparative and International Environmental Law* **2021**, *30*, 16-33.
75. Ghaleigh, N.S. *Art. 2* in G Van Caster, L Reins, The Paris Agreement on Climate Change; Edward Elgar Publishing: Cheltenham, UK, 2021.

76. Intergovernmental Panel on Climate Change (IPCC). *Global Warming of 1.5°C*. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, efforts to eradicate poverty; Cambridge University Press: Cambridge, UK, 2018.
77. Sachverständigenrat für Umweltfragen (SRU). *Umweltgutachten 2020: Für eine entschlossene Umweltpolitik in Deutschland und Europa;* Berlin, Germany, 2020.
78. Riahi, K.; Bertram, C.; Huppann D. et al. Cost and attainability of meeting stringent climate targets without overshoot. *Nature Climate Change* **2021**, *11*, 1063-1069.
79. Schurer, A.P.; Cowtan, K.; Hawkins E. et al. Interpretations of the Paris climate target. *Nature Climate Change* **2018**, *11*, 220-221.
80. Hawkins, E.; Ortega, P.; Suckling, E. et al. Estimating Changes in Global Temperature since the Preindustrial Period. *Bull. Amer. Meteor.* **2017**, *98*, 1841-1856.
81. Spangenberg, J.H.; Neumann, W.; Klöser, H.; Wittig, S. et al. False hopes, missed opportunities. How economic models affect the IPCC proposals in Special Report 15 Global Warming of 1.5 °C (2018). An Analysis From the Scientific Advisory Board of BUND. *The Journal of Applied Business and Economics* **2021**, *23*, 49-72.
82. Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2022.* Mitigation of Climate Change. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change; Cambridge University Press: Cambridge, UK, 2022.
83. Bodansky, D. The Paris Climate Change Agreement: A New Hope? American Journal of International Law 2016, 110, 288-319.
84. Allan, J.I. Dangerous Incrementalism of the Paris Agreement. *Global Environmental Politics* **2019**, *19*, 4-11.
85. Voigt, C. The Paris Agreement: What is the standard of conduct for parties? *Zoom-In* **2016**, *26*, 17-28.
86. Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2021*: The Physical Science Basis [Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change - Approved Version, 2021.
87. Bastin, J.F.; Finegold, Y.; Garcia C. et al. Response to Comments on "The global tree restoration potential". *Science* **2019**, *366*, 317.
88. Knopf, B.; Geden, O. *Ist Deutschland auf dem 1,5-Grad-Pfad?* Eine Einordnung der Diskussion über ein nationales CO2-Budget. Mercator Research Institute on Global Commons and Climate Change 2022.
89. Friedlingstein, P. et al. Global Carbon Budget 2020. *Earth System Science Data* **2020**, *12*, 3269-3340.
90. Boers, N. Observation-based early-warning signals for a collapse of the Atlantic Meridional Overturning Circulation. *Nature Climate Change* **2021**, *11*, 680-688.
91. Exner, A.K. *Clean Development Mechanism und alternative Klimaschutzansätze: Rechts- und Governance-Fragen*; Metropolis: Marburg, Germany, 2016.
92. Stubenrauch, J.; Ekardt, F.; Hagemann, K.; Garske, B. *Forest Governance*; Springer: Cham, Germany, 2022.
93. Ekardt, F.; Jacobs, B.; Stubenrauch, J.; Garske, B. Peatland Governance: The Problem of Depicting in Sustainability Governance, Regulatory Law, and Economic Instruments. *Land* **2020**, *9*, 83.
94. Nordhaus, W.D. *A Question of Balance.* Weighing the Options of Global Warming Policies; Yale University Press: New Haven, U.S., London, UK, 2008.
95. Peters, B. *The European Court of Human Rights and the Environment* in E Sobenes, B Samson, S Mead, International Courts and Tribunals and the Protection of the Environment; Springer Asser Press: Den Haag/Heidelberg, Netherlands/Germany, 2022, pp. 189-218.
96. Okonkwo, T. Protecting the Environment and People from Climate Change through Climate Litigation. *Journal of Politics and Law* **2017**, *10*, 66-77.
97. Ruppel, O.C.; Roschmann, C.; Ruppel-Schlichting, K. *Climate Change: International Law and Global Governance*; Nomos: Baden-Baden, Germany, 2013.
98. OHCHR, Human Rights Council adopts four resolutions on the right to development, human rights and indigenous people, the human rights implications of the COVID-19 pandemic on young people, and the human rights to a safe, clean, healthy and sustainable environment, Resolution of 08 October 2021, https://www.ohchr.org/en/press-releases/2021/10/human-rights-council-adopts-four-resolutions-right-development-human-rights (Accessed 13 December 2022).
99. Hunter, D.; Salzman, J. Negligence in the Air: The Duty of Care in Climate Change Litigation. *University of Pennsylvania Law Review* **2006**, *155*, 1741-1794.
100. Weishaupt, A.; Ekardt, F.; Garske, B.; Stubenrauch, J.; Wieding, J. Land Use, Livestock, Quantity Governance, and Economic Instruments. *Sustainability* **2020**, *12*, 2053.
101. Garske, B.; Ekardt, F. Economic policy instruments for sustainable phosphorus management: taking into account climate and biodiversity targets. *Environmental Sciences Europe* **2021**, *33*, 56.
102. Rath, T.; Ekardt, F. EU-Emissionshandels-Reform, Wärmewende, EU-Sozialrecht und die digitale Transformation. *Klimaschutzrecht* **2022**, *1*, 138 and 171.
103. Schmidt-De Caluwe, R.; Ekardt, F.; Rath, T. Sozialrecht und Energiewende. *Soziales Recht* **2022**, *15*, 11-29.
104. Flachsland, C.; Marschinski, R.; Edenhofer, O. To link or not to link: benefits and disadvantages of linking cap-and-trade systems. *Climate Policy* **2009**, *9*, 358-372.
105. European Commission (EC). 'Proposal for a Directive of the European Parliament and the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757, 551 final' of 14 July 2021, COM/2021/551 final; Brussels, Belgium, 2021.
106. Elkerbout, M.; Zetterberg, L. *EU ETS Reform Needs in the Light of National Politics*; European Liberal Forum: Brussels, Belgium, 2020.

 doi:10.20944/preprints202306.0645.v1

107. Zaklan, A.; Duscha, V.; Gibis, C. et al. EU ETS cap must and can be reduced more quickly. *DIW Weekly Report* **2020**, 293-300.
108. Zaklan, A.; Wachsmuth, J.; Duscha, V. The EU ETS to 2030 and beyond: adjusting the cap in light of the 1.5°C target and current energy policies. *Climate Policy* **2021**, 778-791.
109. Brink, C.; Vollebergh, H.R.J. What Can We Learn from EU ETS. *ifo DICE report* **2020**, 23-29.
110. Garske, B. *Ordnungsrechtliche und ökonomische Instrumente der Phosphor-Governance*. Unter Berücksichtigung der Wirkungen auf Böden, Gewässer, Biodiversität und Klima; Metropolis: Marburg, Germany, 2020.
111. Hennig, B. *Nachhaltige Landnutzung und Bioenergie – Ambivalenzen, Governance, Rechtsfragen*; Metropolis: Marburg, Germany 2017.
112. Ekardt, F.; Wieding, J.; Garske, B.; Stubenrauch, J. Agriculture-related Climate Policies – Law and Governance Issues on the European Global Level. *CCLR* **2018**, 316-331.