

2022

**European
Yearbook of
International
Economic Law**

European Yearbook of International Economic Law

Volume 13

Series Editors

Jelena Bäumler, Lüneburg, Germany
Christina Binder, Neubiberg, Germany
Marc Bungenberg, Saarbrücken, Germany
Markus Krajewski, Erlangen, Germany
Giesela Rühl, Berlin, Germany
Christian J. Tams, Glasgow, UK
Jörg Philipp Terhechte, Lüneburg, Germany
Andreas R. Ziegler, Lausanne, Switzerland

Assistant Editor

Judith Crämer, Lüneburg, Germany

Advisory Editors

Armin von Bogdandy, Heidelberg, Germany
Thomas Cottier, Bern, Switzerland
Mary Footer, Nottingham, UK
Stefan Griller, Salzburg, Austria
Armin Hatje, Hamburg, Germany
Christoph Herrmann, Passau, Germany
Meinhard Hilf, Hamburg, Germany
Locknie Hsu, Singapore, Singapore
William E. Kovacic, Washington, USA
Gabrielle Marceau, Geneva, Switzerland
Ernst-Ulrich Petersmann, Florence, Italy
Hélène Ruiz Fabri, Luxembourg, Luxembourg
Bruno Simma, München, Germany
Rudolf Streinz, München, Germany
Tania Voon, Melbourne, Australia

The European Yearbook of International Economic Law (EYIEL) is a Springer-publication in the field of International Economic Law (IEL), a field increasingly emancipating itself from Public International Law scholarship and evolving into a fully-fledged academic discipline in its own right. With the yearbook, editors and publisher make a significant contribution to the development of this “new” discipline and provide an international source of reference of the highest possible quality.

The EYIEL covers all areas of IEL, in particular WTO Law, External Trade Law of major trading countries, important Regional Economic Integration agreements, International Competition Law, International Investment Regulation, International Monetary Law, International Intellectual Property Protection and International Tax Law.

EYIEL publishes articles following a substantive review by the editors and external experts as appropriate.

The editors have published extensively in the field of IEL and European Law alike. They are supported by an international Advisory Board consisting of established scholars of the highest reputation.

Jelena Bäumlér • Christina Binder •
Marc Bungenberg • Markus Krajewski •
Giesela Rühl • Christian J. Tams •
Jörg Philipp Terhechte • Andreas R. Ziegler
Editors

European Yearbook of International Economic Law 2022

 Springer

Editors

Jelena Bäumler
Leuphana University
Lüneburg, Germany

Christina Binder
Bundeswehr University Munich
Neubiberg, Germany

Marc Bungenberg
Saarland University
Saarbrücken, Germany

Markus Krajewski
University of Erlangen-Nuremberg
Erlangen, Germany

Giesela Rühl
Humboldt University
Berlin, Germany

Christian J. Tams
University of Glasgow
Glasgow, UK

Jörg Philipp Terhechte
Leuphana University
Lüneburg, Germany

Andreas R. Ziegler
Université de Lausanne
Lausanne, Switzerland

ISSN 2364-8392

ISSN 2364-8406 (electronic)

European Yearbook of International Economic Law

ISBN 978-3-031-28531-8

ISBN 978-3-031-28532-5 (eBook)

<https://doi.org/10.1007/978-3-031-28532-5>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2023

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Editorial

When the editors of the European Yearbook for International Economic Law (EYIEL) published the open call for contributions for Volume 13 in December 2021, the world looked very different than it does today. The aggressive war launched by Russia against Ukraine on 24 February 2022 not only brought death and destruction to the citizens of Ukraine, but also fundamentally changed the political architecture in Europe and had profound ramifications on global commerce and investment. Assessing the impact of this war on international economic law and relations will be the subject of future editions of the EYIEL. Instead, the EYIEL 2022 focuses on a global crisis, which already existed before 2022 and will continue to shape lives across the globe even long after the war between Russia and Ukraine has ended: The climate change crisis.

As shown in the latest report of the Intergovernmental Panel on Climate Change (IPCC) entitled “Climate Change 2022: Impacts, Adaptation, Vulnerability”¹ human-induced climate change causes significant disruptions in nature affecting the lives of billions of people around the world. People and ecosystems least able to cope will face the most severe consequences. Heatwaves, droughts, and floods are increasing and occur simultaneously. They have exposed millions of people to acute food and water insecurity. The IPCC therefore calls for urgent, ambitious, and accelerated action to adapt to climate change and for rapid progress with regard to cutting greenhouse gas emissions.

In light of these facts, Part I of the present EYIEL volume specifically assesses the impact of climate change on international economic law and vice versa. The contributions look at the role of international trade, finance and investment law as well as constitutional and civil law and other subfields of domestic and international law. All chapters approach their topic in light of the fundamental question how the law can contribute to climate change mitigation and adaptation, but also which

¹Charter of the United Nations, 24 October 1945, 1 U.N.T.S. XVI (1945).

elements of the law actually stand in the way of effective actions against climate change.

Traditionally, the EYIEL begins with a distinguished essay on a topic of general interest. This year's focus reaches beyond the traditional realm of international economic law addressing climate change and constitutional law. *Martin Eifert* and *Michael von Landenberg-Roberg* contextualise the 2021 German Federal Constitutional Court's climate change judgement within climate constitutionalism. They argue that climate change requires constitutional responses based on fundamental rights or environmental protection clauses contained in many domestic constitutions. In the opinion of the authors, climate change challenges to constitutional law arise due to climate protection's dependence on scientific knowledge and international efforts as well as the need to take the time dimension into account.

The two subsequent contributions analyse legal issues in the context of international climate change law, in particular the United Nations Framework Convention on Climate Change (UNFCCC). *Nciko wa Nciko Arnold* critically discusses the specific instrument of Nationally Determined Contributions (NDCs) and argues that expecting countries of the Global South to account for greenhouse gas emissions of transnational corporations in the same way as in the Global North contradicts the principle of common but differentiated responsibilities. *Arnold* suggests that Trans-Nationally Determined Contributions (TNDCs) can provide an adequate solution to this challenge. *Rainer Maria Baratti* analyses the Green Climate Fund established by the Conference of Parties of the UNFCCC in 2010 and investigates the transformative role of this Fund in involving companies in the fight against climate change. In addition to addressing the institutional aspects, he assesses the Green Climate Fund with particular attention to the criticisms of indigenous peoples.

One of the most controversial instruments to support the fight against climate change are trade barriers aiming at conditioning market access, in particular carbon border adjustment mechanisms (CBAM). *Ilaria Espa* and *Kateryna Holzer* assess the EU Commission's CBAM proposal and explain how imports can be partially or fully excluded from the scope of application of this instrument. Based on this, they ask if the exclusion features could be overcome by opting for a carbon club approach. The authors also discuss which model of clubbing could be more appropriate with a view to foster mutual supportiveness between the multilateral trade and climate regimes. Still focusing on CBAM, *Christian Riffel* assesses the EU CBAM proposal on the basis of WTO law, in particular the GATT. He argues that although the proposed instrument would infringe Articles I:1 and II:1(b) of the GATT, it could be justified in principle. *Riffel* compares CBAM with alternative measures to prevent carbon leakage and proposes to revisit the interpretation of the chapeau of Article XX GATT and to reduce it to an arbitrariness test, because otherwise WTO Members may be forced to rely on the security exception of Article XXI GATT.

Continuing with the discussion of trade law issues, *Xinyan Zhao* analyses the WTO Panel Report on US-Safeguard Measure on PV Products which seems to have clarified that WTO members should use safeguard measures to protect their environmental industries against unfair competition. After explaining the positive and negative impact of the Panel's ruling on WTO members' national strategies for

promoting the use of clean energy, *Zhao* suggests a more comprehensive analytical framework balancing various sustainability elements to combat climate change.

Moving from the multilateral trading system to bilateral agreements, *Patrick Abel* discusses the trade and climate action linkage in the EU-UK Trade and Co-operation Agreement (TCA). In the TCA, the parties agreed on innovative provisions on climate action unprecedented in the EU's practice of free trade agreements. *Abel* compares the TCA to the designs of earlier EU free trade agreements (FTAs) and situates it within international climate change law. Based on this analysis, he suggests that the TCA may serve as a template for trade and climate action linkages in future EU FTAs.

After climate change and trade law, the next two chapters address international investment law. *Emily Webster* and *Myriam Gicquello* focus on the Energy Charter Treaty (ECT) and discuss the impact of investor-state dispute settlement (ISDS) under the ECT on EU Member States in response to fossil fuel phase-outs and policies promoting investment in renewable energies. The authors argue that ISDS created significant barriers to the introduction of laws, regulations, and policies facilitating energy transition, but they also draw attention to the possibilities of investment treaty protection supporting policies attempting to scale up renewable energies. The ECT is also the topic of *Mattia Colli Vignarelli's* contribution on making this treaty climate friendly. The author analyses the text of the "modernised" ECT with particular attention to the "flexibility mechanism" for the optional progressive carve out of fossil-fuel investments. *Vignarelli* argues that this mechanism would continue to ensure fossil-fuel investments protection at the crucial stage of energy transition. Therefore, the author also assesses a withdrawal of the EU and its Member States from the ECT.

After the more "traditional" fields of trade and investment law and their impact on climate change policies, the next chapters turn to regulations applicable to private economic actors. *Gudrun Zagel* and *Dieter Huber* discuss how finance flows can be made consistent with the aims of the Paris Agreement and focus specifically on the EU banking sector and its regulatory framework. The authors discuss how activities, tasks, and mandates of the private banking sector, banking supervisory authorities, and central banks in the EU and the related regulatory framework may affect the achievement of the objectives of the Paris Agreement. Finally, *Zagel* and *Huber* propose measures the EU banking sector can undertake and identify necessary changes in EU legislation.

In his contribution, *Philip Förster* assesses a very specific issue in the context of corporate sustainability reporting. He asks if the proposed so-called double materiality principle in the draft EU Corporate Sustainability Reporting Directive effectively tackles green washing. The materiality principle aims at streamlining company reports, focusing on the most relevant factors, and reducing information overload. The author concludes that the proposed new Article 19a of the EU Non-Financial Reporting Directive addresses the main challenges of non-financial reporting, i.e. information overload and greenwashing, but he also suggests that there is still a need for clarification of the details of the materiality principle.

The next two chapters deal with the emerging trend of climate change litigation. *Nikita Pattajoshi* takes a critical look at shareholder-based climate change litigation in the Global South. She shows that the landscape of shareholder climate change litigation is very Global North centric, both quantitatively and qualitatively. There are hardly any climate change litigation cases against corporations brought by shareholders in a country of the Global South. *Pattajoshi* suggests that there is an opportunity of shareholder climate lawsuits in the Global South and she predicts that they will increase and positively influence the climate change litigation landscape, even if they are unsuccessful in terms of the judicial outcome. Turning to different actors, *Astrid Iversen* focuses on the potentials of climate change litigation against central banks and analyses how the protection of central banks under the laws of immunity can be overcome. Drawing on the example of a 2021 judgement of the Swedish Supreme Court, *Iversen* argues that far-reaching immunity is not only unreasonable when taking into consideration the original justification for central banks' immunity but may also prompt a backlash against the immunity related to the core functions of central banks, namely monetary policy mandates.

The last four chapters of EYIEL 13 are devoted to EU law instruments and their impact on climate change. *Bernadette Zelger* begins with a look at environmental and sustainability aspects in EU competition law. In particular, she asks if the approach under Article 101 Treaty on the Functioning of the European Union (TFEU) can be expanded and developed into a "more economic & ecological approach". *Zelger* analyses the TFEU competition provisions and shows to what extent and on which basis environmental considerations and sustainability aspects can be taken account of within the current EU competition law framework. *Julia Wallner* and *Emil Nigmatullin* assess climate-related individual rights under EU secondary law following a climate change lawsuit in Austria in which the claimants tried to derive a right to require the issuing of an ordinance on fossil fuel sales bans from the EU Effort Sharing Regulation, which stipulates greenhouse gas emission reduction targets for EU Member States. The authors examine the existence of climate-related individual rights in EU secondary law and also discuss their limitations based on primary EU and international law.

The EU Emission Trading System (ETS) has been praised as an efficient instrument to reduce GHG emissions and mitigate the consequences of global heating. *Ina Frieling* discusses the expansion and adjustment of this regime by EU Member States' civil courts in climate litigation proceedings. She compares the 2021 Shell decision by The Hague District Court and the 2017 RWE decision of the Higher Regional Court of Hamm. The author asks how the EU ETS shapes the duty of care of companies with regard to climate change measures and how it can serve as a justification of an interference with the rights of others.

Concluding the focus section on climate change, *Concetta Maria Pontecorvo* attempts a first assessment of the proposed EU Regulation on Trade in Forest-Risk Commodities (FRCs) aimed at reducing the EU's global deforestation "footprint". Notwithstanding some important limits and shortcomings in the Commission's proposal, in particular relating to land tenure rights' protection, *Pontecorvo* argues that the EU has a moral duty to avoid contributing to the global destruction and

degradation of forests. However, the proposed regulation needs to be better aligned with WTO law.

Part II of EYIEL 13 on “Current Challenges, Development and Events in European and International Economic Law” only contains one contribution. *Frank Hoffmeister* assesses the practice of the European Commission in the area of trade defence since 2014. Based on his experience and knowledge as an “insider”, *Hoffmeister* analyses how the Commission exercised its political discretion in the field of anti-dumping measures, countervailing duties and safeguards. He concludes that there was a progressive development of Commission practice, in particular in the field of anti-dumping measures and a dynamic interpretation of the law in the last 7 years.

Most contributions to Part I of EYIEL 13 followed an open call for papers which not only ensured the high quality of the chapters but also led to more diversity in the group of authors. We are happy that authors from different regions of the world and at various stages of their academic or professional careers contributed to this volume and we hope that readers will appreciate the innovative and original approaches taken by the authors.

Lüneburg, Germany
 Neubiberg, Germany
 Saarbrücken, Germany
 Erlangen, Germany
 Berlin, Germany
 Glasgow, UK
 Lüneburg, Germany
 Lausanne, Switzerland
 December 2022

Jelena Bäumler
 Christina Binder
 Marc Bungenberg
 Markus Krajewski
 Giesela Rühl
 Christian J. Tams
 Jörg Philipp Terhechte
 Andreas R. Ziegler

Reference

IPCC (2022) Climate Change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, Craig M, Langsdorf S, Löschke S, Möller V, Okem A, Rama B (eds)]. Cambridge University Press, Cambridge. <https://doi.org/10.1017/9781009325844>

Contents

Part I Climate Change & Liability

Climate Change Challenges Constitutional Law: Contextualising the German Federal Constitutional Courts Climate Jurisprudence Within Climate Constitutionalism	3
Martin Eifert and Michael von Landenberg-Roberg	
<i>Trans</i>-Nationally Determined Contributions for Climate Justice: Resolving a Paris Agreement’s Contradiction That Is Working Against Developing States	35
Nciko wa Nciko	
The Green Climate Fund, Climate Change and Corporate Due Diligence: What Role for the Private Facility Sector?	63
Rainer Maria Baratti	
Market Access Conditionality and Border Carbon Adjustments	83
Christian Riffel	
Removing Barriers to Climate Change Litigation: The Progressive Erosion of Central Banks’ Immunity	149
Astrid Iversen	
The WTO Panel Report on US-Safeguard Measure on PV Products: A Decisive Victory for the Fight Against Climate Change?	175
Xinyan Zhao	
The Innovative Trade and Climate Action-Linkage in the EU-UK Trade and Cooperation Agreement: A Template for the EU’s New Approach to Green Trade Agreements	205
Patrick Abel	

The Investment Treaty Regime and the Clean Energy Transition 235
Myriam Gicquello and Emily Webster

Making the Energy Charter Treaty Climate-Friendly: An (Almost) Impossible Leap 267
Mattia Colli Vignarelli

Making Finance Flows Consistent with the Aims of the Paris Agreement: Roles, Obligations, and Limitations of the EU Banking Sector and Its Regulatory and Supervisory Institutions 295
Gudrun Zagel and Dieter Huber

The Double Materiality Principle (Article 19a NFRD) as Proposed by the Corporate Sustainability Reporting Directive: An Effective Concept to Tackle Green Washing? 345
Philip Förster

Assessing the Climate of ‘Shareholder Based Climate Change Litigation’ in the Global South 365
Nikita Pattajoshi

From Unilateral Border Carbon Adjustments to Cooperation in Climate Clubs: Rethinking Exclusion in Light of Trade and Climate Law Constraints 389
Ilaria Espa and Kateryna Holzer

Environmental and Sustainability Aspects in EU Competition Law: Towards a “More Economic & Ecological Approach” Under Article 101 TFEU? 411
Bernadette Zelger

Climate-Related Individual Rights Under EU Secondary Law and Limitations to Their Material Scope 443
Julia Wallner and Emil Nigmatullin

Reducing GHG Emissions in a Constitutional Democracy: When EU Civil Courts Adjust the EU Emission Trading System 477
Ina Frieling

The Proposed EU Regulation on Trade in Forest-Risk Commodities (FRCs): A First Assessment 507
Concetta Maria Pontecorvo

Part II Current Challenges, Development and Events in European and International Economic Law

Seven Years Inside the Trade Defence Machinery Room: How Political Is the European Commission? 543
Frank Hoffmeister

Part I
Climate Change & Liability

Climate Change Challenges Constitutional Law: Contextualising the German Federal Constitutional Courts Climate Jurisprudence Within Climate Constitutionalism



Martin Eifert and Michael von Landenberg-Roberg

Contents

1	Climate Change as a Challenge for Constitutional Law	4
2	Types of Constitutional Provisions Relevant to Climate Protection	6
2.1	Specific Climate Protection Clauses	6
2.2	General Environmental Protection Clauses	6
2.3	Fundamental Rights	7
2.4	Constitution Matters	8
3	Constitutional Standard-Setting Against the Background of Climate Protection's Special Features	8
3.1	Climate Protection as a Global Challenge	8
3.2	Climate Protection as a Knowledge-Dependent Challenge	9
3.3	Climate Protection as a Temporal Challenge	10
3.4	Climate Protection as an Institutional Challenge	11
4	Obligations to Protect Against Climate Change: Determination and Application of the Constitutional Standard	12
4.1	Constitutional Climate Protection Obligations Arising from General Environmental Protection Clauses	12
4.2	Fundamental Rights Guarantees of Protection	20
5	Preserving Freedom on the Path to Climate-Neutrality	22
5.1	The Inextricable Connection Between Present and Future Freedom	23
5.2	Necessity to Protect Future Freedom at Present	24
5.3	The Intertemporal Preservation of Freedom and Its Difficulties	24
6	Conclusion	27
	References	27

Abstract Climate change requires constitutional responses. The fundamental rights or environmental protection clauses contained in most constitutions provide a basis for this endeavour. The particular difficulties of determining the constitutionally required level of climate protection, climate protection's dependence on scientific

M. Eifert (✉) and M. von Landenberg-Roberg
Humboldt-Universität zu Berlin, Faculty of Law, Berlin, Germany
e-mail: Martin.Eifert@HU-Berlin.de; Michael.Roberg@HU-Berlin.de

knowledge and international efforts, and the need to take the time dimension into account are specific challenges for any constitutional order. This article addresses these basic questions on constitutional law and presents the answers given by the Federal Constitutional Court in its landmark climate decision regarding the German Constitution.

1 Climate Change as a Challenge for Constitutional Law

The existential threat to humankind and the environment caused by anthropogenic climate change poses particular challenges to constitutional law. As the basic legal order of a polity, modern constitutions are intended to secure a fundamental level of freedom and protection for the individual irrespective of current political majorities.¹ Climate change and its consequences not only endanger people's lives and health but also their freedom.² In an environment that is becoming more and more hostile to human life due to increased global warming, rights to freedom are drying up into empty forms—either because of the hostile environment or because of late and desperate attempts to address climate change.

If constitutions should preserve their function of protecting the necessary pre-conditions of exercising individual and collective freedom, they cannot remain neutral with climate change being the biggest threat to humankind in the twenty-first century. The protection of the earth's climate through the transformation to greenhouse gas (GHG) neutrality in time, as well as protection against the impacts of the already inevitable level of global warming through adaptation, must also be a normative imperative of the constitution, if only for reasons of the self-preservation of a dignified life and freedom.³

Freedom, however, must not only be constitutionally protected by the requirement of a profound and timely transformation process towards climate neutrality; it must also be guaranteed with respect to the transformation process as such. Climate protection must be implemented in a way that preserves freedom and human rights to the greatest possible extent.⁴ Constitutional law needs to reflect the dangers to civil liberties that climate protection obligations might entail.

From the perspective of the protection of freedom, climate change thus poses two central challenges for constitutional law and its interpretation: First, the level of

¹For constitutions rooted in the liberal-democratic tradition see Grimm (1991), pp. 116–119.

²See Reder (2012), S. 66 f.; Ekarth (2014), pp. 192–198.

³On the impact of the right to human dignity e.g. The Lahore High Court, *Leghari v. Federation of Pakistan*, Judgement of 25.1.2018, W.P. No. 25501/2015, pp. 10 f.

⁴Emphasising the necessity of safeguarding human rights in mitigation and adaptation activities UNEP (2015), p. 26. The Paris Agreement also expressly recognizes in its preamble, that “Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights”.

protection required under constitutional law must be determined with regard to the tolerated extent of climate change. Second, freedom must be preserved to the greatest possible extent within this transformation process, and the burdens associated with the transformation process must be distributed equitably within and between generations. Overall, constitutional law should define cornerstones for the inevitable path to climate neutrality.

The global challenge of climate change has triggered an international debate on the role of law and the courts.⁵ In this debate, the general issues related to the characteristics of climate change and climate change politics encounter specific (national) legal systems.⁶ This broadens understanding and allows for a range of arguments to emerge, but the particular constitutional answer remains dependent on the constitutional law in question. This article focuses on the role of constitutional law regarding climate change.⁷ It aims to contribute to the debate in two ways. Firstly, it identifies the basic constitutional questions that arise in most jurisdictions in the face of the challenge of climate protection, and secondly, it presents the German Federal Constitutional Court's response to each of these basic questions as developed in its climate decision.^{8,9}

⁵From the extensive literature see Posner (2007), p. 1925; Preston (2011), p. 3; Markell and Ruhl (2012), p. 15; Okubo (2013), p. 741; Peel and Osofsky (2015); Burger and Grundlach (2017); Setzer and Bangalore (2017), p. 175; Bouwer (2018), p. 347; Saurer (2018), p. 679; Graser (2019), p. 271; Burgers (2020), p. 55; Mitkidis and Valkanou (2020), p. 11; Setzer and Higham (2021); Peel and Markey-Towler (2021), p. 1484; Wagner (2021), p. 2256; Franzius (2021a), p. 121; Payandeh (2021), p. 64; Rodi and Kalis (2022), p. 5; de Vilchez Moragues (2022); Lange and Lippold (2022), p. 685; Fellenberg (2022), p. 913; Wegener (2022), p. 425; and further contributions in Kahl and Weller (2021). For a special focus on the post-Paris situation Wegener (2020), p. 17; Beauregard et al. (2021), p. 652; Preston (2021), p. 1; Saiger (2022). An instructive review of the research on courts and litigants in climate governance is provided by Setzer and Vanhala (2019), pp. 1–19; Peel and Osofsky (2020), pp. 22–26.

⁶In particular, see articles in Alogna et al. (2021); Sindico and Mbengue (2021); Lin and Kysar (2022); and furthermore Vanhala (2013) p. 447; Peel and Lin (2019), p. 679; Setzer and Benjamin (2019), p. 77; Zhao et al. (2019), p. 349; Saiger (2020), pp. 51 ff.; Chaturvedi (2021), p. 1459; Torre-Schaub (2021), p. 1445; Voigt (2021), p. 697; Cameron and Weyman (2022), p. 195; Kotzé and Du Plessis (2022), p. 615.

⁷For a broader notion of “constitutionalism” see the contributions in Jaria-Manzano and Borrás (2019) and Ghaleigh (2021), p. 445.

⁸Bundesverfassungsgericht (Federal Constitutional Court), Order of the First Senate of 24 March 2021—1 BvR 2656/18, paras. 1–270 (hereafter cited as: BVerfG, Climate Decision). The decision is officially published in BVerfGE 157, pp. 30–177. A translation in English is available at http://www.bverfg.de/e/rs20210324_1bvr265618en.html (last accessed 3 October 2022).

⁹This decision has triggered a controversial debate in German literature. For rather critical views Calliess (2021b), p. 355; Fassbender (2021), p. 2085; Hofmann (2021), p. 1587; Kloepfer and Wiedmann (2021), p. 1333; Möllers and Weinberg (2021) p. 1069; Polzin (2021) p. 1089; Ladeur (2022), p. 13; Lenz (2022), p. 73; von Weschpfennig (2022), paras. 19–24; more ambivalent Buser (2021), p. 1409; Krämer-Hoppe (2021), p. 1393; Ekardt and Heß (2021), p. 579; Berkemann (2021), p. 701; Stark (2021), p. 237; Minnerop (2022), p. 135; Kirchhoff (2022), pp. 9–31; Volkmann (2022), p. 5; Winter (2022a), p. 209; differentiating Kahl (2022a), p. 2; Franzius (2021b), p. 136; for a decidedly positive evaluation Eifert (2021a), p. 1085; Schlacke (2021),

2 Types of Constitutional Provisions Relevant to Climate Protection

The starting point of all consideration must be the constitution itself. If the state's obligation to protect the Earth's climate should not only be an ethical postulate but a juridical constitutional requirement, climate protection must be anchored in the text of the constitution. Climate protection can be explicitly required in the constitutional text itself or can be inferred from it by way of interpretation. A textual basis can be found in special environmental protection clauses as well as in fundamental rights provisions.

2.1 *Specific Climate Protection Clauses*

To date, only few constitutional texts explicitly mention climate protection. However, climate protection is expressly incorporated in the preamble or the main text of eleven constitutions worldwide, mostly more recent ones from Latin America, Africa and Asia.¹⁰ The form and content of the provisions differ considerably. Only rarely has the state been made so explicitly responsible as, for instance, in the Constitution of Ecuador, where the state is obliged to “adopt adequate and cross-cutting measures for the mitigation of climate change, by limiting greenhouse gas emissions, deforestation, and air pollution” and “to protect the population at risk”.¹¹ More commonly, general commitments to climate protection without a specific duty or the formulation of respective expectations with uncertain legal implications can be found.¹²

2.2 *General Environmental Protection Clauses*

Insofar as constitutional texts do not expressly contain a climate protection provision, as is particularly the case in Europe and North America, it can also be convincingly derived from general environmental protection clauses. These can be found as general constitutional provisions or right guarantees for a healthy

p. 912; Sinder (2021), p. 1078; Wahnschaffe and Lücke (2021), p. 1099; Aust (2022), p. 150; von Landenberg-Roberg (2022), pp. 269–276. Defending the decision against points of criticism that were regularly voiced Eifert (2022b), pp. 542–545.

¹⁰According to Ghaleigh et al. (2022), p. 7, these include: Algeria, Bolivia, Côte d'Ivoire, Cuba, Dominican Republic, Ecuador, Thailand, Tunisia, Venezuela, Vietnam and Zambia.

¹¹Art. 414 of the Constitution of the Republic of Ecuador.

¹²For a more detailed account, see Ghaleigh et al. (2022), p. 9; May and Daly (2019), pp. 235 ff.

environment in more than 150 constitutional documents worldwide.¹³ Here, too, the range in wording, normative content, density of regulation and enforceability in court is considerable.¹⁴ However, it is hard to imagine that the protection of the environment, regardless how the provision is formulated (for instance protection of a “healthy environment” or “natural basis of life”), does not include the global climate as part of its most basic conditions. These form a basis for the state’s obligation to protect the climate.

2.3 *Fundamental Rights*

Constitutional requirements for climate protection measures can also be derived from fundamental rights which are enshrined in most constitutions. Due to the extraordinary risks of unrestrained climate change, the fundamental rights to life, health and property are at the centre of the discussion.¹⁵ However, the effects of climate change on the undisturbed exercise of civil liberties have also been recognized and discussed from an early stage.¹⁶

Since greenhouse gases are predominantly emitted by private parties, fundamental rights as traditional limitations to state action do not offer any protection. Climate protection obligations can only be derived from fundamental rights to the extent that positive obligations are acknowledged. However, particularly with regard to the right to life and physical integrity, a fundamental duty of the state to protect against dangers from third parties or natural events is widely recognized.¹⁷ Protection against the impacts of climate change on life and health represents merely a specification of this obligation which in turn requires measures to mitigate climate change.

In the constitutional assessment of climate protection measures, fundamental rights maintain their traditional role by ensuring the proportionality of obligations imposed and the equality of its distribution among different groups. What is new here is the question of whether this task also extends to the temporal dimension.

¹³UNEP, Environmental Rule of Law, First Global Report, 2017, p. 2, 154–161; Lewis (2018), pp. 43–55; Gross (2021), p. 83.

¹⁴For an instructive overview see Boyd (2015), pp. 171–186.

¹⁵Jaimes (2015), pp. 170–181; Lewis (2018), pp. 157–165; Bickenbach (2020), p. 170; However, other fundamental rights can also be affected such as the right to private life, family and home or, especially in cases involving indigenous communities, rights concerning the preservation of culture (cf. UN HR Committee, Daniel Billy et al. v. Australia, CCPR/C/135/D/3624/2019). Kahl (2022b) observes that in absence of independent rights to climate protection the normative allocation of climate change-related human rights impacts are arbitrary.

¹⁶See McNerney-Lankford et al. (2011), pp. 18 f.

¹⁷Birchler (2020), pp. 192–202; Braig and Ehlers-Hofherr (2020), p. 591.

2.4 *Constitution Matters*

It has become obvious that most constitutions contain provisions that could serve as a basis for climate change commitments, and that fundamental rights at least have some influence on climate protection measures. The constitution matters when it comes to climate change and so does the design of the applicable provisions. Climate protection clauses and environmental protection clauses can protect the climate regardless of its impact on human health and life. They may go beyond anthropocentric protection. Fundamental rights are generally tied to human beings. Furthermore, fundamental rights offer protection (only) against the impact of climate change on, inter alia, health and life. Thus, at least in the mid-term, and in some regions even in the long-term, climate adaptation measures that mitigate these impacts are equivalent to climate mitigation measures.

Provisions may also differ with respect to access to courts.¹⁸ General clauses may only be constitutional goals or obligations that are not enforceable in court, whereas fundamental rights generally give individuals access to the courts.¹⁹ In the end, the more precise the constitutional obligations to protect the climate are, the better existing climate protection measures can be related to them and thus the burden-sharing over time can be assessed in the light of fundamental rights.

3 **Constitutional Standard-Setting Against the Background of Climate Protection's Special Features**

Regardless of the type of constitutional provision that can be used to anchor a climate protection imperative in the respective national context, four central questions arise from the specifics of the climate protection challenge.

3.1 *Climate Protection as a Global Challenge*

The first challenge results from the global nature of anthropogenic climate change. This is caused by the cumulative effect of global emissions of greenhouse gases and

¹⁸Burger and Grundlach (2017), pp. 28 f.; Payandeh (2021), para. 18; Kelleher (2022), pp. 108–110.

¹⁹However, individual standing provisions might also be narrowly interpreted or applied. For instance, access to the CJEU is particularly restricted by its jurisprudence on individual standing. For a critique, see Winter (2022b), pp. 367 ff. See also the decision of the Swiss Supreme Court, *Association of Swiss Senior Women for Climate Protection v. Federal Department of the Environment Transport, Energy and Communications*, judgement of 20.5.2020, 1C_37/2019, where the court held that the plaintiffs' asserted rights had not been affected with sufficient intensity. For a critical discussion see Reich (2020), pp. 501 ff.

their associated increase in concentration in the atmosphere. Therefore, no state can stop global warming through national measures alone. Individual national contributions to the increase in greenhouse gas concentrations still differ considerably.²⁰ However, even the complete transformation of the currently largest emitters to greenhouse gas neutrality would only slow down the global temperature rise, but not stop it in the long term. At the same time, due to the cumulative effect of greenhouse gas emissions, no country's emissions are so insignificant that its reductions would not contribute to solving the problem.²¹ No country could therefore fundamentally refuse to make the long-term transition to a GHG-neutral economy, in view of its currently small percentage share in causing the increase of GHG concentrations in the atmosphere or because other countries are still willing to increase their greenhouse gas emissions.²² If this were to happen, it would seriously undermine the necessary momentum in international negotiations.

The operationalisation of constitutional climate protection requirements must therefore be adjusted to the basic structure of the atmosphere as a "global common"²³ and climate protection as a problem of collective action.²⁴ Due to the limited power of individual state action in climate issues, the formulation of constitutional obligations can only be carried out with special consideration of the international context of action. National constitutional law therefore has the task of activating state action to solve problems at the international level and of embedding national climate policy in the international climate protection regime as a crucial framework for global coordination.

3.2 Climate Protection as a Knowledge-Dependent Challenge

The second challenge is the various scientific uncertainties that exist regarding climate change and its appropriate mitigation. There is no longer any scientific disagreement that anthropogenic greenhouse gas emissions are causing current global warming.²⁵ However, with regard to complex interactions within the climate system, the exact consequences of a certain increase of the global average temperature can still only be predicted abstractly at best. The same applies to the questions of when and where such consequences are to be expected. Even on the issue of

²⁰Data collected from the reported national GHG inventories can be accessed via https://di.unfccc.int/time_series.

²¹See e.g. Rechtbank Den Haag, *Urgenda v The Netherlands*, Judgment of 24.06.2015, C/09/456689/HA ZA 13-1396, paras. 4.79 and 4.90; Hoge Raad of the Netherlands, *Urgenda v The Netherlands*, Judgment of 20.12.2019, 19/00135, no. 5.7.8.

²²See Supreme Court of United States, *Massachusetts et al. v. Environmental Protection Agency*, Judgement of 2.4.2007, 549 U.S. 497 (2007), p. 23.

²³Edenhofer et al. (2015), pp. 260 ff.; Stoll (2016), pp. 131–141.

²⁴IPCC (2014), p. 17.

²⁵IPCC (2021), p. 5.

causation, the seemingly simple relationship between human greenhouse gas emissions, the increase in GHG concentrations in the atmosphere and the rise in average temperature may lose its linearity and thus its predictability once certain tipping points are reached.²⁶ For the same reason, the ecological consequences of reaching a particular temperature threshold can only be roughly predicted with varying degrees of probability, even though scientific projections on the danger of exceeding the 1.5 °C threshold in particular have become increasingly substantiated and consolidated over time.²⁷

Constitutional climate protection requirements must therefore align normative specifications with scientific evidence without petrifying current states of scientific knowledge into normative provisions too hastily. Therefore, a sufficiently flexible link between constitutional law and scientific knowledge is required. In this context, a science-oriented specification of the climate protection imperative must avoid disguising genuine normative issues as scientific questions. In particular, the question of the acceptable level of risk cannot be passed off as a question of pure scientific knowledge.

3.3 *Climate Protection as a Temporal Challenge*

The third challenge is the temporal dimension of climate change.²⁸ The current level of global greenhouse gas emissions and the associated increase in greenhouse gas concentrations determines the timeframe remaining for society to transition to climate neutrality if global temperatures are not to rise above a certain threshold. This time frame must be brought into line with that required for a successful transformation. Government climate policy must therefore, on the one hand, radically *decelerate* the consumption of the remaining total emission budget by reducing emissions. On the other hand, it must sufficiently *accelerate* the necessary structural transformation processes in the economy and society through appropriate regulations, knowledge-generating measures and the promotion of innovation.²⁹

The main political challenge here is that an enormous reduction and transformation efforts must be made at a time when the catastrophic impacts of global warming are just becoming apparent. The transformation to a net-zero emission society is a necessarily long-term process whose start can no longer be postponed without significantly increasing the already considerable burdens of transformation and shifting them into the future. As a rule, however, the future or long-term interests that are central here remain systematically underrepresented in the democratic

²⁶IPCC (2021), pp. 630–635.

²⁷IPCC (2018), pp. 7–11.

²⁸Pahl et al. (2014), p. 376; Eifert (2022a), p. 75.

²⁹von Landenberg-Roberg (2022), p. 280.

process because its legitimization cycles are structured by short-term election periods.³⁰

Constitutional requirements for climate protection must call for timely political action and also develop normative safeguards with regard to the temporal distribution of transformation burdens. Without timely initiation of the transformation, stabilization of the Earth's temperature at a tolerable level and effective health protection are unlikely, and a one-sided shift of then outsized burdens of transformation to future generations is likely.

3.4 *Climate Protection as an Institutional Challenge*

If the temporal dimension of climate change and the systematic underrepresentation of long-term interests in the political process imply that constitutional law is legitimately intended to oblige the legislature to protect the climate, the relationship between the legislature and (constitutional) courts in specifying this obligation becomes of central importance.³¹ On the one hand, courts are needed to remedy the short-sighted neglect of timely climate protection; on the other hand, the design of the path to climate neutrality involves numerous trade-offs and prioritization and distribution issues, so that it is also necessarily a political process.³² Striking the balance is very difficult and must be embedded in the respective constitutional separation of powers.³³

The task of constitutional interpretation is therefore to specify climate protection obligation in a way that assigns the overall responsibility for the concrete design of the transformation path to climate neutrality to the legislature.³⁴ It can only be entrusted to a parliament to make the manifold weighing, prioritising and burden-distributing decisions that inevitably go hand in hand with the implementation of the transformative process to climate neutrality. This is because only the legislative process is capable of balancing all the interests affected and providing a public forum to politicise and debate the fundamental strategic choices.

³⁰Steinberg (1998), pp. 335 ff.; Franzius (2021a), pp. 140–142.

³¹See also High Court of New Zealand, *Thomson v. The Minister for Climate Change Issues*, Judgment of 2.11.2017, CIV 2015-485-919 [2017] NZHC 733, paras. 133 f.; Cremer (2019), pp. 278 f.; Franzius (2021a), pp. 133 f.

³²Wegener (2019), p. 15.

³³See Franzius (2021a), pp. 133 f.; Payandeh (2021), pp. 76–80.

³⁴See also Gross (2019), p. 362.

4 Obligations to Protect Against Climate Change: Determination and Application of the Constitutional Standard

Although most constitutions can respond to climate change in some way, its characteristics make it difficult to derive constitutional requirements. This applies to the requirements from environmental protection clauses and to the requirements from fundamental rights. In the following, we will address the difficulties and present the Federal Constitutional Court's response in its first leading climate change decision as an example. We will first address the obligation to climate protection and then the requirements for the transformation path.

The German constitution does not contain an explicitly formulated climate protection clause. However, it provides for a general environmental protection clause in Article 20a Basic Law.³⁵ In the absence of any specific right to a healthy environment, individual rights against the state to offer protection against climate change and its dangerous consequences could only be derived from general fundamental rights, in particular the right to life and health from Article 2 (2) of the Basic Law (GG).³⁶ The Federal Constitutional Court uses both options—the general environmental protection clause (Sect. 4.1) and the right to life and health (Sect. 4.2)—to embed climate protection as a state obligation in the constitution.

4.1 *Constitutional Climate Protection Obligations Arising from General Environmental Protection Clauses*

Given the impact of the earth's climate on almost all ecosystems, it is protected as a central component of the environment by a general environmental protection clause. This also applies to Article 20a of the Basic Law.³⁷

³⁵ According to Article 20a of the Basic Law, the state shall protect “mindful also of its responsibility towards future generations” the “natural foundations of life and animals by legislation and, in accordance with law and justice, by executive and judicial action, all within the framework of the constitutional order”. For an analysis of the provision, see Dürner (2021), paras. 61–71; Schulze-Fielitz (2015), paras. 23–54; with special regard to climate protection Gross (2009), pp. 366 f.; Härtel (2020), pp. 578 f.

³⁶ Arguing for the introduction of a procedural fundamental right to environmental protection, Calliess (2021a), pp. 323 ff.

³⁷ In Germany the global climate was recognised early on by constitutional jurisprudence as an object of protection under Article 20a of the Basic Law without any special reasoning. See BVerfGE 118, 79 (110 f.); 137, 350 (368 f. paras. 47, 378 para. 73); 155, 238 (278 para. 100).

4.1.1 Normative Openness of a Climate Protection Obligation as an Initial Problem

However, deriving normative implications from such a general and open obligation requires a conceptual framework that translates highly complex climate change into manageable targets (Sect. 4.1.2) and enables the determination of a level of protection (Sect. 4.1.3).

4.1.2 Preserving a Temperature Threshold as the Core of Climate Protection

The global average temperature is a key parameter in climate science and can also serve as a point of reference for constitutional climate protection targets. It represents the complex processes of change in the Earth's climate system and their likely effects in a simplified form. The obligation to climate protection can be translated into the aim of not exceeding a temperature threshold and has been used in this way by the Federal Constitutional Court.³⁸

However, the determination of a temperature threshold is necessarily associated with further requirements. Because of the almost linear relationship between the increase in greenhouse gas concentrations in the atmosphere and the increase in the Earth's temperature, further increase in greenhouse gas concentrations above a level corresponding to the temperature threshold must be prevented.³⁹ It is therefore not only necessary to take measures to reduce greenhouse gas emissions. Rather, when the relevant temperature threshold is approached, the level of human greenhouse gas emissions must reach climate neutrality. A temperature threshold as core of the constitutional climate protection requirement thus includes the demand for a timely transition to greenhouse gas neutrality.⁴⁰

4.1.3 Constitutionally Bound Prerogative of the Legislature to Determine the Relevant Temperature Threshold

Determining the temperature threshold at which global warming should be halted is the central issue for a specific constitutional climate protection requirement. Three potential points of reference are available for this purpose.

The first option would be to draw directly on the findings of climate science. IPCC reports, in particular, could provide an essential point of reference.⁴¹ Based on

³⁸BVerfG, Climate Decision, para. 198.

³⁹IPCC (2021), pp. 27–31.

⁴⁰BVerfG, Climate Decision, para. 198.

⁴¹Hinting in this direction High Court of New Zealand, *Thomson v. The Minister for Climate Change Issues*, Judgment of 2.11.2017, CIV 2015-485-919 [2017] NZHC 733, para. 133.

their forecasts of the anticipated effects of certain degrees of global warming, a temperature threshold could be determined, which, if exceeded, would threaten severe and incalculable consequences for humans and the environment. It could mark the constitutionally tolerable degree of global warming. However, scientific forecasts are still subject to considerable uncertainties. Secondly, any determination of a tolerable temperature threshold is accompanied by considerable questions of normative assessments. This applies in particular to the level of acceptable risk. Dealing with scientific uncertainty and assessing and weighing the risks to be taken is, however, first and foremost a task of the political process. Climate science findings and constitutional benchmarking should therefore not be short-circuited even when setting the relevant temperature threshold.

The second option is to draw on normative decisions already found in the international climate protection regime. The temperature target contained in the Paris Agreement (PA) is obviously particularly suitable for this. The advantage would be that this temperature target already represents a deliberative decision of an international political process that has taken into account climate science findings and risk analyses as well as conflicting social and economic interests. The criticism of concealing the inescapable assessment and valuation dimension in dealing with climate science findings therefore does not apply to this approach. However, international law provisions like the temperature target in the Paris Agreement might only prove to be the lowest common denominator of the contracting parties. Direct adoption might also weaken international negotiation dynamics in the future. Furthermore, the notion of incorporating international law provisions without a legislative act of implementation does not fit easily in jurisdictions with a dualistic approach to international law obligations. This has been pointed out for the German constitution.⁴² Although national climate protection efforts will only be successful in the end if they are embedded in the international context, there is no reason to conclude that the state's constitutional obligations should simply be short-circuited with the results it has achieved in the negotiation process at the international level.

The disadvantages of the first two approaches are avoided if the specification of the constitutional temperature threshold is initially left to the prerogative of the legislature, while binding the exercise of this prerogative to limiting constitutional directives that reflect the specific challenges of climate change (see Sect. 3). This conception was chosen by the Federal Constitutional Court in its climate decision, invoking in particular the wording of Article 20a of the Basic Law. It explicitly assigns a central role to legislation in the protection of the natural foundations of life.⁴³

When the legislature specifies the temperature threshold, two constitutional directives become central: Firstly, the legislator must be guided by the state of climate science.⁴⁴ Its decision must be science-based. New and sufficiently

⁴²Kahl (2022a), p. 16; Schlacke (2021), p. 915.

⁴³BVerfG, Climate Decision, para. 205; Britz (2022), pp. 827 f.

⁴⁴BVerfG, Climate Decision, para. 211.

substantiated findings on the progression of global warming, its consequences and its manageability could therefore oblige the legislature to adjust the target. This would be subject to constitutional review.⁴⁵ Secondly, the temperature target must be selected in such a way that it does not impede the search for a solution at the international level, but rather facilitates it. The legislature must therefore not set a temperature target that falls short of the ambition agreed upon at the international level.

This approach involves the legislature in the specification of the constitutional climate protection requirement, without exempting it entirely from constitutional restraints. It allows for a flexible alignment of constitutional standard-setting with science and the international climate protection regime.⁴⁶ It also takes into account the importance of the parliamentary decision-making process in public debate without ignoring its structural weaknesses concerning long-term responsibility.

If such an approach is to lead to a general request for the legislature to determine a temperature threshold, it presupposes an existing fundamental provision by the national legislator to which further reference can be made. For Germany, the Federal Constitutional Court was able to refer to Section 1 Sentence 3 of the Federal Climate Change Act (*Bundes-Klimaschutzgesetz—KSG*).⁴⁷ This cites the obligation under the Paris Agreement as the *basis* for the German Climate Protection Act. According to the Court, the temperature limit set is thus intended to serve as a basic orientation for climate protection measures and to specify the constitutional obligation. This interpretation is supported by the fact that this climate target is the internationally agreed temperature limit of Art. 2(1)(a) PA, which the legislator has deliberately and explicitly taken as a basis. Since the state can ultimately achieve the objective of slowing climate change only through international cooperation, the legislator, in adopting the temperature limit of Art. 2(1)(a) PA, has set the fundamental course of national climate protection law in a direction that allows the constitutional mandate for climate protection to be effectively embedded in an international framework.⁴⁸

In reviewing this specification of the temperature target, the Court held that the legislator is “currently” operating “within the leeway to specify the law granted by Article 20a GG”, because the Paris Agreement was adopted “on the basis of scientific findings compiled in preparation for the Paris Climate Change

⁴⁵BVerfG, Climate Decision, para. 212.

⁴⁶For a positive evaluation in this regard, see also Gärditz (2021), pp. 314 f.

⁴⁷§ 1 Federal Climate Change Act reads: “The purpose of this Act is to provide protection from the effects of worldwide climate change by ensuring achievement of the national climate targets and compliance with the European targets. The ecological, social and economic impacts shall be taken into consideration. The basis of the Act is the obligation according to the Paris Agreement, under the United Nations Framework Convention on Climate Change, to limit the increase in the global average temperature to well below 2°C and, if possible, to 1.5°C, above the pre-industrial level so as to minimise the effects of worldwide climate change, as well as the commitment made by the Federal Republic of Germany at the United Nations Climate Action Summit in New York on 23 September 2019 to pursue the long-term goal of greenhouse gas neutrality by 2050.”

⁴⁸BVerfG, Climate Decision, para. 210.

Conference”.⁴⁹ Although the IPCC Special Report from 2018 on the impacts of global warming of 1.5 °C indicates that the climate-related risks for natural and human systems—especially the probability of crossing tipping points—are greater in a 2 °C warming scenario than in a 1.5 °C scenario,⁵⁰ the Court found that in view of the explicitly stated ranges and uncertainties, Article 20a of the Basic Law still leaves the legislator with leeway to determine the climate goal in terms of how it evaluates the dangers and risks. The limits of this legislative leeway have not been violated, as the Court added, “at least not at present”.⁵¹

In sum, the temperature limit set out in the third sentence of Section 1 of the KSG, in accordance with the PA and scientific findings, is therefore currently the essential specification of the constitutional obligation under Article 20a of the Basic Law.⁵²

4.1.4 Addressing the International Dimension and Advancing Knowledge

Setting a temperature target is not sufficient to establish constitutional requirements. While it includes a requirement for a (timely) transition to greenhouse gas neutrality (see Sect. 4.1.2), it does not relate the national contribution along this path to the contributions of other states. Nor does it define how to deal with scientific advances in climate science.

Obligation to Participate in International Climate Protection Efforts

Due to the global nature of the climate change challenge (see Sect. 3.1), a constitutional obligation to take climate action cannot be confined to the obligation to adopt national measures alone.⁵³ It inherently has an international dimension from which the German Federal Constitutional Court has derived the obligation to engage internationally to tackle climate change at the global level and to promote climate protection measures within an international framework.⁵⁴

However, climate protection does not become effective through agreements alone; it must also be implemented. The Court has therefore extended the constitutional obligation to take climate protection measures to the implementation of agreed solutions.⁵⁵ Since all states depend on international cooperation to protect the climate, all states must avoid creating incentives for others to undermine that cooperation. This is all the more important as the Paris Agreement, with its core

⁴⁹BVerfG, Climate Decision, para. 211.

⁵⁰IPCC (2018), pp. 5 f.

⁵¹BVerfG, Climate Decision, para. 211.

⁵²BVerfG, Climate Decision, para. 213.

⁵³See also Schlacke (2022), p. 123.

⁵⁴BVerfG, Climate Decision, para. 201.

⁵⁵BVerfG, Climate Decision, para. 201.

concept of nationally determined contributions (NDCs),⁵⁶ very much relies on mutual trust. Creating and fostering trust in the willingness of the parties to achieve the target is key to the effectiveness of the current UN Climate Protection Regime in general. The Federal Constitutional Court has therefore particularly emphasised that every state should strengthen international confidence that ambitious climate action—particularly the pursuit of treaty-based climate targets—can be successful while safeguarding decent living conditions and fundamental freedoms.⁵⁷

Commitment to National Climate Protection Independent of Success at the International Level

The collective action problem of climate change definitely cannot be solved if constitutional climate protection obligations are made dependent on the success of international climate protection efforts. Rather, the problem can only be addressed if states cannot escape their shared responsibility simply by referring to greenhouse gas emissions in other states.⁵⁸ Due to the causal contribution of even the smallest emission of GHGs, national climate action remains obligatory even if international cooperation cannot be legally fixed in an agreement. The Federal Constitutional Court has established the state's obligation to protect the climate irrespective of any such agreement and stressed that the state must continue seeking opportunities to make national climate action efforts more effective within an international framework.⁵⁹

Adaptation of Climate Policy to the Progress of Scientific Knowledge

Climate protection is strongly linked to climate science. The temperature target (see Sect. 4.1.2), as well as national and international climate protection measures, must be dynamically aligned with scientific findings in order to provide effective protection. Both general environmental protection clauses and fundamental rights protection must take this into account. The Federal Constitutional Court has interpreted the environmental protection clause (Art. 20a GG) to place the legislator under a permanent obligation to adapt environmental and climate change law to the latest scientific findings.⁶⁰ It has explicitly noted that in the event that the temperature target under Art. 2(1)(a) PA should prove insufficient to adequately prevent climate change, Art. 20a GG would oblige the state to reach a more stringent international agreement.⁶¹

⁵⁶ Art. 4 (2) Paris Agreement. See further Bodle and Oberthür (2017), pp. 93 f.; Winkler (2017), pp. 146 f.

⁵⁷ BVerfG, Climate Decision, para. 203.

⁵⁸ See also Hoge Raad of the Netherlands, *Urgenda v The Netherlands*, Judgment of 20.12.2019, 19/00135, no. 5.7.7.

⁵⁹ BVerfG, Climate Decision, para. 201.

⁶⁰ BVerfG, Climate Decision, para. 212.

⁶¹ BVerfG, Climate Decision, para. 212.

4.1.5 Constitutional Review by Applying the Temperature Target with Recourse to a Budget Approach

The remaining key challenge is if and to what extent such still general obligations translate into a specific GHG reduction contribution or even a reduction pathway. To translate temperature targets into emissions targets, climate science has developed what is referred to as the budget approach.⁶² Notwithstanding all remaining uncertainties, this approach allows in principle to determine a remaining global CO₂ budget with regard to a certain temperature target in a comprehensible and reliable way.⁶³ The budget approach can therefore be used as a potential guiding parameter for climate policy to comply with a temperature target. The total emissions perspective differs from legislature's widespread use of GHG budgets to set reduction targets.⁶⁴ The Federal Constitutional Court has referred to the residual budget approach as a scientific basis for a judicial review of the required level of climate protection.⁶⁵

Remaining National Emission Budget as the Only Approximately Identifiable Parameter

However, here too the global dimension (see Sect. 3.1) complicates the matter. While the determination of the remaining global CO₂ budget for complying with the temperature target is essentially a question of climate science, its allocation among states is not. The determination of the remaining national budget depends in particular on questions of global equity. Since these issues also cannot be determined by national constitutional law, a residual national budget cannot be derived in purely scientific or constitutional terms. It can only be precisely determined at the price of ignoring scientific uncertainties and declaring the normative criterion of allocation as constitutionally prescribed. An appropriate use of this approach in the constitutional framework is therefore only possible as an "approximately identifiable" parameter, not as a fixed quantity.⁶⁶

⁶² See, with further references, WBGU (2008), pp. 21–40; IPCC (2018), pp. 104–107; SRU (2020), pp. 5–58.

⁶³ References to the budget approach have also been made in, among others, Hoge Raad of the Netherlands, *Urgenda v The Netherlands*, Judgment of 20.12.2019, 19/00135, no. 4.6, 7.4.3 and implicitly in The Supreme Court of Ireland, *Friends of the Irish Environment v The Government of Ireland*, Judgment of 31.7.2020, Appeal No 205/19, no. 4.6.

⁶⁴ Examples are Germany and France. Such a use, however, enables courts to evaluate climate protection measures against the legislative budget targets (cf. Conseil d'État, Decision of 1.7.2021, 427301 (Grand-Synthe II)).

⁶⁵ In the absence of alternative control variables, it is highly reasonable for the legislature to also take this approach, but it is not obliged by the constitution to do so (see BVerfG, Climate Decision, para. 218). The budget approach is therefore not constitutionalised, but only used in the context of necessary scientific controls. As long as there is no alternative, however, this boundary is blurred in practical applications. For a constitutionalisation of the budget approach argues Abel (2022), p. 336.

⁶⁶ Clearly stated in BVerfG (Chamber), Decision of 18.1.2022, 1 BvR 1565/21, para. 5; Britz (2022), p. 832.

Despite this restriction, the approach of a residual national CO₂ budget allows for meaningful constitutional control of national climate policy against the benchmark of the temperature target. A two-step approach can be followed. The first step is to calculate a residual national budget by taking the residual global budget for the temperature target into question and selecting a hypothetical allocation criterion from a range of possible criteria or rather by defining a range that corresponds to plausible criteria. The range is determined by the criteria's compatibility with the abstract constitutional climate protection principles, in particular the postulate that international cooperation based on mutual trust must be facilitated (see Sect. 4.1.4). The second step is to evaluate the national climate policy and its effect on emission reduction in the light of this residual national budget. Due to the above-mentioned uncertainties and evaluations involved in the definition of the national budget (or range), as well as in forecasts of future emissions, any judicial control along these lines is limited to obvious mismatches between the self-imposed target and the measures taken and needs to allow for legislative leeway. However, even such limited judicial control has proven to be meaningful in many areas of constitutional law.

The German Federal Constitutional Court has taken this approach.⁶⁷ As a starting point it took the national residual budget calculated by the German Advisory Council on the Environment (SRU). This was calculated based on per capita emission rights for the world's population.⁶⁸ The per capita distribution is not only a plausible and potentially mutual agreeable figure in the middle range of the broad spectrum of internationally discussed allocation keys,⁶⁹ but it is also highly compatible with the *common, but differentiated responsibility and respective capability principle* as the main reference point under international law.⁷⁰ Furthermore, it is in line with the constitutional requirement to participate in international efforts to solve the climate crisis in a way that enhances their success and the fact that the Paris Agreement on Climate Change is based on mutual trust and national contributions that are recognized by all parties as appropriate.⁷¹

The Court then addressed the uncertainties associated with this point of reference and the national temperature target. It explicitly acknowledged the uncertainties within the SRU budget calculations, potential increases of the budget due to international cooperation according to Article 6 of the Paris Agreement and negative emission technologies in the future. On the other hand, the Court has highlighted the not overly restrictive temperature threshold of 1.75 °C on which the calculations of the remaining national budget by the SRU were based. In light of these factors, the Court did not consider the emission paths of the Federal Climate Act to be *currently* in violation of the requirements of Article 20a GG, although it expressly stated that it

⁶⁷ BVerfG, Climate Decision, para. 212.

⁶⁸ SRU (2020), pp. 5–58.

⁶⁹ SRU (2020), pp. 15–20.

⁷⁰ Voigt and Ferreira (2016), pp. 288–303; Rajamani and Guérin (2017), pp. 81–88.

⁷¹ For a more detailed analysis, see von Landenberg-Roberg (2021), pp. 124–139.