

Headnotes

to the Order of the First Senate of 24 March 2021

- 1 BvR 2656/18 -

- 1 BvR 78/20 -

- 1 BvR 96/20 -

- 1 BvR 288/20 -

(Climate Change)

1. **The protection of life and physical integrity under Art. 2(2) first sentence of the Basic Law encompasses protection against impairments of constitutionally guaranteed interests caused by environmental pollution, regardless of who or what circumstances are the cause. The state's duty of protection arising from Art. 2(2) first sentence of the Basic Law also encompasses the duty to protect life and health against the risks posed by climate change. It can furthermore give rise to an objective duty to protect future generations.**
2. **Art. 20a of the Basic Law obliges the state to take climate action. This includes the aim of achieving climate neutrality.**
 - a. **Art. 20a of the Basic Law does not take absolute precedence over other interests. In cases of conflict, it must be balanced against other constitutional interests and principles. Within the balancing process, the obligation to take climate action is accorded increasing weight as climate change intensifies.**
 - b. **If there is scientific uncertainty regarding causal relationships of environmental relevance, a special duty of care imposed upon the legislator by Art. 20a of the Basic Law – also for the benefit of future generations – entails an obligation to take account of sufficiently reliable indications pointing to the possibility of serious or irreversible impairments.**

- c. **As an obligation to take climate action, Art. 20a of the Basic Law has an international dimension. The fact that no state can resolve the problems of climate change on its own due to the global nature of the climate and global warming does not invalidate the national obligation to take climate action. Under this obligation, the state is compelled to engage in internationally oriented activities to tackle climate change at the global level and is required to promote climate action within the international framework. The state cannot evade its responsibility by pointing to greenhouse gas emissions in other states.**
 - d. **In exercising its mandate and prerogative to specify the law, the legislator has formulated the climate goal of Art. 20a of the Basic Law in a constitutionally permissible manner, currently setting out that the increase in the global average temperature should be limited to well below 2°C and preferably to 1.5°C above pre-industrial levels.**
 - e. **Art. 20a of the Basic Law is a justiciable legal provision designed to commit the political process to a favouring of ecological interests, partly with a view to future generations.**
3. **Compatibility with Art. 20a of the Basic Law is required in order to justify under constitutional law any state interference with fundamental rights.**
 4. **Under certain conditions, the Basic Law imposes an obligation to safeguard fundamental freedom over time and to spread the opportunities associated with freedom proportionately across generations. In their subjective dimension, fundamental rights – as intertemporal guarantees of freedom – afford protection against the greenhouse gas reduction burdens imposed by Art. 20a of the Basic Law being unilaterally offloaded onto the future. Furthermore, in its objective dimension, the protection mandate laid down in Art. 20a of the Basic Law encompasses the necessity to treat the natural foundations of life with such care and to leave them in such condition that future generations who wish to carry on preserving these foundations are not forced to engage in radical abstinence.**

Respecting future freedom also requires initiating the transition to climate neutrality in good time. In practical terms, this means that transparent specifications for the further course of greenhouse gas reduction must be formulated at an early stage, providing orientation for the required development and implementation processes and conveying a sufficient degree of developmental urgency and planning certainty.

5. The legislator itself must set out the necessary provisions specifying the overall emission amounts that are allowed for certain periods. As regards the method by which the legal framework for the allowed emission amounts is adopted, the legislative process cannot be replaced by a reduced form of parliamentary involvement in which the *Bundestag* merely approves the Federal Government's ordinances. This is because it is precisely the special public function of the legislative process that makes the adoption of parliamentary legislation necessary here. It is true that having parliamentary legislation in areas of law that are constantly subject to new developments and knowledge can in some cases be detrimental to the protection of fundamental rights. This notion draws on the concept of dynamic fundamental rights protection (foundationally, see BVerfGE 49, 89 <137>). However, this concept cannot be used here as an objection against the requirement for parliamentary legislation. The challenge is not to protect fundamental rights by ensuring that the legal framework keeps pace with new developments and knowledge. The challenge is to create a framework that makes further developments aimed at protecting fundamental rights possible in the first place.

FEDERAL CONSTITUTIONAL COURT

- 1 BvR 2656/18 -
- 1 BvR 78/20 -
- 1 BvR 96/20 -
- 1 BvR 288/20 -



IN THE NAME OF THE PEOPLE

In the proceedings on the constitutional complaints of

I. 1. to 11. [individuals from Germany]

12. registered association S...,

13. registered association B...,

- authorised representatives: 1. ... -

2. ... -

against 1. the failure of the Federal Republic of Germany to adopt suitable statutory provisions and measures to tackle climate change

2. § 3(1), § 4(1) in conjunction with Annex 2, § 4(6) of the Federal Climate Change Act (*Bundes-Klimaschutzgesetz – KSG*) of 12 December 2019 (Federal Law Gazette, *Bundesgesetzblatt – BGBl I*, p. 2513)

– 1 BvR 2656/18 –

II. 1. to 12. [individuals from Bangladesh]

13. to 15. [individuals from Nepal]

- authorised representatives: ... -

- against 1. § 3(1), § 4(1) in conjunction with Annex 1 and Annex 2, § 4(3), (5) and (6), § 8 and § 9 of the Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513)
2. the persistent failure of the federal legislator and the Federal Government to take suitable and prospectively sufficient measures to stay within the remaining national CO2 budget measured according to population size (3,465 gigatonnes of CO2 from 2020)

- 1 BvR 78/20 -,

III. 1. to 10. [individual German minors]

- authorised representatives: ... -

- against 1. § 3(1), § 4(1) in conjunction with Annex 1 and Annex 2, § 4(3), (5) and (6), § 8 and § 9 of the Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513)
2. the persistent failure of the federal legislator and the Federal Government to take suitable and prospectively sufficient measures to stay within the remaining national CO2 budget measured according to population size (3,465 gigatonnes of CO2 from 2020)

- 1 BvR 96/20 -,

IV. 1. to 9. [individuals residing on German islands or near the German coast, some minors]

- authorised representatives: ... -

- against § 3(1), § 4(1) in conjunction with Annex 1 and Annex 2 and § 4(3) of the Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513) in conjunction with Art. 5 of Regulation (EU) 2018/842 of 30 May 2018

- 1 BvR 288/20 -

the Federal Constitutional Court - First Senate -

with the participation of Justices

President Harbarth,

Paulus,

Baer,

Britz,
Ott,
Christ,
Radtke,
Härtel

held on 24 March 2021:

1. **The constitutional complaint of complainants no. 12 and 13 in proceedings 1 BvR 2656/18 is dismissed as inadmissible.**
2. **§ 3(1) second sentence and § 4(1) third sentence of the Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513) in conjunction with Annex 2 are incompatible with fundamental rights insofar as they lack provisions on the updating of reduction targets for periods from 2031 that satisfy the constitutional requirements as set forth in the reasons.**
3. **In all other respects, the constitutional complaints are rejected.**
4. **The legislator must enact provisions by no later than 31 December 2022 on the updating of reduction targets for periods from 2031 as set forth in the reasons. § 3(1) second sentence and § 4(1) third sentence of the Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513) in conjunction with Annex 2 remain applicable.**
5. **The Federal Republic of Germany must reimburse one half of the necessary expenses incurred by the complainants in proceedings 1 BvR 96/20 and 1 BvR 288/20 and by complainants no. 1 to 11 in proceedings 1 BvR 2656/18. In proceedings 1 BvR 78/20, the Federal Republic of Germany must reimburse one quarter of the necessary expenses incurred by the complainants.**

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Reasons:

A.

The four constitutional complaints are directed against selected provisions of the Federal Climate Change Act (*Bundes-Klimaschutzgesetz – KSG*) of 12 December 2019 (Federal Law Gazette, *Bundesgesetzblatt – BGBl I*, p. 2513) and against the failure to take further measures to reduce greenhouse gas emissions. With their constitutional complaints, the complainants primarily allege that the state has not introduced a legal framework sufficient for swiftly reducing greenhouse gases, especially carbon dioxide (CO₂) – a legal framework they claim is necessary to limit the increase in global temperature to well below 2°C and preferably to 1.5°C. They challenge specific provisions of the Federal Climate Change Act. They claim that the reduction of CO₂ emissions specified in the Federal Climate Change Act is not sufficient to stay within the remaining CO₂ budget that correlates with a temperature limit of 1.5°C. Their constitutional complaints rely primarily on duties of protection arising from fundamental rights under Art. 2(2) first sentence and Art. 14(1) of the Basic Law (*Grundgesetz – GG*), as well as on a fundamental right to a future consistent with human dignity (*menschenwürdige Zukunft*) and a fundamental right to an ecological minimum standard of living (*ökologisches Existenzminimum*), which they derive from Art. 2(1) in conjunction with Art. 20a and from Art. 2(1) in conjunction with Art. 1(1) first sentence GG. With regard to obligations to reduce emissions for periods after 2030, the complainants rely on fundamental freedoms more generally.

1

I.

1. The Federal Climate Change Act of 12 December 2019 responds to the need – as seen by the legislator – for greater climate action efforts (cf. Bundestag document, *Bundestagsdrucksache – BTDrucks 19/14337*, p. 17).

2

a) The purpose of the Act is to afford protection against the effects of worldwide climate change by ensuring that the national climate targets are reached and the European targets are met (§ 1 first sentence KSG). Pursuant to § 1 third sentence KSG, the legal basis of the Act is the obligation under the Paris Agreement (cf. Act of 28 September 2016 on the Paris Agreement of 12 December 2015, *Gesetz zu dem Übereinkommen von Paris vom 12. Dezember 2015 vom 28. September 2016*, BGBl II, p. 1082, UNTS No. 54113) to limit the increase in the global average temperature to well below 2°C and preferably to 1.5°C above pre-industrial levels so as to minimise the effects of worldwide climate change, as well as the commitment made by the Federal Republic of Germany to pursue the long-term goal of greenhouse gas neutrality by 2050.

3

The specific climate targets of the Act are set out in § 3(1) KSG, which is challenged in these proceedings. According to this provision, greenhouse gas emissions must

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be gradually reduced; a reduction of at least 55% must be achieved by the year 2030 in comparison with the levels in 1990. This reduction quota applies to all greenhouse gas emissions (cf. BTDrucks 19/14337, p. 19). § 3(1) KSG does not distinguish between emissions in sectors covered by the Emissions Trading System and emissions that fall within the scope of “effort sharing”, which is covered by Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013 (cf. OJ L 156/26, hereinafter: European Effort Sharing Regulation). In § 4(1) third sentence KSG in conjunction with Annex 2, which has also been challenged, the annual emission amounts allowed in various sectors are set down in line with the reduction quota for the year 2030. The result is a specific pathway for reducing emissions until 2030. This does not include greenhouse gas emissions from land-use change and forestry, nor does it include the emissions from international aviation and shipping attributable to Germany (cf. BTDrucks 19/14337, p. 26 f.).

With § 3(1) KSG, the federal legislator gave statutory force to the climate targets that had previously been defined in various plans and programmes for the period from 2020 onwards. For the period up to 2020, Germany had set itself the target of reducing its greenhouse gas emissions by 40% compared to 1990 levels. In the Federal Government’s vision, this was aligned with the long-term goal of preventing global warming of more than 2°C (cf. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (*Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit* – BMU), Climate Action Programme 2020, Cabinet decision of 3 December 2014, p. 7 ff.). Prior to the adoption of the Federal Climate Change Act, the climate targets for the period from 2020 onwards were based on the Climate Action Plan 2050 (BMU, Climate Action Plan 2050, Principles and goals of the German government’s climate policy, 2016) and the Climate Action Programme 2030 (BMU, Climate Action Programme 2030, Measures to achieve the 2030 climate protection goals, October 2019). The Climate Action Plan 2050 contains the long-term climate policy goal of cutting emissions by between 80% and 95% by 2050 compared to 1990 levels. It also contains an emission reduction pathway for achieving this goal. For example, it envisages a reduction in greenhouse gas emissions of at least 55% by 2030 compared to 1990 – a target now also contained in § 3(1) second sentence KSG. By 2040, it calls for greenhouse gas emissions to be reduced by at least 70% compared to 1990. No such corresponding provision for the year 2040 appears in the Federal Climate Change Act. In order to implement the Climate Action Plan 2050, the Federal Government adopted in 2019 the Climate Action Programme 2030. The Climate Action Programme 2030 diverges from the Climate Action Plan 2050 in that it no longer describes the long-term goal for the year 2050 as being “an 80% to 95% reduction in greenhouse gas emissions compared to 1990”. Instead, it refers to the goal of achieving greenhouse gas neutrality by 2050.

5

b) The Federal Climate Change Act has the character of framework legislation and is intended to bring transparency to the measures needed to reduce greenhouse gas emissions in the various sectors. The explanatory memorandum attached to the Government's draft proposal states the following:

6

“By having statutorily defined climate targets and steadily decreasing annually allowed emission amounts in the individual sectors, the required reductions in greenhouse gas emissions are predictable. This clear legal framework offers planning certainty. The sector targets defined in the Climate Action Plan 2050 also provide a basis for allocating responsibility for compliance within the individual sectors. This ensures that the 2030 climate targets are met and the European requirements are implemented.

As is usual for framework legislation of this kind, the goals and principles of climate policy are enshrined therein – not unlike in the Budgetary Principles Act (*Haushaltsgrundsätze-Gesetz*) for budgetary policy. While not directly reducing CO₂ emissions, this does serve to place climate policy as a whole on solid foundations and make it binding. In order for the climate targets to be reached in practice, each sector needs to carry out the climate action measures that were first adopted by the Federal Government in its ‘Climate Action Programme 2030’. This will require the amendment of various ordinary laws” (BTDrucks 19/14337, p. 17).

2. The Paris Agreement (PA) had already come into effect prior to this, on 4 November 2016. Art. 2(1)(a) PA contains the commitment to limit the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. The German legislator makes reference to this in § 1 third sentence KSG.

7

Art. 2 PA reads as follows [...]:

8

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;

(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food produc-

tion; and

(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

2. This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

The Paris Agreement does not specify any greenhouse gas reduction quotas or emission ceilings that would have to be met in order to achieve the targets. Rather, it is left to the contracting Parties to determine the measures required to achieve the targets. According to Art. 4(2) first sentence PA, the Parties must prepare and communicate the “nationally determined contributions” (NDCs) that they intend to achieve. Pursuant to Art. 4(2) second sentence PA, they must pursue domestic mitigation measures with the aim of achieving the targets of such contributions. New nationally determined contributions must be submitted every five years (Art. 4(9) PA). Art. 3 PA states that in order to achieve the purpose set out in Art. 2 PA, all Parties must undertake ambitious efforts that represent a progression over time (Art. 3 second sentence, Art. 4(3) PA). In this respect, the European Union has committed itself to reducing its greenhouse gas emissions by at least 40% by 2030 compared to 1990 (Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council, OJ L 426/58).

9

The United Nations has evaluated the nationally determined contributions (NDCs) submitted under the Paris Agreement. In its report, the Secretariat of the United Nations Framework Convention on Climate Change concluded that the resulting greenhouse gas emissions to be expected worldwide by 2030 are not compatible with reduction pathways that limit global warming to 1.5°C or even 2°C (United Nations Framework Convention on Climate Change, UNFCCC, Conference of the Parties, Aggregate effects of the intended nationally determined contributions: an update, Doc FCCC/CP/2016/2 of 2 May 2016, p. 9 ff., Fig. 2 on p. 12). Instead, the anticipated emissions are consistent with trajectories that point towards a 3°C temperature increase by 2100 (IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 18, D1.1).

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3. The European Union’s 2021-2030 climate target of reducing greenhouse gas emissions across Europe by at least 40% compared to 1990 is to be achieved by reducing greenhouse gases in the ETS (Emissions Trading System) sectors by 43% and in non-ETS sectors by 30% compared to 2005 (cf. European Council, EUCO 169/14, European Council meeting (23 and 24 October 2014) – Conclusions, 2014, p. 1). The climate target set by the European Union was recently raised from 40% to 55% (cf. European Council, EUCO 22/20, European Council meeting (10 and 11 December 2020) – Conclusions, 2020, p. 5).

11

The Emissions Trading System covers greenhouse gas emissions from large combustion plants, energy-intensive industries and, from 2012, the aviation sector. The current Emissions Trading Directive (Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814, OJ L 76/3) provides that the total quantity of emission allowances available for trading must be reduced each year on a linear basis from 2021 onwards in order to achieve the targeted emission reductions (cf. Recital 2 of Directive (EU) 2018/410). No specific reduction quotas are imposed on the individual Member States here.

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By contrast, the effort sharing area accounts for a large part of the emissions that fall outside the scope of the Emissions Trading System. In this area, each Member State is allocated a reduction quota in percentage terms from the outset. For the 2013-2020 period, effort sharing was governed by the so-called Effort Sharing Decision (Decision of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, OJ L 140/136). For the 2021-2030 period, the emission reductions to be achieved in the effort sharing sectors are set out in the European Effort Sharing Regulation. Pursuant to Art. 4(1) in conjunction with Annex I of the Effort Sharing Regulation, Germany is obliged to reduce its greenhouse gas emissions in effort sharing sectors by 38% by 2030 compared to 2005. Rather than merely setting an ultimate goal, the Regulation lays down a specific overall reduction pathway. This pathway determines the minimum required reduction – in the form of a uniform emissions cap for all the covered emissions – that the individual Member State must achieve every year. Member States are free to pursue more ambitious targets. In Art. 5, the Regulation also provides for various flexibility mechanisms. For example, Art. 5(1) to (3) enables Member States to balance out any annual shortfall or overshoot in their own budgets. Furthermore, Art. 5(4) and (5) allows for the possibility of transfers between Member States.

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4. The provisions of § 3(1), § 4(1) in conjunction with Annexes 1 and 2, § 4(3) second sentence KSG in conjunction with Art. 5 of the European Effort Sharing Regulation, § 4(5) and (6), § 8 and § 9 KSG are each challenged by at least one of the four constitutional complaints. The provisions read as follows:

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§ 3 National climate targets

(1) Emissions of greenhouse gases shall be gradually reduced in comparison with their levels in the year 1990. The reduction to be achieved by the target year 2030 shall be at least 55 per cent.

[...]

§ 4 Permissible annual emission amounts, authority to enact statu-

tory instruments

(1) To achieve the national climate targets referred to in § 3 subsection (1) of this Act, annual reduction targets shall be set by stipulating annual emission amounts for the following sectors:

1. energy,
2. industry,
3. transport,
4. buildings,
5. agriculture,
6. waste and other.

The emission sources of the individual sectors and the division of sectors are indicated in Annex 1. The annual emission amounts for the period up to the year 2030 shall be based on Annex 2. In the energy sector, greenhouse gas emissions shall be reduced as steadily as possible between the stated annual emission amounts. For periods from 2031 onwards, the annual reduction targets shall be updated by means of a statutory instrument enacted pursuant to subsection (6) below. The annual emission amounts to which this Act refers shall be binding. Subjective rights and actionable legal positions are not established by or on the basis of this Act.

[...]

(3) If, from the year 2021, greenhouse gas emissions are above or below the relevant permissible annual sectoral emission amounts, the differential shall be subtracted from or added to the residual annual sectoral emission amount in equal instalments until the next target year referred to in § 3 subsection (1) of this Act. The foregoing shall be without prejudice to the requirements of the European Effort Sharing Regulation.

[...]

(6) In the year 2025, the Federal Government shall set annually decreasing emission amounts for further periods after the year 2030 by means of a statutory instrument. These amounts must be consistent with the achievement of the climate targets of this Act and with the requirements of European Union legislation. When annually decreasing emission amounts are set for periods after the year 2030, the statutory instrument shall require the consent of the Bundestag. If the Bundestag has not considered the statutory instrument by the time six sitting weeks have elapsed since the date of receipt, it shall

be deemed to have given its consent to the unamended statutory instrument.

Annex 1 (ad §§ 4 and 5) Sectors

[...]

Annex 2 (ad § 4) Permissible annual emission amounts

Annual emission amounts in millions of tonnes of CO ₂ equivalent	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy	280		257								175
Industry	186	182	177	172	168	163	158	154	149	145	140
Buildings	118	113	108	103	99	94	89	84	80	75	70
Transport	150	145	139	134	128	123	117	112	106	101	95
Agriculture	70	68	67	66	65	64	63	61	60	59	58
Waste and Other	9	9	8	8	7	7	7	6	6	5	5

[...]

[...]

15

II.

1. The factual background of anthropogenic climate change, its consequences and the associated risks are described in the assessment reports and special reports published by the Intergovernmental Panel on Climate Change (IPCC). These reports are considered to be reliable summaries of the current state of knowledge on climate change. As such, they are relied upon by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Federal Environment Agency (*Umweltbundesamt* – UBA) and the German Advisory Council on the Environment (*Sachverständigenrat für Umweltfragen* – SRU) as well as by the European Union and international agencies. The IPCC is an intergovernmental committee that was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 (Memorandum of Understanding between the UNEP and the WMO on the IPCC of 8 May 1989) and endorsed by the United Nations General Assembly (UN General Assembly Resolution 43/53 of 6 December 1988, Protection of global climate for present and future generations of mankind, E 5, in: General Assembly, 43rd session, Doc A 43/49).

16

The IPCC’s task is to present the state of scientific research on climate change in a comprehensive and objective manner, thereby providing a basis for science-based decisions. To this end, it compiles the results of the scientific, technical and socio-

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economic literature currently published around the world. The IPCC does not conduct research itself, but rather summarises the key findings of these publications in assessment reports and special reports, and evaluates them from a scientific perspective. The authors are required to reach agreement on their assessment of the state of the scientific research, specifying their level of confidence and clearly presenting any contradictory views, gaps in knowledge and uncertainties (for more details see IPCC, Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties, 2010; see also IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 4 fn. 3). The results are then reviewed once again by independent experts prior to the Summary for Policymakers being adopted by the member governments in a plenary session. The summary may only reproduce information that is also contained in the main report. The group of reviewing authors, selected on the basis of scientific expertise, decides whether the reformulations proposed by the governments are correct (for more details see IPCC, Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports, 2013; [...]).

2. According to virtually unanimous scientific opinion, the rapid acceleration of global warming that is currently observable in comparison with historical levels is essentially due to the change in the material balance of the atmosphere caused by anthropogenic emissions. The increase in CO₂ concentrations is deemed to play a particularly significant role here (IPCC, Fifth Assessment Report, Climate Change 2013, The Physical Science Basis, Summary for Policymakers, 2016, p. 11; UBA, *Klima und Treibhauseffekt*, 2020, p. 2 f.). Atmospheric concentrations of CO₂ have increased by 40% relative to pre-industrial times due primarily to fossil fuel emissions and secondarily to deforestation and other land-use changes (IPCC, loc. cit., p. 11).

In simplified terms, the main relationships can be summarised as follows: human-induced increases in concentrations of greenhouse gases in the atmosphere change the Earth's radiation balance and thus lead to global warming. The greenhouse gases in the Earth's atmosphere absorb the heat radiation emitted by the Earth and radiate some of it back to the Earth's surface. The heat radiation emitted by the greenhouse gases thus reaches the Earth's surface as additional heat radiation. In compensating for incoming and outgoing heat, the Earth's surface radiates more heat. This makes the atmosphere near the ground warmer (IPCC, loc. cit., p. 11 f.; Rahmstorf/Schellnhuber, *Der Klimawandel*, 9th ed. 2019, p. 12 f., 30 ff.; UBA, *Klima und Treibhauseffekt*, 2020, p. 2). How far and how quickly the temperature will continue to rise in the future depends on the proportion of greenhouse gases in the atmosphere and is thus largely dependent on the amount of anthropogenically emitted greenhouse gases, CO₂ emissions in particular (IPCC, loc. cit., p. 17 f., 26). This is because there is a nearly linear relationship between the total amount of climate-relevant greenhouse gases emitted and the increase in mean surface temperatures (SRU, *Demokratisch regieren in ökologischen Grenzen - Zur Legitimation von Umweltpolitik*, Special report, 2019, p. 36). Without additional measures to combat

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climate change, it is now considered likely that the global temperature will increase by more than 3°C by 2100 (BMU, Climate Action in Figures, 2019 edition, p. 6 f.).

3. The greenhouse effect has a wide range of impacts on the environment and the Earth's climate. For example, it affects the ice masses (cryosphere). The consequences of global warming include the decline of polar sea ice, the melting of the continental ice sheets in Greenland and Antarctica, and the retreat of glaciers that can be observed worldwide. These changes in ice masses are a significant contributor to the rise in sea levels (IPCC, Fifth Assessment Report, Climate Change 2013, The Physical Science Basis, Summary for Policymakers, 2016, p. 7, 23 f.; Rahmstorf/Schellnhuber, *Der Klimawandel*, 9th ed. 2019, p. 57, 59, 63 f.). By 2100, the rise in global mean sea level is projected to be in the range of 26-77 cm if global warming is 1.5°C. If global warming reaches 2°C, the rise will be an additional 10 cm (IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 11). Furthermore, there are indications that the thermohaline circulation of the North Atlantic (Atlantic Meridional Overturning Circulation) is losing strength as a result of the melting of the Greenland ice sheet and other fresh water inputs into the North Atlantic. A considerable weakening would have a major impact on weather systems in Europe, North America and elsewhere. The North Atlantic region would rapidly cool by several degrees, while the southern hemisphere would warm up all the more. Other expected impacts include an increase in winter storms, precipitation and flooding in northern Europe and a decrease in precipitation in southern Europe. The Sahel could expect to see a decrease in precipitation with associated droughts (IPCC, Special Report on the Ocean and the Cryosphere in a Changing Climate, Executive Summary, 2020, p. 75; Rahmstorf/Schellnhuber, *Der Klimawandel*, 9th ed. 2019, p. 66 f.; SRU, *Demokratisch regieren in ökologischen Grenzen - Zur Legitimation von Umweltpolitik*, Special Report, 2019, p. 38; IPCC, Special Report, The Ocean and the Cryosphere in a Changing Climate, 2019, p. 618, 621 f.). The climate-change-related rise in temperature also has an impact on the position and strength of the jet stream and thereby affects global wind patterns, which can in turn lead to unusually long-lasting, large-scale and extreme weather events such as heavy precipitation, flooding, hurricanes, heat waves and droughts (Rahmstorf/Schellnhuber, loc. cit., p. 68 ff., 72; SRU, loc. cit., p. 38 f.).

Tipping point dynamics are regarded as posing a particular risk to ecological stability as they can have far-reaching impacts on the environment. Tipping elements are components of the Earth system that have special significance for the global climate and which, when placed under increasing stress, undergo abrupt and often irreversible change. Examples include the Siberian and North American permafrost, the ice masses in the polar zones, the Amazon rainforest, and major wind and ocean current systems. Minor perturbations in a relevant environmental parameter – such as the exceeding of a certain temperature limit – can cause these tipping elements to transition into a qualitatively different state if the parameter value is already close to a critical point, the tipping point. Tipping elements can also interact with one another.

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For example, the melting of the Greenland ice sheet could alter the Atlantic circulation, which in turn could lead to a destabilisation of ice in the Antarctic. It cannot be ruled out that a cascading series of such interactions could transform the Earth system, but this area is still regarded as poorly researched (on tipping points: SRU, loc. cit., p. 39 f. with further references).

4. If the global temperature rises by more than 3°C by 2100, which is considered likely unless additional measures to combat climate change are taken, the consequences of global warming and climate change are expected to be drastic (BMU, Climate Action in Figures, 2019 edition, p. 6 f.). However, even if the temperature increase is lower, climate change will still have serious negative consequences for individuals and societies (a). In Germany, climate change is already having a range of direct impacts, the severity of which could massively escalate as global warming progresses (b). Furthermore, Germany could also be indirectly affected by the consequences of climate change in other parts of the world through an increase in climate-related human displacement and migration towards Europe (c).

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a) The effects of recent climate-related extreme events – such as heat waves, droughts, heavy rainfall, floods, hurricanes and forest fires – are regarded by the scientific community as demonstrating significant human vulnerability to climate change. The consequences of these climate-related extreme events include disruptions in food production and water supply, damage to infrastructure and settlements, disease and fatalities, as well as implications for people’s mental health and well-being (IPCC, Fifth Assessment Report, Climate Change 2014, Impacts, Adaptation, and Vulnerability, Summary for Policymakers, 2016, WGII-6). Human health is particularly vulnerable to climate change. Changes in weather and climate patterns can lead to increases in infectious diseases and non-communicable illnesses such as allergies. They can also lead to an intensification of symptoms related to cardio-vascular and respiratory complaints. Extreme events such as storms, floods, avalanches or landslides pose immediate risks to life and limb. Moreover, they can increase social and psychological pressures and trigger disorders such as stress, anxiety attacks and depression (UBA, 2019 Monitoring Report on the German Strategy for Adaptation to Climate Change, 2019, p. 31).

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b) Climate change is already having multiple effects in Germany. By 2018, the country’s annual mean temperature had risen by 1.5°C compared to the pre-industrial era (UBA, loc. cit., p. 7). The probability of extremely hot days occurring has increased. Heat events caused by climate change are already posing a threat to human health in Germany (Federal Government, *Zweiter Fortschrittsbericht zur Deutschen Anpassungsstrategie an den Klimawandel*, 2020, p. 11; see also UBA, *Vulnerabilität Deutschlands gegenüber dem Klimawandel*, 2015, p. 603). The duration of summer heat waves in Western Europe has roughly tripled since 1880. Climate projections indicate that these developments will significantly worsen if greenhouse gas emissions continue unabated. By the end of the 21st century, the number of heat waves could potentially rise by as much as 5 events per year in northern Germany and 30

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events per year in southern Germany. The likelihood of temperature records being broken is also set to increase dramatically. During the summer months in particular, a tenfold increase in such events is considered realistic (Deutschländer/Mächel, in: Brasseur/Jacob/Schuck-Zöllner (eds.), *Klimawandel in Deutschland*, 2017, p. 55).

The global rise in sea levels will also have an impact in Germany. Over the last 100 years, sea levels have risen about 20 cm in the German Bight and around 14 cm on the German Baltic coast (*Deutscher Wetterdienst*, National Climate Report, 2017, p. 5). In the event of unmitigated emissions, the sea level is expected to rise by well over one metre by the end of the 21st century. This does not even factor in the possibility of the ice sheets collapsing (*Deutscher Wetterdienst*, loc. cit., p. 29). Long-term changes in mean sea level can significantly increase the probability of particularly high storm surge levels occurring in the North Sea and Baltic Sea (Weiße/Meinke, in: Brasseur/Jacob/Schuck-Zöllner (eds.), *Klimawandel in Deutschland*, 2017, p. 78). German coastal regions are thus exposed to a greater risk of flooding. Coastal areas in Germany are considered at risk if they are less than five metres above sea level on the North Sea coast or less than three metres above sea level on the Baltic Sea coast. This represents an area of around 13,900 square kilometres with 3.2 million inhabitants. Storm surges pose a particular risk to cities near the coast such as Hamburg, Bremen, Kiel, Lübeck, Rostock and Greifswald (UBA, Monitoring Report on the German Strategy for Adaptation to Climate Change, 2019, p. 72).

The effects of climate change on groundwater formation are already apparent in Germany (UBA, loc. cit., p. 48 f.). Rising temperatures cause higher overall evaporation with the result that less water trickles down to infiltrate the groundwater. Months with below-average groundwater levels compared to the long-term mean are becoming significantly more frequent. A particularly strong trend towards low groundwater levels can be seen in the low-precipitation areas of northeast Germany. This situation is especially prevalent in Brandenburg, Sachsen-Anhalt and Mecklenburg-Vorpommern. However, low groundwater levels are also clearly observable in regions with particularly high precipitation, such as uplands and alpine regions (UBA, loc. cit., p. 48 f.). In other respects too, climate change is altering Germany's water regime in various areas. For example, water availability in the summer half of the year is decreasing significantly, the water temperature in lakes is rising, and water temperatures in the North Sea and Baltic Sea are also increasing (UBA, loc. cit., p. 51 f., 56 f., 60 f., 82).

The increase in dryness and drought observed in Germany is regarded as being particularly challenging. The associated dehydration of the soil is particularly critical for agriculture. Soil humidity is crucial for the water supply level of plants. If soil humidity falls beneath 30% to 40% of the so-called usable field capacity (*nutzbare Feldkapazität* – nFK), there is a sharp decline in plant photosynthesis and growth. The mean number of days with soil humidity levels below 30% nFK has significantly increased in Germany since 1961, both for light sandy soil and for heavy soil, which stores more water. Eastern Germany and the Rhein-Main region are particularly af-

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ected by increasingly dry soil (UBA, loc. cit., p. 26).

c) Climate change is also a significant driver of human displacement and migration. People are already leaving their homes as a result of natural disasters and long-term environmental changes such as increased droughts and rising sea levels. Apart from having an adverse impact on health, the main negative consequences of the changes are on food production and supply. The risk of famine is increasing. At the same time, climate change exacerbates social inequalities and carries the potential risk of violent conflict as competition for water, food and grazing land intensifies. Increased warming exposes low-lying coastal areas, deltas and small islands to particular risks associated with sea level rise, including increased saltwater intrusion, flooding and damage to infrastructure. As sea levels rise, the local population will abandon islands and coastal zones due to periodic or permanent flooding. Increasingly pronounced changes in the climate thus amplify worldwide refugee movements and could intensify international displacement and migration towards Europe (see German Advisory Council on Global Change, Special Report, Climate Protection as a World Citizen Movement, 2014, p. 28, 61; United Nations High Commissioner for Refugees (UNHCR), Climate Change, Disasters and Displacement, 2017, p. 1 ff.; IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 9; BMU, Climate Action in Figures, 2019 edition, p. 19; Rahmstorf/Schellnhuber, *Der Klimawandel*, 9th ed. 2019, p. 71, 75; UNHCR, Global Report 2019, p. 29 f.).

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5. Since the start of industrialisation, more than half of all anthropogenic greenhouse gas emissions have been caused by today's industrialised countries. In recent years, emissions from emerging nations have also skyrocketed. The largest current emitters of greenhouse gases are the United States of America, the European Union, China, Russia and India. Historically, Germany accounts for 4.6% of greenhouse gas emissions. Per capita CO₂ emissions in Germany were 9.2 tonnes in 2018 – almost twice as high as the global average of 4.97 tonnes per capita (BMU, Climate Action in Figures, 2020 edition, p. 12).

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While accounting for approximately 1.1% of the world's population, Germany is currently responsible for almost 2% of annual greenhouse gas emissions. However, Germany's greenhouse gas emissions have fallen since 1990: whereas 1.251 gigatonnes of greenhouse gas were emitted in 1990, the figure for 2019 was down to around 0.805 gigatonnes (BMU, loc. cit., p. 12 f., 27 f.; note that all the data for 2019 are indicated in the report as being estimates). In 2019, the energy sector accounted for the largest share of greenhouse gas emissions. These emissions primarily stem from the combustion of fossil fuels in power plants. Relative to 1990 levels, however, these greenhouse gas emissions had fallen by 45% by 2019 (BMU, loc. cit., p. 29 ff.). The industrial sector was the second largest greenhouse gas emitter in Germany in 2019. Here, greenhouse gases arise primarily in energy-intensive sectors involving steel, chemicals, non-ferrous metals, cement, lime, glass and paper, as well as in industrial electricity supply. Compared to 1990, emissions in this area had dropped by 34% by 2019 (BMU, loc. cit., p. 33 ff.). The third largest source of greenhouse gas

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emissions in 2019 was the transport sector, with motor vehicles accounting for 94% of emissions. Compared to 1990, greenhouse gas emissions in the transport sector had fallen by 0.1% by 2019 (BMU, loc. cit., p. 36 ff.). However, this does not include the figures for international aviation and shipping, where emissions increased compared to 1990 (see UBA, Submission under the United Nations Framework Convention on Climate Change and the Kyoto Protocol 2020, National Inventory Report for the German Greenhouse Gas Inventory 1990 – 2018, 2020, p. 159). This is followed by the buildings sector, which incorporates emissions from private households and from trade, commerce and services. Emissions in this sector are largely caused by the burning of fossil fuels to provide heating and hot water. By 2019, they were down by 42% relative to 1990 (BMU, Climate Action in Figures, 2020 edition, p. 40 f.). In the agricultural sector, land use and livestock farming account for the largest share of greenhouse gas emissions. The greenhouse gases of methane and nitrous oxide are particularly relevant here. The sector's greenhouse gas emissions had dropped by 24% by 2019 compared to 1990 (BMU, loc. cit., p. 42 f.). In the waste and recycling management sector, greenhouse gas emissions had dropped by 76% by 2019 compared to 1990 (BMU, loc. cit., p. 44 f.).

III.

As things presently stand, the only way to significantly slow down human-induced climate change is by reducing CO₂ emissions. 31

1. Human-induced climate change can be slowed down by limiting the increase in concentrations of anthropogenic greenhouse gases in the Earth's atmosphere (for more details on the following, see SRU, *Für eine entschlossene Umweltpolitik in Deutschland und Europa, Umweltgutachten 2020*, p. 39 ff., para. 9 f. with further references). Due to the quantitative significance and particular longevity of CO₂, its concentration is particularly relevant here. There is presumed to be a roughly linear relationship between the total amount of anthropogenic CO₂ emissions accumulated over time and the global temperature increase. Only small amounts of anthropogenic emissions are absorbed by the oceans and the terrestrial biosphere. The legislator has assumed that 5% of the 1990 annual emissions would represent "net greenhouse gas neutrality" for Germany (cf. the legal definition in § 2 no. 9 KSG; see also IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 24) since this amount would be offset in particular by long-term sequestration in natural carbon sinks such as soil, forests and water bodies (BTDrucks 19/14337, p. 24). However, most of the remaining anthropogenic CO₂ emissions stay in the atmosphere for a long time, where they accumulate and contribute to CO₂ concentrations, thereby having an impact on the Earth's temperature. Unlike other greenhouse gases, CO₂ does not naturally leave the Earth's atmosphere within a period of time relevant for humans. This means that every additional amount of CO₂ that enters the Earth's atmosphere and is not then artificially removed (see para. 33 below) permanently increases the concentration of CO₂ and leads to a further rise in temperature. This temperature rise will continue even if greenhouse gas concentrations stabilise at 32

a certain level. In order to limit global warming, it is therefore necessary to limit the total cumulative global anthropogenic emissions of CO₂ (IPCC, loc. cit., p. 12, C.1.3).

2. Limiting the further increase of CO₂ concentrations in the Earth's atmosphere can primarily be achieved by reducing further CO₂ emissions through not generating such greenhouse gas emissions in the first place, for example by not burning fossil fuels. Other options include measures which, although not actually preventing CO₂ emissions from being produced, do prevent them from being released into the atmosphere, or which can subsequently remove CO₂ emissions from the atmosphere ("negative emissions"; "carbon dioxide removal" - CDR; "carbon capture and storage" - CCS). The IPCC considers the future use of such technologies to be essential, particularly in order to achieve the target of limiting global warming to 1.5°C or of subsequently returning to that level. However, negative emission technologies are currently regarded as difficult to implement, at least on a larger scale. There are considerable restrictions and concerns regarding economic viability, technical feasibility and international coordination, as well as in terms of the social impacts and, above all, the emerging ecological risks (IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 17 C.3; UBA, Position on Carbon Dioxide Removal, 2019; SRU, *Umweltgutachten 2020*, p. 62 ff.; see also Markus/Schaller/Gawel/Korte, *NuR 2021*, p. 90 ff. with further references).

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While not aimed at limiting climate change, another strategy is to alleviate its negative impacts, especially on people. This strategy is commonly referred to as "adaptation" (cf. Federal Government, German Strategy for Adaptation to Climate Change, 17 December 2008). The options include reinforcement and heightening of dykes, changes in agriculturally grown crops, forest conversion by planting tree species that are suited to the respective site, new urban planning methods involving fresh-air corridors and green spaces to prevent urban heat islands, as well as the unsealing and greening of suited areas (UBA, 2019 Monitoring Report on the German Strategy for Adaptation to Climate Change, 2019, p. 72 f., p. 102 ff., 128 ff., 160 f., 162 ff; Federal Government, *Zweiter Fortschrittsbericht zur Deutschen Anpassungsstrategie an den Klimawandel*, 2020, p. 52 ff.).

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3. Whether it is necessary to restrict the CO₂ concentrations in the Earth's atmosphere and the rise in temperature to particular levels – and what those levels should be – is a question of climate policy. It cannot be answered by the natural sciences. However, scientific findings do provide indications of the reductions required to meet specific climate targets. In this respect, climate science and climate policy use a variety of different targets and measurement parameters relating to temperature, atmospheric CO₂ concentrations and CO₂ emissions. The Paris climate targets (see para. 7 f. above) were formulated as maximum warming or temperature targets. The methodological advantage of using such temperature targets lies in their direct correlation with the effects of global warming, because the mean temperature of the Earth is a core indicator for the state of the Earth system as a whole.

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In order to derive specifications for reducing CO₂ emissions from a global temperature target, calculations based on climate physics must be used to translate the level of warming into emitted CO₂ quantities. Given the correlation between CO₂ concentrations and global warming, this is a viable approach – even if some uncertainties about the calculation do persist due to the complexity of the climate system (SRU, loc. cit., p. 39 ff. para. 8 f.; more details under para. 216 ff. below). In view of the almost linear correlation, it is possible to roughly state the maximum CO₂ concentration that can be tolerated in the atmosphere if the Earth’s temperature is not to exceed a certain level. Furthermore, the CO₂ concentration that has already been reached is approximately known. On this basis, it is possible to determine roughly how much CO₂ can still be released into the Earth’s atmosphere and remain there permanently without causing the desired temperature to be exceeded. If the (currently small) amounts of negative CO₂ emissions (i.e. emissions that never reach the atmosphere or are subsequently removed) are also factored in, the result is the total (global) amount of CO₂ that can still be emitted if the resultant warming of the Earth is not to exceed the temperature limit. Within the climate policy and climate science discourse, this amount is referred to as the “carbon budget” or “CO₂ budget” (IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 12 f., 24; SRU, loc. cit., p. 38 para. 3). The IPCC has drawn up a range of remaining global CO₂ budgets for different temperature targets with different probabilities (IPCC, Special Report, Global Warming of 1.5°C, 2018, Chapter 2, p. 108, Tab. 2.2). On this basis, the Advisory Council has calculated a remaining budget for Germany that would limit global warming to 1.75°C. In doing so, it based its calculations on the IPCC’s figure of a 67% probability of complying with the target (SRU, loc. cit., p. 52; see para. 219 ff. below for more details on these assumptions and their reliability).

4. In order to achieve greenhouse gas neutrality by 2050 – which § 1 third sentence KSG declares to be one of the fundamental tenets underlying the Federal Climate Change Act – profound transformations will be necessary. In our current way of life, virtually all forms of behaviour either directly or indirectly involve some emission of CO₂. Large industrial plants are not the only source of CO₂ emissions – everyday human behaviour also makes a direct or indirect contribution. While the CO₂ relevance of directly consuming fuel or electricity for heating, cooking, lighting, etc. is immediately obvious, the CO₂ aspect of other processes may only become apparent at second glance. Greenhouse gas emissions occur not just when goods and services are used, but along the entire value chain: first during production, then during storage and transport, and finally in the context of disposal. The extraction of oil, the transportation of fossil fuels, even the construction of wind farms – these all require energy and therefore produce greenhouse gases. Some production processes such as in the metal and chemical industries or in the manufacturing of mineral products are particularly energy-intensive and emissions-intensive. The cement industry, for example, accounts for between 6% and 7% of anthropogenic CO₂ emissions worldwide (cf. UBA, *Prozesskettenorientierte Ermittlung der Material- und Energieeffizienzpotentiale in der Zementindustrie*, 2020, p. 11 ff.). Meanwhile, the energy-intensive produc-

tion of the foam and insulating materials, fire extinguishers, air conditioning systems, aluminium products, soundproof windows, paints and adhesives that are used in the construction industry contributes indirectly to greenhouse gas emissions without being directly visible. Under certain conditions, the use of consumer goods can also have a major indirect impact on greenhouse gas emissions, as illustrated by the textile industry. Greenhouse gas emissions from global textile production were estimated at around 1.2 gigatonnes in 2015 – almost double the total emissions of international shipping and aviation combined (UBA, *Big Points des ressourcenschonenden Konsums als Thema für die Verbraucherberatung – mehr als Energieeffizienz und Klimaschutz*, 2019, p. 78 with further references; on the environmental costs of specific product groups, see also UBA, *Umweltkosten von Konsumgütern als Ansatzpunkt zur Verbesserung marktlicher und nicht-marktlicher Verbraucherinformationen „Zweites Preisschild“*, 2020, p. 56 ff.). Throughout their lifecycles (production, use, disposal), clothing and footwear account for approximately 8% of global greenhouse gas emissions (European Topic Centre on Waste and Materials in a Green Economy, *Textiles and the environment in a circular economy*, 2019, p. 2 with further references). In order to achieve climate neutrality in our current way of life – including in activities as common and mundane as the construction and utilisation of new buildings or the wearing of clothes – fundamental changes and restrictions are needed in patterns of production, consumption and everyday activity.

IV.

With their constitutional complaints, the complainants primarily allege that the state has failed to create a legal framework sufficient for reducing greenhouse gases, CO₂ in particular. They claim that the reduction of CO₂ emissions as set down in the Federal Climate Change Act is not adequate to stay within a remaining CO₂ budget that correlates with a 1.5°C temperature limit. The constitutional complaints primarily rely on duties of protection arising from fundamental rights under Art. 2(2) first sentence and Art. 14(1) GG, on a fundamental right to a future consistent with human dignity and a fundamental right to an ecological minimum standard of living – which the complainants derive from Art. 2(1) in conjunction with Art. 20a GG and from Art. 2(1) in conjunction with Art. 1(1) first sentence GG – as well as on the requirement of a statutory provision, and on the legislator’s duties of investigation and substantiation, which the complainants refer to as “rationality obligations”.

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1. The constitutional complaint in proceedings 1 BvR 2656/18 was lodged in 2018, i.e. before the Federal Climate Change Act came into force. The *Bundestag* outlined its position on the matter in a statement dated 6 December 2019. The *Bundestag* parliamentary group *BÜNDNIS 90/DIE GRÜNEN* clarified its own position in a statement dated 17 December 2019. The Federal Government outlined its position in a statement dated 14 February 2020. By letter of 15 June 2020, the constitutional complaint was amended to take account of the Federal Climate Change Act, which had entered into force by that time.

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<p>a) The complainants allege a failure to take action on the part of the legislator. Complainants no. 1 to 11 claim that the state has violated its duties of protection arising from Art. 2(2) first sentence GG and in part from Art. 14(1) GG due to the insufficiency of its climate action. They also allege a violation of Art. 2(1) in conjunction with Article 1(1) first sentence GG (“ecological minimum standard of living”) and a violation of fundamental freedoms in conjunction with Art. 20(3) GG due to a failure to observe the “essential matters doctrine” (<i>Wesentlichkeitsgrundsatz</i>) requiring that essential matters be set out in parliamentary legislation. They contend that the Federal Climate Change Act did nothing to alter their complaint as it lacks the necessary ambition. They challenge the national climate targets set out in § 3(1) KSG, the annual emission amounts that are allowed under § 4(1) KSG and Annex 2, and the provision in § 4(6) KSG on their future updating. Complainants no. 12 und 13 are environmental associations who – as “advocates of nature” – allege a violation of Art. 2(1) and Art. 19(3) in conjunction with Art. 20a GG in conjunction with Art. 47 of the EU Charter of Fundamental Rights and who likewise claim a violation of fundamental freedoms in conjunction with Art. 20(3) GG due to a failure to observe the essential matters doctrine.</p>	40
<p>[...]</p>	41-46
<p>b) aa) The German <i>Bundestag</i> considers the constitutional complaint to be inadmissible und unfounded.</p>	47
<p>[...]</p>	48-53
<p>bb) The parliamentary group of <i>BÜNDNIS 90/DIE GRÜNEN</i> in the <i>Bundestag</i> disagrees with the statement by the <i>Bundestag</i>. [...]</p>	54
<p>cc) The Federal Government considers the constitutional complaint to be inadmissible. [...]</p>	55
<p>[...]</p>	56-58
<p>2. The constitutional complaint in proceedings 1 BvR 288/20 is directed against the Federal Climate Change Act.</p>	59
<p>a) The complainants are predominantly adolescents and young adults. They claim the violation of a fundamental right to a future consistent with human dignity, which they derive from Art. 1(1) in conjunction with Art. 20a GG, the violation of a fundamental right arising from Art. 2(2) first sentence in conjunction with Art. 20a GG, the violation of their occupational freedom (Art. 12(1) GG), and the violation of the guarantee of property (Art. 14(1) GG), in each case also in conjunction with Art. 20(3) GG with regard to related guarantees laid down in Art. 2 and 8 of the European Convention on Human Rights. They regard the climate action efforts of the German legislator as insufficient. They object to the national climate target for the year 2030 specified in § 3(1) KSG (greenhouse gas reduction of at least 55% compared to 1990), which they claim is insufficient, and they challenge the annual emission amounts allowed</p>	60

until 2030 specified in § 4(1) third sentence KSG in conjunction with Annexes 1 and 2, which they claim have been set too high. In addition, they challenge the provisions of § 4(3) second sentence KSG in conjunction with Art. 5 of the European Effort Sharing Regulation, because these allow unused national emission allocations to be sold to other EU Member States, thereby negating the effect of increased national climate action efforts. They argue that the legislator has thereby failed to fulfil its duties of protection.

[...]	61-66
b) aa) The German <i>Bundestag</i> considers the constitutional complaint to be inadmissible und unfounded. [...]	67
[...]	68
bb) The Federal Government has issued a single statement covering the proceedings 1 BvR 78/20, 1 BvR 96/20 and 1 BvR 288/20. [...]	69
It contends that the constitutional complaints are inadmissible. [...]	70
3. a) The complainants in proceedings 1 BvR 96/20 are children and adolescents who challenge what in their view are insufficient national climate action efforts, which they regard as violating their fundamental rights under Art. 2(2) first sentence and Art. 14(1) GG. They challenge § 3(1), § 4(1) third sentence in conjunction with Annexes 1 and 2, § 4(3), (5) and (6), § 8 and § 9 KSG, as well as what they regard as the legislator's persistent failure to take suitable and prospectively sufficient measures to stay within the remaining CO2 budget. Furthermore, the complainants view the Federal Climate Change Act as incompatible with the minimum required standard of rational justification for legislative action – a standard they regard as being rooted in fundamental rights – because the legislator did not take sufficient account of the IPCC's findings.	71
[...]	72-74
b) aa) The German <i>Bundestag</i> considers the constitutional complaint [...] to be inadmissible und unfounded. [...]	75
[...]	76
bb) [...]	77
4. The complainants in proceedings 1 BvR 78/20 live in Bangladesh and in Nepal. They claim that the Federal Republic of Germany has violated its duties of protection arising from Art. 2(2) first sentence and Art. 14(1) first sentence GG due to insufficient climate action efforts.	78
a) The complainants submit that Bangladesh and Nepal are particularly vulnerable in a range of different ways to changes in climatic conditions and are directly endangered by ongoing climate change.	79

[...]	80-84
b) aa) The German <i>Bundestag</i> considers the constitutional complaint to be inadmissible und unfounded. [...]	85
[...]	86-88
bb) The Federal Government holds the view that the special non-domestic circumstances of the matter exclude the possibility of a fundamental rights violation from the outset. [...]	89

B.

Insofar as the complainants are natural persons, their constitutional complaints are admissible. This applies insofar as they claim that duties of protection arising from fundamental rights have been violated. The complainants can in some cases claim a violation of their fundamental right to life and physical integrity (Art. 2(2) first sentence GG) and some of them can claim a violation of their fundamental right to property (Art. 14(1) GG) (see II 1, C I below for more details) because it is possible that the state, in adopting the Federal Climate Protection Act, might have taken only insufficient measures to reduce greenhouse gas emissions and to limit global warming. The complainants living in Bangladesh and Nepal also have standing in this respect because it cannot be ruled out from the outset that the fundamental rights of the Basic Law also oblige the German state to protect them against the impacts of global climate change (see II 1, C II below for more details). Insofar as the complainants live in Germany, their fundamental rights might have been violated by the fact that they will have to accept considerable reduction burdens and corresponding losses of freedom in the post-2030 period because of the climate action that will then be constitutionally necessary due to what they regard as the overly generous amounts of greenhouse gas emissions allowed by the Federal Climate Change Act until the year 2030 (see II 4, C III below for more details). The constitutional complaints are admissible insofar as they challenge § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. In all other respects, the constitutional complaints are not admissible.

I.

Insofar as the constitutional complaints are directed against provisions of the Federal Climate Change Act, they have an admissible subject matter. 91

1. The complainants essentially claim that the legislator has violated their fundamental rights by not taking sufficient measures to reduce greenhouse gas emissions and limit global warming. The constitutional complaint in proceedings 1 BvR 2656/18 was lodged before the Federal Climate Change Act was passed. The initial complaint was therefore directed solely at the state's failure to take action. Now that the Federal Climate Change Act has been adopted, the complainants – like those in the other proceedings – claim that the Act fails to satisfy constitutional requirements. 92

[...]	93-94
2. [...]	95

II.

Insofar as the complainants are natural persons, they have standing with regard to § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. In light of what the complainants regard as the overly generous emission amounts allowed until 2030 under these provisions, it ultimately seems possible that duties of protection arising from fundamental rights in Art. 2(2) first sentence and Art. 14(1) GG have been violated, and moreover that the complainants who live in Germany are potentially faced with immense reduction burdens after 2030 which might jeopardise their freedom – freedom that is comprehensively protected by fundamental rights – in an unconstitutional manner. In all other respects, the possibility of a fundamental rights violation is ruled out or at least has not been sufficiently demonstrated. 96

1. Insofar as the complainants are natural persons, they have standing with regard to § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 on the grounds of a possible violation of state duties of protection arising from Art. 2(2) first sentence and Art. 14(1) GG. By contrast, the violation of a duty of protection arising from Art. 12(1) GG that is additionally claimed in proceedings 1 BvR 288/20 does not provide grounds for standing. Complainants no. 12 and 13 in proceedings 1 BvR 2656/18 do not claim any violation of duties of protection. 97

a) The challenged provisions might have violated duties of protection arising from Art. 2(2) first sentence and Art. 14(1) GG but not from Art. 12(1) GG. With regard to § 3(1) second sentence and § 4(1) third sentence KSG in connection with Annex 2, a violation of a duty of protection appears possible. With regard to the other challenged provisions, the possibility of a violation of a duty of protection has not been sufficiently demonstrated. 98

aa) (1) The complainants' fundamental right to protection arising from Art. 2(2) first sentence GG might have been violated. The protection of life and physical integrity under Art. 2(2) first sentence GG extends to protection against impairments caused by environmental pollution (cf. Decisions of the Federal Constitutional Court, *Entscheidungen des Bundesverfassungsgerichts* – BVerfGE 49, 89 <140 f.>; established case-law; on Art. 2 of the European Convention on Human Rights (ECHR), see also European Court of Human Rights (ECtHR), *Öneryildiz v. Turkey*, Judgment of 30 November 2004, no. 48939/99, para. 89 ff.; ECtHR, *Budayeva and Others v. Russia*, Judgment of 20 March 2008, no. 15339/02 inter alia, para. 128 ff.; on Art. 8 ECHR see ECtHR, *Cordella and Others v. Italy*, Judgment of 24 January 2019, nos. 54414/13 and 54264/15, para. 157 ff. with further references). It also includes protection against risks to human life and health caused by climate change. The legislator might have violated its duty of protection by affording insufficient protection against health impairments and risks to life caused by climate change. It is true that climate 99

change is a genuinely global phenomenon and could obviously not be stopped by the German state on its own. However, this does not render it impossible or superfluous for Germany to make its own contribution towards protecting the climate (see para. 199 ff. below for more details).

Insofar as the complainants are the owners of properties they describe as being jeopardised by climate change, a violation of the legislator's duty to protect property arising from Art. 14(1) GG is also a possibility (cf. BVerfGE 114, 1 <56>). However, insofar as the complainants in proceedings 1 BvR 288/20 claim a violation of Art. 12(1) GG because climate change prevents them from continuing to run a family farm or hotel, the possibility of a violation of a duty of protection that goes beyond the protection of tangible property is not apparent. 100

(2) The complainants in proceedings 1 BvR 78/20 who live in Bangladesh and in Nepal also have standing. The Federal Constitutional Court has yet to clarify whether the Basic Law's fundamental rights oblige the German state to contribute towards protecting people abroad against impairments caused by the effects of global climate change and under what circumstances such a duty of protection could potentially be violated. The validity of German fundamental rights vis-à-vis these complainants does not appear to be ruled out from the outset (see para. 173 ff. below for more details). 101

bb) (1) § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 might be incompatible with the duties of protection arising from fundamental rights. With these provisions, the legislator might have given permission for excessive amounts of CO₂ to be emitted until 2030 – something that would contribute towards further climate change and thereby jeopardise the health, in some cases even the lives, and the property of the complainants. 102

(2) With regard to the other provisions challenged by the constitutional complaints, the possibility of a violation of duties of protection arising from fundamental rights has neither been demonstrated, nor is it apparent. 103

This applies insofar as the complainants in proceedings 1 BvR 288/20 object to the fact that § 4(3) second sentence KSG in conjunction with Art. 5 of the European Effort Sharing Regulation permits the transfer of emission allowances to other Member States. There is no need to clarify whether the constitutional complaint's admissibility is already invalidated in this respect by the fact that § 4(3) second sentence KSG merely declares that Art. 5 of the European Effort Sharing Regulation remains unaffected, and that the latter provision is part of EU law and thus in principle not subject to review by the Federal Constitutional Court. The constitutional complaint is in any case insufficiently substantiated in this respect (§ 23(1) second sentence, § 92 of the Federal Constitutional Court Act, *Bundesverfassungsgerichtsgesetz* – BVerfGG). The complainants do not address the different flexibility options contained in Art. 5 of the European Effort Sharing Regulation and do not demonstrate how their usage, when viewed from a European or global perspective, could diminish the overall effec- 104

tiveness of climate action. Yet this overall effectiveness is significant in view of the genuinely global nature of climate change. The complainants have not established that this effectiveness has been diminished by the challenged provisions.

[...]

105-107

b) aa) The complainants are presently affected in their own fundamental rights by the provisions governing the amount of greenhouse gas emissions allowed until 2030 in § 3(1) second sentence 2 and § 4(1) second sentence KSG in conjunction with Annex 2. As things currently stand, global warming caused by anthropogenic greenhouse gas emissions is largely irreversible (see para. 32 above). It cannot be ruled out from the outset that the complainants will see climate change advancing to such a degree in their own lifetimes that their rights protected under Art. 2(2) first sentence GG and Art. 14(1) GG will be impaired ([...]). The possibility of a violation of the Constitution cannot be negated here by arguing that a risk of future harm does not represent a current harm and therefore does not amount to a violation of fundamental rights. Even provisions that only begin posing significant risks to fundamental rights over the course of their subsequent implementation can fall into conflict with the Basic Law (cf. BVerfGE 49, 89 <141>). This is certainly the case where a course of events, once embarked upon, can no longer be corrected (see also BVerfGE 140, 42 <58 para. 59> with further references).

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The complainants are not asserting the rights of unborn persons or even of entire future generations, neither of whom enjoy subjective fundamental rights ([...]; on objective protection, see para. 146 below). Rather, the complainants are invoking their own fundamental rights.

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Nor are the constitutional complaints an inadmissible *actio popularis*. The mere fact that very large numbers of people are affected does not exclude persons from being individually affected in their own fundamental rights (see VG Berlin, Judgment of 31 October 2019 – 10 K 412.18, para. 73; see also BVerfG, Order of the Third Chamber of the First Senate of 21 January 2009 - 1 BvR 2524/06 -, para. 43). In constitutional complaint proceedings, it is not generally required that complainants are especially affected – beyond simply being individually affected – in some particular manner that differentiates them from all other persons (unlike the case-law on Art. 263(4) TFEU, cf. GCEU, Order of 8 May 2019, Carvalho, T-330/18, EU:T:2019:324, para. 33 ff.; see also BVerfG, Order of the Second Chamber of the Second Senate of 15 March 2018 - 2 BvR 1371/13 -, para. 47; [...]).

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bb) By contrast, § 4(6) KSG – which concerns the setting of annual emission amounts for the post-2030 period and is challenged here on the grounds of incompatibility with the requirement of a statutory provision – does not presently or directly affect the complainants since it merely contains an authorisation to enact ordinances. Nor is there any risk of an irreversible violation of constitutional law in this respect. If a future ordinance were to violate duties of protection arising from fundamental rights on the grounds of having an insufficient legal basis, protection would be available

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from the Federal Constitutional Court by way of a subsequent constitutional complaint.

2. Art. 20a GG cannot be directly relied upon to establish standing to lodge a constitutional complaint. It is true that the protection mandate laid down in Art. 20a GG encompasses climate action (see para. 198 below). It is also a justiciable provision (see para. 205 ff. below). However, Art. 20a GG does not entail any subjective rights (cf. BVerfG, Order of the First Chamber of the First Senate of 10 May 2001 - 1 BvR 481/01 inter alia -, para. 18; Order of the First Chamber of the First Senate of 5 September 2001 - 1 BvR 481/01 inter alia -, para. 24; Order of the Third Chamber of the First Senate of 10 November 2009 - 1 BvR 1178/07 -, para. 32; [...]). Proposals for including a subjective fundamental right to environmental protection in the Constitution have been repeatedly discussed (cf. BTDrucks 10/990; BTDrucks 11/663), but with the constitutional reforms of 1994, the legislator decided against making any such amendment. This is why Art. 20a GG is located outside the fundamental rights part of the Constitution. Furthermore, Art. 20a GG is not mentioned in Art. 93(1) no. 4a GG, which lists the rights that may be asserted by way of a constitutional complaint when they are violated. Accordingly, the Federal Constitutional Court has repeatedly described the provision as being a fundamental national objective (*Staatszielbestimmung*) (cf. BVerfGE 128, 1 <48>; 134, 242 <339 para. 289>).

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3. Neither the “fundamental right to an ecological minimum standard of living” asserted by the complainants in proceedings 1 BvR 2656/18, nor the similar “right to a future consistent with human dignity” claimed in proceedings 1 BvR 288/20 can be invoked here to establish standing to lodge a constitutional complaint. It is unnecessary to conclusively determine the extent to which such rights are protected by the Basic Law. The legislator would not have violated them in any case.

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A right to an “ecological minimum standard of living” (*ökologisches Existenzminimum*) is derived among other things from the “minimum standard of living consistent with human dignity” (*menschenwürdiges Existenzminimum*) guaranteed under Art. 1(1) in conjunction with Art. 20(1) GG (cf. BVerfGE 125, 175 <222 et seq.>), whereby minimum ecological standards are regarded as a precondition for a minimum standard of living ([...]). It is true that physical survival or even the possibilities for cultivating interpersonal relationships and taking part in social, cultural and political life (cf. BVerfGE 125, 175 <223>) could not be guaranteed by economic safeguards alone if the only environment available for this purpose had been radically altered by climate change and had become toxic by human standards. However, other fundamental rights already make it obligatory to maintain minimum ecological standards that are essential for fundamental rights, thereby making it obligatory to afford protection against environmental degradation “of catastrophic or even apocalyptic proportions” (BVerfG, Order of the Second Chamber of the Second Senate of 18 February 2010 - 2 BvR 2502/08 -, para. 13). Nevertheless, alongside the duties of protection arising from Art. 2(2) first sentence with regard to physical and mental well-being and from Art. 14(1) GG, a mechanism for safeguarding the ecological minimum standard could

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indeed acquire its own independent validity if, in an environment transformed to the point of being toxic, adaptation measures (see para. 34 above) would still be capable of protecting life, physical integrity and property but not the other prerequisites for social, cultural and political life. Another conceivable scenario is that adaptation measures would have to be so extreme that they would no longer allow for meaningful social, cultural and political interaction and participation.

However, it is not ascertainable that the state has violated requirements incumbent upon it to avert existential threats of catastrophic or even apocalyptic proportions. Germany has ratified the Paris Agreement and the legislator has not remained inactive. In the Federal Climate Change Act, it has set down concrete specifications for the reduction of greenhouse gases (see § 3(1) second sentence, § 4(1) third sentence KSG in conjunction with Annex 2). These reduction targets, which have been specified until 2030, do not in themselves lead to climate neutrality but will be updated (cf. § 4(1) fifth sentence KSG) in line with the long-term goal of achieving greenhouse gas neutrality by 2050 (§ 1 third sentence KSG). If the necessary efforts are made within this framework, it does seem possible – insofar as Germany can contribute towards resolving the problem – to at least prevent catastrophic conditions from occurring. Another question is whether the post-2030 burdens inherently built into the framework – burdens that will entail restrictions on freedom – can be justified under constitutional law or whether the Federal Climate Change Act has inadmissibly offloaded reduction burdens onto the future and onto whomever will then bear responsibility (see para 116 ff. below). 115

4. With regard to their fundamental freedoms, complainants no. 1 to 11 in proceedings 1 BvR 2656/18 and the complainants in proceedings 1 BvR 96/20 and 1 BvR 288/20 have standing to lodge constitutional complaints insofar as they challenge § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2, because under these provisions they may be faced with substantial burdens to reduce greenhouse gas emissions from the year 2031 onwards. The scale of the ensuing restrictions on fundamental rights is already partially determined by the aforementioned provisions. This advance effect on future freedom might have violated the fundamental rights of the complainants. 116

a) aa) (1) The fundamental freedoms of the complainants might have been violated on the grounds that the Federal Climate Change Act offloads significant portions of the greenhouse gas reduction burdens required under Art. 20a GG onto the post-2030 period. Further mitigation efforts might then be necessary at extremely short notice, placing the complainants under enormous (additional) strain and comprehensively jeopardising their freedom protected by fundamental rights. Practically all forms of freedom are potentially affected because virtually all aspects of human life involve the emission of greenhouse gases (see para. 37 above) and are thus potentially threatened by drastic restrictions after 2030. Freedom is comprehensively protected by the Basic Law through special fundamental rights, and in any case through the general freedom of action enshrined in Art. 2(1) GG as the elementary 117

fundamental right to freedom (cf. BVerfGE 6, 32 <36 f.>; established case-law). Freedom might be jeopardised in an unconstitutional manner by § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 if these provisions were to allow overly generous amounts of CO₂ to be emitted in the near term, thereby offloading the necessary reduction burdens onto the future at the expense of future freedom. It is true that no reduction burdens deemed constitutionally unreasonable may be imposed on the complainants even in the future; their fundamental rights will continue to protect them against unreasonable impairments of freedom. However, the definition of reasonable (*zumutbar*) will to some extent be determined in light of the constitutional obligation to take climate action (Art. 20a GG). This, reinforced by similar protection obligations arising from fundamental rights, will demand greater reductions in greenhouse gas emissions than is presently the case and will therefore justify more severe restrictions on freedom if the risk posed by climate change does indeed increase.

(2) The amounts of greenhouse gas emissions that are allowed until 2030 under § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 have an impact on the reduction efforts that will be required thereafter. Even now, these amounts already play a role in determining future restrictions on fundamental rights – not just in factual terms, but with advance legal effects. This is partly due to the largely irreversible impact of CO₂ emissions on the Earth's temperature, and partly to the fact that the Basic Law does not allow the state to remain inactive while climate change progresses *ad infinitum*. One key factor influencing the extent of the potential loss of freedom is the amount of time left for making the social and economic transition to climate neutrality – something that will at some point be required under constitutional law in order to tackle climate change.

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(a) There is a direct causal link between anthropogenic climate change and concentrations of human-induced greenhouse gases in the Earth's atmosphere (on the current state of scientific knowledge, see paras. 18 ff. and 32 ff. above). CO₂ emissions are particularly significant in this regard. Once they have entered the Earth's atmosphere, they are virtually impossible to remove as things currently stand. This means that anthropogenic global warming and climate change resulting from earlier periods cannot be reversed at some later date. At the same time, with every amount of CO₂ emitted over and above a small climate-neutral quantity, the Earth's temperature rises further along its irreversible trajectory and climate change also undergoes an irreversible progression. If global warming is to be halted at a specific temperature limit, nothing more than the amount of CO₂ corresponding to this limit may be emitted. The world has a so-called remaining CO₂ budget. If emissions go beyond this remaining budget, the temperature limit will be exceeded.

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(b) However, unmitigated aggravation of global warming and climate change would not be in accordance with the Basic Law. Apart from being at odds with the duties of protection arising from fundamental rights, it would primarily conflict with the obligation under Art. 20a GG to take climate action, which the legislator has specified by

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formulating the target – now the relevant standard under constitutional law – of limiting global warming to well below 2°C and preferably to 1.5°C above pre-industrial levels (see para. 208 ff. below for more details). This temperature limit correlates with an – albeit not precisely quantifiable – remaining national CO₂ budget that is derived from the remaining global budget (see para. 216 ff. below). Once this national CO₂ budget has been used up, any further CO₂ emissions may only be allowed if the interest in doing so takes constitutional precedence over, in particular, the obligation to take climate action arising from Art. 20a GG (see para. 198 below). Behaviour directly or indirectly involving CO₂ emissions would then be constitutionally acceptable only if the fundamental freedoms supporting such behaviour were capable of prevailing within the necessary balancing process, whereby the relative weight accorded to any climate-harmful exercise of freedom will steadily decrease as climate change intensifies. In terms of the legal framework governing CO₂-relevant behaviour, Art. 20a GG is accorded increasing normative weight even before the constitutionally relevant budget is entirely used up because, regardless of any concerns from the constitutional law perspective, it would be neither responsible nor realistic to initially allow CO₂-relevant behaviour to continue unabated but then to suddenly demand climate neutrality once the remaining budget had been completely exhausted. As ever more of the CO₂ budget is consumed, the requirements arising from constitutional law to take climate action become ever more urgent and the potential impairments of fundamental rights that would be permissible under constitutional law become ever more extreme ([...]). The restrictions on freedom that will be necessary in the future are thus already built into the generosity of the current climate change legislation. Climate action measures that are presently being avoided out of respect for current freedom will have to be taken in future – under possibly even more unfavourable conditions – and would then curtail the exact same needs and freedoms but with far greater severity.

(c) The amount of time remaining is a key factor in determining how far freedom protected by fundamental rights will have to be restricted – or how far fundamental rights may be respected – when making the transition to a climate-neutral society and economy. If alternative CO₂-free and climate-neutral forms of behaviour were available and sufficiently established in society so that any CO₂-producing exercise of freedom could at least be partially replaced, the prohibition of climate-harming behaviour would entail less intrusive restrictions on freedom than if such alternatives did not exist. For example, if a fully developed CO₂-neutral transport system were in place and the necessary vehicles and other transportation equipment were manufactured in a CO₂-neutral manner, the loss of freedom associated with banning all CO₂-producing transport and manufacturing activities would be much less extensive than if such alternatives were not available. Yet it will be some time before technological progress and other developments enable CO₂-intensive processes and products to be largely replaced or avoided, especially considering that such innovations will have to be introduced on a massive scale in nearly all areas of economic production and in practically every aspect of how people live. Given the extent of the requisite socio-technological transformation, long-term restructuring plans and phase-out

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trajectories are considered necessary (SRU, *Für eine entschlossenene Umweltpolitik in Deutschland und Europa, Umweltgutachten*, 2020, p. 51 ff., para. 33). This means that the relative mildness or severity of the restrictions on freedom depend on how much time still remains for transitioning to CO₂-free alternatives, how early this process is initiated, and how far the overall CO₂ emission levels have already been lowered. If a society that is geared towards a CO₂-intensive lifestyle is forced to switch to climate-neutral behaviour within an extremely short period of time, the restrictions on freedom are likely to be enormous ([...], see also Federal Government, *Denkschrift zum Übereinkommen von Paris vom 12. Dezember 2015*, BTDrucks 18/9650, p. 30 para. 8; IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 18 para. D.1.3; [...]; similarly Hoge Raad of the Netherlands, Judgment of 20 December 2019, 19/00135, no. 7.4.3).

(3) Every consumed part of the CO₂ allowance reduces the remaining budget, narrows the possibilities for any other CO₂-relevant exercise of freedom and shortens the time left for initiating and completing a socio-technological transformation. It does at least seem possible that the Basic Law's fundamental rights – as intertemporal guarantees of freedom – afford protection against provisions that allow such consumption without taking sufficient account of the future freedom jeopardised as a result (on subjective rights in the context of freedom (to shape one's life) that is to be distributed over time and across generations, see also BVerfGE 129, 124 <170>; 132, 195 <242 para. 112; 246 f. para. 124>; 135, 317 <401 para. 163 f.>; 142, 123 <231 para. 213> – on Art. 38(1) first sentence in conjunction with Art. 20(1) and (2) GG). 122

bb) Freedom in the post-2030 future might, as the complainants allege, be specifically impaired by the fact that the amounts of CO₂ emissions allowed until 2030 are overly generous in the Federal Climate Change Act. There might be a lack of precautionary measures that are sufficient to respect future freedom. § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 specify the amounts of CO₂ emissions allowed until 2030 and thereby determine how much of the remaining CO₂ budget may be used up. They are thus a cause of the fundamental rights impairment under consideration here and can give rise to standing to lodge a constitutional complaint in this respect also. 123

[...] 124-125

cc) (1) The constitutional complaints are sufficiently substantiated in this respect (§ 23(1) second sentence, § 92 BverfGG). The complainants have shown in extensive detail that the provisions governing the period until 2030 in the Federal Climate Change Act would lead to what they regard as excessive consumption of the remaining budget so that extraordinary efforts would subsequently be required in order to reduce CO₂ emissions. [...] 126

(2) The complainants largely base their claim on duties of protection arising from fundamental rights under Art. 2(2) first sentence and Art. 14(1) GG, a "right to a future 127

consistent with human dignity” and a “fundamental right to an ecological minimum standard of living”. In their view, this gives rise to protection against what they regard as being the overly generous legal framework for emissions contained in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. It is true that only in proceedings 1 BvR 2656/18 are the burdens of future reduction measures explicitly addressed in the more general context of fundamental freedoms. The Federal Constitutional Court nonetheless reviews all the fundamental rights that require consideration within the subject matter at issue (cf. BVerfGE 147, 364 <378 para. 36> with further references; 148, 267 <278 para. 27>). Thus, the question of whether the challenged provisions are compatible with fundamental freedoms must form part of the review in all the proceedings here.

(3) However, the constitutional complaint of complainants no. 12 and 13 in proceedings 1 BvR 2656/18 is insufficiently substantiated in this respect [...]. 128

b) The complainants are presently, individually and directly affected in their fundamental freedoms by § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. 129

aa) The described risk of future restrictions on freedom gives rise to fundamental rights being presently affected because this risk is built into the current legislation. Any exercise of freedom directly or indirectly involving CO2 emissions after 2030 is jeopardised precisely because § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 allow possibly excessive amounts of greenhouse gas emissions until 2030. Insofar as this causes the remaining CO2 budget to be used up, the effect is irreversible because no method is currently known for removing CO2 emissions from the Earth’s atmosphere on a large scale. Since future impairments of fundamental rights could potentially be set into irreversible motion today, and given that lodging a constitutional complaint to address the ensuing restrictions on freedom might be futile by the time the impairments have arisen, the complainants already have standing to lodge a constitutional complaint at the present time (on this see BVerfGE 140, 42 <58 para. 59> with further references; established case-law). 130

bb) The complainants are individually affected in their own freedom. They are themselves capable of experiencing the measures necessary to reduce CO2 emissions after 2030. The fact that the restrictions will affect virtually everyone then living in Germany does not exclude the complainants from being individually affected (see para. 110 above). 131

The situation is different with regard to the complainants in proceedings 1 BvR 78/20 who live in Bangladesh and in Nepal. They are not individually affected in this respect. In their case, it can be ruled out from the outset that a violation of their fundamental freedoms might arise from potentially being exposed some day to extremely onerous climate action measures because the German legislator is presently allowing excessive amounts of greenhouse gas emissions with the result that even stricter measures would then have to be taken in Germany in the future. The complainants 132

live in Bangladesh and Nepal and are thus not subject to such measures.

cc) The other complainants are also directly affected. This applies where interference with a legal position is not only caused by some further legal act or depends upon such an act being issued (cf. BVerfGE 140, 42 <58 para. 60>). In the case at hand, the actual impairment of fundamental rights will only arise as a result of a future legal framework (see para. 120 above), but since it is irreversibly built into the current legislation, the complainants are indeed directly affected today. 133

[...] 134

5. Insofar as complainant no. 9 in proceedings 1 BvR 2656/18 claims a violation of the general freedom of action under Art. 2(1) GG on the grounds of being denied a climate and environment-friendly way of life, he has provided insufficient reasons in substantiation of this claim (§ 23(1) second sentence, § 92 BVerfGG). 135

6. As “advocates of nature”, the environmental associations (appearing as complainants no. 12 and 13 in proceedings 1 BvR 2656/18) claim – on the basis of Art. 2(1) in conjunction with Art. 19(3) and Art. 20a GG in the light of Art. 47 of the EU Charter of Fundamental Rights – that the legislator has failed to take suitable measures to limit climate change and has thereby disregarded binding requirements under EU law to protect the natural foundations of life. However, the Basic Law and constitutional procedural law make no provision for this kind of standing to lodge a constitutional complaint. Although the Basic Law’s environmental protection mandate in Art. 20a GG would obviously have greater impact if its enforcement were strengthened by the possibility of seeking individual legal protection before the Federal Constitutional Court, the Constitution has not been amended by the legislator to provide for such a possibility (see para. 112 above). 136

Furthermore, Art. 47 of the EU Charter of Fundamental Rights does not make another interpretation possible or necessary. [...] It is not in any case apparent that environmental associations would need to be given the opportunity to lodge a constitutional complaint themselves on the grounds of the alleged violation of the Effort Sharing Decision. It is furthermore doubtful whether the alleged violation of the Effort Sharing Decision has even occurred. Germany might have fulfilled its obligation to reduce greenhouse gas emissions by 14% by 2020 compared to 2005 in the areas covered in the Decision. It is true that when the Federal Climate Change Act was passed, the legislator itself assumed that this obligation would not be met (cf. BT-Drucks 19/14337, pp. 1 and 17). But Germany’s greenhouse gas emissions dropped considerably in 2020 as a result of the coronavirus pandemic; overall emission levels were more than 40% below the levels of the reference year 1990 (Agora Energiewende, *Die Energiewende im Corona-Jahr: Stand der Dinge 2020*, 2021, p. 31). This means that Germany’s 2020 target of reducing its greenhouse gas emissions by a total of 40% compared to 1990 will probably be reached, at least for a short period. 137

III.

The constitutional complaints satisfy the requirements of the exhaustion of legal remedies (§ 90(2) BVerfGG) insofar as they are directed against statutory provisions. [...] 138

IV.

[...] 139-140

V.

The Federal Climate Change Act's background in EU law does not rule out the admissibility of the constitutional complaints. The challenged provisions are not fully determined by EU law. It is true that the Federal Climate Change Act might be regarded in some respects as implementing EU law within the meaning of Art. 51(1) first sentence of the EU Charter of Fundamental Rights. The legislator assumed that the Federal Climate Change Act would create the framework for implementing the Federal Republic of Germany's obligations under the European Effort Sharing Regulation (cf. BTDrucks 19/14337). However, according to the case-law of the Federal Constitutional Court (cf. BVerfGE 152, 152 <168 para. 39> with further references - Right to be forgotten I) and the European Court of Justice (cf. CJEU, Judgment of 26 February 2013, Åkerberg, C-617/10, EU:C:2013:105, para. 29), this does not preclude a review of conformity with the Basic Law. 141

C.

The constitutional complaints are partially successful. While it is not ascertainable that the legislator has violated its constitutional duties to protect the complainants against the risks of climate change (I and II), fundamental rights have nonetheless been violated because the emission amounts allowed by the Federal Climate Change Act in the current period are capable of giving rise to substantial burdens to reduce emissions in later periods (III). In this respect, § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 violate the fundamental rights of the complainants in proceedings 1 BvR 96/20 and 1 BvR 288/20 and of complainants no. 1 to 11 in proceedings 1 BvR 2656/18. This risk to fundamental freedoms is not unconstitutional on the grounds of any violation of objective constitutional law. No violation of Art. 20a GG can ultimately be ascertained (III 2 a). However, there is a lack of precautionary measures required by fundamental rights in order to guarantee freedom over time and across generations – precautionary measures aimed at mitigating the substantial emission reduction burdens which the legislator offloaded onto the post-2030 period with the challenged provisions and which it will then have to impose on the complainants (and others) due to Art. 20a GG and due to the obligation arising from fundamental rights to afford protection against impairments caused by climate change (III 2 b). 142

I.

The risks posed by climate change give rise to duties of protection under Art. 2(2) first sentence and Art. 14(1) GG vis-à-vis the complainants who live in Germany (see para. 173 ff. below on the complainants who live in Bangladesh and in Nepal). However, it cannot be ascertained that these duties of protection have been violated. 143

1. a) The fundamental right to the protection of life and health enshrined in Art. 2(2) first sentence GG obliges the state to afford protection against the risks of climate change. The state must combat the considerable potential risks emanating from climate change by taking steps which – with the help of international involvement – contribute to stopping human-induced global warming and limiting the ensuing climate change. These steps must be supplemented by positive measures aimed at alleviating the consequences of climate change (“adaptation measures”). 144

aa) Art. 2(2) first sentence GG imposes on the state a general duty of protection of life and physical integrity. Apart from providing the individual with a defensive right against state interference, this fundamental right also encompasses the state’s duty to protect and promote the legal interests of life and physical integrity and to safeguard these interests against unlawful interference by others (cf. BVerfGE 142, 313 <337 para. 69> with further references; established case-law). The duties of protection derived from the objective dimension of this fundamental right are, in principle, part of the subjective enjoyment of this fundamental right. Thus, if duties of protection are violated, the fundamental right enshrined in Art. 2(2) first sentence GG is also violated, and affected individuals can oppose such a violation by lodging a constitutional complaint (cf. BVerfGE 77, 170 <214>; established case-law). 145

The state’s duty of protection arising from Art. 2(2) first sentence GG does not take effect only after violations have already occurred. It is also oriented towards the future (cf. BVerfGE 49, 89 <140 et seq.>; 53, 30 <57>; 56, 54 <78>; 121, 317 <356>). The duty to afford protection against risks to life and health can also establish a duty to protect future generations ([references to German legal scholarship]). This is all the more applicable where irreversible processes are at stake. However, this duty to afford intergenerational protection has a solely objective dimension because future generations – either as a whole or as the sum of individuals not yet born – do not yet carry any fundamental rights in the present (see para. 109 above; [...]). 146

bb) The protection of life and physical integrity under Art. 2(2) first sentence GG encompasses protection against impairments and degradation of constitutionally guaranteed interests caused by environmental pollution, regardless of who or what circumstances are the cause (cf. BVerfGE 49, 89 <140 f.>; established case-law; [...]). According to the case-law of the European Court of Human Rights, the European Convention on Human Rights also imposes positive obligations on the state to protect life and health against risks posed by environmental pollution (on Art. 2 ECHR, see ECtHR, Öneriyildiz v. Turkey, Judgment of 30 November 2004, no. 48939/99, para. 89 ff.; ECtHR, Budayeva and Others v. Russia, Judgment of 20 March 2008, 147

no. 15339/02, para. 128 ff.; on Art. 8 ECHR, see ECtHR, Cordella and Others v. Italy, Judgment of 24 January 2019, nos. 54414/13 and 54264/15, para. 157 ff. with further references; [...]). However, as far as is apparent, this does not lead to protection of greater scope than that afforded under Art. 2(2) first sentence GG.

The state's duty of protection arising from Art. 2(2) first sentence GG also includes the duty to protect life and health against the risks posed by climate change (see also VG Berlin, Judgment of 31 October 2019 - 10 K 412.18 - para. 70; [...]). In view of the considerable risks that increasingly severe climate change may also entail for the legal interests protected under Art. 2(2) first sentence GG – for example through heat waves, floods or hurricanes (see para. 22 ff. above) – the state is obliged to afford this protection to the current population and also, in light of objective legal requirements, to future generations. 148

On the one hand, Art. 2(2) first sentence GG obliges the state to afford protection by taking measures that help to limit anthropogenic global warming and the associated climate change (cf. also Art. 2(1)(a) PA). The fact that the German state is incapable of halting climate change on its own and is reliant upon international involvement because of climate change's global impact and the global nature of its causes does not, in principle, rule out the possibility of a duty of protection arising from fundamental rights ([...]). The global dimension is nonetheless significant for determining the content of the duty of climate-change-related protection arising from Art. 2(2) first sentence GG. For example, the state must involve the international level in seeking to resolve the climate problem. Insofar as the duty of protection arising from Art. 2(2) first sentence GG is directed at the risks posed by climate change, it compels the state to engage in internationally oriented activities to tackle climate change at the global level and requires it to promote climate action within the international framework (for example through negotiations, via treaties or in organisations). National measures embedded within this framework then make a contribution towards halting climate change (see para. 200 f. below for more details with regard to Art. 20a GG). 149

On the other hand, where climate change is not preventable or has already taken place, Art. 2(2) first sentence GG also obliges the state to address the risks by implementing positive measures aimed at alleviating the consequences of climate change (referred to as "adaptation measures", see para. 164 below for more details). These measures are additionally necessary in order to keep the risks posed by the actual impacts of climate change to levels that are tolerable under constitutional law (cf. also Art. 2(1)(b) PA). 150

b) It is not presently ascertainable that the duty of protection arising from fundamental rights has been violated by the provisions challenged as insufficient by the complainants. 151

aa) The question of whether sufficient measures have been taken to fulfil duties of protection arising from fundamental rights can only be reviewed by the Federal Constitutional Court to a limited extent (cf. BVerfGE 77, 170 <214 et seq.>; 79, 174 152

<202>; established case-law). There is an essential difference between the subjective, defensive rights against state interference that arise from fundamental rights on the one hand, and the state's duties of protection that result from the objective dimension of fundamental rights on the other. In terms of purpose and content, defensive rights are aimed at prohibiting certain forms of state conduct, whereas duties of protection are essentially unspecified. It is for the legislator to decide how risks should be tackled, to draw up protection strategies and to implement those strategies through legislation. Even where the legislator is under obligation to take measures to protect a legal interest, it retains, in principle, a margin of appreciation and evaluation as well as leeway in terms of design (cf. BVerfGE 96, 56 <64>; 121, 317 <356>; 133, 59 <76 para. 45>; 142, 313 <337 para. 70>; established case-law). However, this does not mean that the question as to the effectiveness of state protective measures is beyond the scope of review by the Federal Constitutional Court where a duty of protection does exist. The Federal Constitutional Court will find a violation of a duty of protection if no precautionary measures whatsoever have been taken, or if the adopted provisions and measures prove to be manifestly unsuitable or completely inadequate for achieving the required protection goal, or if the provisions and measures fall significantly short of the protection goal (cf. BVerfGE 142, 313 <337 f. para. 70> with further references; established case-law).

bb) This is ultimately not the case here.

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(1) The German legislator has taken precautionary measures that are not manifestly unsuitable. The legislator has made efforts towards limiting climate change, not least by introducing the provisions of the Federal Climate Change Act challenged here. The adopted provisions are not manifestly unsuitable for safeguarding the interests protected under Art. 2(2) first sentence GG.

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A manifestly unsuitable protection strategy would be one that concerned itself with reducing greenhouse gas emissions without pursuing the goal of climate neutrality (cf. § 2 no. 9 KSG). Global warming can only be stopped if greenhouse gas emissions are kept down to climate-neutral levels (see para. 32 above). The Federal Climate Protection Act is not oblivious to this fact. It is based on the commitment to pursue the goal of greenhouse gas neutrality by 2050 (§ 1 third sentence KSG). The specified reduction quota of at least 55% by 2030 compared to 1990 levels (§ 3(1) second sentence KSG) is clearly just an interim goal on the path towards climate neutrality.

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However, the goal of neutrality by a specific year and the reduction target formulated in § 3(1) second sentence KSG would not in themselves be suitable for guaranteeing compliance with a particular temperature limit because there would be nothing to specify how much greenhouse gas may be emitted in the intervening period (see para. 125 above). Ultimately, the extent of global warming and climate change depends on the total volume of greenhouse gas remaining in the Earth's atmosphere. And here, the Federal Climate Change Act does more than merely set down reduction quotas and climate neutrality goals to be reached by a particular year. § 3(1) first

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sentence KSG specifies that greenhouse gas emissions must be reduced in gradual steps. This requirement of continuous reduction is not confined to a specific target year but remains effective until greenhouse gas neutrality has been achieved. Furthermore, § 4(1) third sentence KSG in conjunction with Annex 2 quantifies and limits the exact amount of emissions allowed in Germany until 2030, albeit with figures not covering all greenhouse gas emissions. While it is true that the annual emission amounts for the post-2030 period are only due to be updated at a later stage (§ 4(1) fifth sentence KSG, § 4(6) KSG), they must nonetheless continue decreasing in accordance with § 3(1) first sentence KSG. In principle, this legislative technique is suitable for guaranteeing compliance with a particular temperature limit and thus for affording protection against the risks posed by climate change.

(2) Nor can it be ascertained that the protective framework set out by the legislator would be completely inadequate for achieving the protection goal required under Art. 2(2) first sentence GG. A completely inadequate approach would be to allow climate change to simply run its course, using nothing but adaptation measures (see para. 34 above) to implement the protection mandate arising from fundamental rights (cf. *Rechtbank Den Haag*, Judgment of 24 June 2015, C/09/456689 / HA ZA 13-1396, no. 4.75.; *Hoge Raad of the Netherlands*, Judgment of 20 December 2019, 19/00135, no. 7.5.2). In Germany as elsewhere, adaptation measures on their own would not be enough to sufficiently contain the risks posed to life and health over the long term ([...]). The legislator must therefore protect life and health by, in particular, taking action to stop climate change. The legislator is doing this with the Federal Climate Change Act and other laws that limit greenhouse gas emissions.

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(3) Nor is it ultimately apparent that the challenged provisions fall significantly short of the protection of life and health required under Art. 2(2) first sentence GG. It should be noted that the complainants regard even the Paris Agreement's climate target – upon which the Federal Climate Change Act is based pursuant to § 1 third sentence KSG – as being insufficient (a). They also contend that the reduction specifications laid down in the Federal Climate Change Act are not suitable for reaching even this target (b), and they claim that the climate action measures already taken are not sufficient to even meet the reduction specifications laid down in the Federal Climate Change Act (c).

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(a) Pursuant to § 1 third sentence KSG, the Federal Climate Change Act is based on the obligation under the Paris Agreement to limit the increase in the global average temperature to well below 2°C and preferably to 1.5°C above pre-industrial levels ("Paris target"). Yet the complainants argue that the duty of protection arising from Art. 2(2) first sentence GG can only be fulfilled by pursuing the target of limiting global warming to a maximum of 1.5°C. It is widely believed that average global warming above 1.5°C would have significant consequences for the climate (cf. *BMU, Climate Action in Figures*, 2019 edition, p. 10). This is based in particular on the IPCC's Special Report published in 2018 on the consequences of global warming of 1.5°C (IPCC, Special Report, Global Warming of 1.5°C, 2018; see also IPCC, Special Re-

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port, Global Warming of 1.5°C, Summary for Policymakers, 2018).

It should be noted that the Special Report never asserts that warming must be limited to 1.5°C. In fact, no such assertion could purport to be a scientific conclusion because the decision on how much global warming can and should be allowed is essentially a normative matter involving an evaluation. Instead, the Special Report compares the consequences of a 1.5°C global warming scenario with a 2°C warming scenario. In summary, the report concludes that the climate-related risks for natural and human systems are lower in a 1.5°C warming scenario than in a 2°C warming scenario (IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018; summary p. 5, A.3). This comparison does not prove the absolute necessity of limiting global warming to 1.5°C.

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Nevertheless, the target of a 1.5°C maximum increase has become the focus of attention primarily because the IPCC Special Report indicates that this level clearly reduces the probability of so-called tipping points being crossed (cf. also Hoge Raad of the Netherlands, Judgment of 20 December 2019, 19/00135, paras. 4.2, 4.4; Supreme Court of Ireland, Judgment of 31 July 2020, 205/19, para. 3.7). In terms of the negative implications for humanity and the environment, the crossing of tipping points would actually be more problematic than the direct consequences of temperature increase. It could trigger a qualitative transformation of major environmental subsystems (see para. 21 above). In the 2018 Special Report, the IPCC stepped up its risk assessment in this respect. Whereas only a few years ago the IPCC's 5th Assessment Report classified the risk of tipping points being crossed as "moderate" in the event of 1.6°C warming and "high" in the event of 4°C, the IPCC now assumes the risk to be "moderate" in the event of 1°C warming and "high" in the event of 2.5°C (IPCC, Special Report, Global Warming of 1.5°C, 2018, Chapter 3, p. 257 f., 3.5.2.5, *medium confidence*). For example, the IPCC now takes into account potential additional CO₂ release from future permafrost thawing (IPCC, Special Report, 1.5°C Global Warming, Summary for Policymakers, 2018, p. 12, C.1.3). In particular, marine ice sheet instability in Antarctica and irreversible loss of the Greenland ice sheet could result in multi-metre rises in sea level over a period of hundreds to thousands of years. This could be triggered at between around 1.5°C and 2°C of global warming (IPCC, loc. cit., p. 7, B.2.2, *medium confidence*). In light of these findings, a certain margin of safety would be created if global warming were limited to 1.5°C ([...]).

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If the legislator has nonetheless based the national climate change legislation on the commitment undertaken by the Parties to the Paris Agreement to limit global warming to well below 2°C and preferably to 1.5°C, this may be regarded as politically too unambitious. However, given the considerable uncertainty which the IPCC itself has documented by stating ranges and levels of confidence, the legislator presently retains significant decision-making leeway in fulfilling its duty of protection arising from fundamental rights (cf. BVerfGE 49, 89 <131>; 83, 130 <141 f.>), especially since it also has to reconcile the requirements of health protection with conflicting interests (cf. BVerfGE 88, 203 <254>).

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Contrary to what the complainants assume, it is not presently ascertainable that the legislator has exceeded this leeway by taking the Paris target as a basis. The violation of duties of protection arising from fundamental rights cannot be derived directly from normative assumptions and conclusions relating to climate action. Although there are large areas of overlap between taking climate action and protecting human life and physical integrity as expressed in Art. 2(2) first sentence GG, these fields are not identical; measures that might be necessary to preserve a climate that is favourable to the environment, animals *and* humans might not be required if the sole purpose were to protect the life and health of humans alone, and vice versa. Indeed it cannot be ruled out from the outset that while a temperature limit of 1.5°C may be advisable to tackle climate change, human life and health would nevertheless be sufficiently protected by the Paris target of limiting the temperature increase to well below 2°C and preferably 1.5°C – as adopted by the German legislator.

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Differences between the requirements of taking climate action and the requirements of protecting human health can also arise because the risks posed to human life and health by climate change can to some extent be alleviated by adaptation measures. While climate change as such cannot be prevented by adaptation measures and all efforts must therefore be directed towards the limitation of global warming, adaptation measures are, in principle, a viable option for affording supplementary protection against risks to life and health. The German adaptation strategy describes a wide range of different measures by which the impacts of climate change could be absorbed and severe consequences averted (see in particular Federal Government, German Strategy for Adaptation to Climate Change, 2008; UBA, 2019 Monitoring Report on the German Strategy for Adaptation to Climate Change, 2019; Federal Government, *Zweiter Fortschrittsbericht zur Deutschen Anpassungsstrategie an den Klimawandel*, 2020). For instance, the climate-induced warming of cities can be alleviated by appropriate architecture or urban and landscape planning. Fresh air can be channelled into urban centres along ventilation corridors, for example via unobstructed fresh air channels and extensive green spaces acting as “cold islands” (Federal Government, German Strategy for Adaptation to Climate Change, 2008, p. 18 f.; UBA, loc. cit., p. 160 f.). Protection against the increasing flood risks in river basins could be stepped up by way of passive safety measures, above all by preserving non-built areas, as well as by active river regulation. The use of open spaces for settlement and infrastructure could be reduced (UBA, loc. cit., p. 229) and efforts could be made on restoring, unsealing, renaturing and reforesting suitable land (Federal Government, German Strategy for Adaptation to Climate Change, 2008, p. 41). The impact of destructive flooding in connection with intense rain events could be reduced by installing non-return valves or by modifying drainage systems (Federal Government, loc. cit., p. 23). With regard to human health in Germany, the Federal Government’s Progress Report thus concludes that medium to high levels of vulnerability will be accompanied in the near future by medium to high adaptive capacity (Federal Government, *Fortschrittsbericht zur Deutschen Anpassungsstrategie an den Klimawandel*, 2015, p. 55).

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If the executive and legislative branches therefore assume that by limiting the increase in the average temperature to well below 2°C and preferably to 1.5°C (§ 1 third sentence KSG), the impact of climate change in Germany could be alleviated using adaptation measures to an extent that would allow the level of protection required under Art. 2(2) first sentence GG to be reached, they are not overstepping the decision-making leeway afforded to them in fulfilling the duty of protection arising from fundamental rights – at least not presently.

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(b) The complainants furthermore allege that the reduction targets specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 are not even enough to achieve the target stated in § 1 third sentence KSG of limiting global warming to well below 2°C and preferably to 1.5°C, a target they regard as inadequate. There are indeed indications to suggest that the reduction pathway specified until 2030 in the Federal Climate Change Act does not suffice to achieve the overall reduction that would correlate with Germany's required contribution towards limiting global warming to 1.5°C, and that an overall reduction that correlated with a target of, say, 1.75°C would only have any possibility of being reached if extremely onerous reduction burdens were imposed after 2030 (see para. 231 ff. below for more details). Achieving a reduction that correlates with a target of 2°C would appear more realistic, but this would not be enough to meet the Paris target of "well below 2°C" stated in § 1 third sentence KSG. The history behind the reduction quota set down in § 3(1) second sentence KSG indicates that it was originally linked to a 2°C target. It was already in 2010 that the Federal Government identified the 55% reduction quota as being the interim goal to be reached by 2030 on the reduction pathway to 2050 (BMU/ Federal Ministry for Economic Affairs and Energy, *Bundesministerium für Wirtschaft und Energie – BMWi, Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply*, 2010, p. 5). At the time, it was presumably only striving to prevent average global warming of more than 2°C (BMU, *Climate Action Programme 2020*, 2014, p. 7).

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In this respect, the emission reduction pathway specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 raises the question of compatibility with the constitutional obligation to take climate action (Art. 20a GG) (see paras. 196 ff., 230 ff. below). Furthermore, the potentially substantial reduction efforts that will then be required from 2031 onwards are not readily justifiable under constitutional law (see para. 243 ff. below). However, with regard to the interests protected under Art. 2(2) first sentence GG – the only relevant interests here – it cannot presently be ascertained that the state has violated its duty of protection with the reduction pathway specified until 2030, which is possibly still oriented towards a target of 2°C. It is not evident that the health consequences arising from 2°C global warming and from the associated climate change in Germany could not be alleviated by supplementary adaptation measures in a manner that would be sufficient under constitutional law (see para. 163 ff. above). It is true that adaptation measures would scarcely be enough to fulfil the duty to protect health if the legislator allowed climate

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change to simply run its course (see para. 157 above), but this is not the case here. As long as the legislator does not abandon the goal set down in § 1 third sentence KSG of achieving climate neutrality in the foreseeable future in order to comply with the Paris target upon which that goal is based, and as long as it continues advancing along the reduction pathway established in § 3(1) and § 4(1) third sentence KSG in conjunction with Annex 2 by setting ever-increasing reduction quotas (cf. § 3(3) second sentence KSG) and annually decreasing emission amounts (cf. § 4(6) first sentence KSG), it is not evident from today's perspective that the level of health protection required under constitutional law would not be achievable at least with supplementary adaptation measures.

[...]

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(c) Finally, the complainants allege that the specific measures taken to reduce greenhouse gas emissions in Germany are not even sufficient to comply with the reduction pathway specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 – a pathway which they regard in any case as inadequate. Scientific studies also point in this direction. A study commissioned by the Federal Environment Agency and conducted by the *Öko-Institut* concludes that the measures contained in the current Climate Action Programme would only enable a reduction of 51% by 2030 compared to 1990 levels (UBA, *Treibhausgasmin-derungswirkung des Klimaschutzprogramms 2030*, 2020, p. 22). A study commissioned by the Federal Ministry for Economic Affairs and Energy places the reduction figure at 52.2% compared to 1990 ([...]). Neither of these would be enough to fully comply with the 55% reduction target specified in § 3(1) second sentence KSG.

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In this respect, however, any violation of the duty of protection arising from Art. 2(2) first sentence GG is already ruled out by the fact that the national climate action instruments can still be adjusted in ways that would enable the reduction target specified for 2030 to be achieved. Reduction deficits could still be turned around within this period. An obligation to make up the necessary difference is already set down in § 4(3) first sentence KSG. Considering the size of the shortfall predicted by the studies, this does not appear unrealistic from the outset. [...]

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2. a) The state also has a duty of protection arising from the fundamental right to property in Art. 14(1) GG (cf. BVerfGE 114, 1 <56>). In view of the fact that climate change in Germany as elsewhere can result in property such as agricultural land or real estate suffering various forms of damage, the fundamental right to property under Art. 14(1) GG includes the state's duty to protect property against the risks of climate change. One aspect of particular importance here is that, in the event of unmitigated climate change, houses or even entire settlements might become uninhabitable in Germany due to phenomena such as flooding and rising sea levels (see para. 25 above). The loss of property might thus be accompanied by a loss of stable community ties within the local environment. Such ties must be taken into consideration under Art. 14(1) GG, which affords a certain degree of protection to social

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environments that have matured to the point of being “communities” (see BVerfGE 134, 242 <331 f. para. 270>).

b) However, it is not presently ascertainable that a duty of protection arising from fundamental rights has been violated by the provisions challenged by the complainants. Given the leeway afforded to the legislator in fulfilling duties of protection arising from fundamental rights, constitutional law is only violated if no precautionary measures whatsoever are taken, or if the adopted provisions and measures prove to be manifestly unsuitable or completely inadequate for achieving the required protection goal, or if the provisions and measures fall significantly short of the protection goal (cf. BVerfGE 142, 313 <337 et seq., para. 70> with further references; established case-law). In particular, the legislator has considerable leeway in deciding how to strike an appropriate balance between the interests of property owners exposed to risks from climate change and the interests opposing more stringent climate action. It is not evident at present that the challenged provisions overstep this leeway. [...]

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II.

Ultimately, no violation of a duty of protection arising from fundamental rights is ascertainable vis-à-vis the complainants who live in Bangladesh and Nepal.

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1. Although it does appear conceivable in principle, there is no need to decide at this point whether duties of protection arising from fundamental rights also place the German state under an obligation vis-à-vis the complainants living in Bangladesh and in Nepal to take action against impairments caused by global climate change. In their own countries, the complainants are particularly exposed to the consequences of global warming caused by global greenhouse gas emissions. Since greenhouse gas emissions have a global impact, further global warming can only be prevented if all states take climate action. This means that greenhouse gas emissions must be reduced to climate-neutral levels in Germany also. Greenhouse gas emissions in Germany currently account for just under 2% of annual global levels (BMU, Climate Action in Figures, 2020 edition, p. 12). It is for the German legislator to limit these emissions.

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While Art. 1(3) GG makes fundamental rights binding on the German state, it does not explicitly restrict this binding effect to German territory. Rather, the binding effect of the Basic Law’s fundamental rights on German state authority is comprehensive (BVerfGE 154, 152 <215 f., para. 88 f.> – BND – Surveillance of Foreign Telecommunications; cf. BVerfGE 6, 32 <44>; 6, 290 <295>; 57, 9 <23>; 100, 313 <363>). Yet despite this comprehensive binding effect of fundamental rights on German state authority, the Federal Constitutional Court has also held that the specific protections afforded by fundamental rights and their scope abroad may vary depending on the circumstances under which they are applied. Thus, it may be necessary to distinguish between the different dimensions of fundamental rights – for example as defensive rights against state interference, as positive obligations of the state, as decisions on values enshrined in the Constitution, or as the basis for duties of protection (cf. BVer-

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fGE 154, 152 <224 para. 104> – BND – Surveillance of Foreign Telecommunications). The circumstances under which fundamental rights may be invoked as the basis for establishing duties of protection vis-à-vis people living abroad have yet to be fully clarified. One possible factor capable of establishing a constitutional duty of protection here would be that the severe impairments already or potentially faced by the complainants due to climate change are caused to some – albeit small – extent by greenhouse gas emissions emanating from Germany ([...]).

2. A duty of protection vis-à-vis the complainants living in Bangladesh and in Nepal would not in any case have the same content as that vis-à-vis people in Germany. In general, the content of fundamental rights protection vis-à-vis people living abroad may differ from the content of fundamental rights protection vis-à-vis people living in Germany. Under certain circumstances, modification and differentiation are required (cf. BVerfGE 100, 313 <363> with further references; BVerfGE 154, 152, 1st headnote – BND – Surveillance of Foreign Telecommunications; [references to German legal scholarship]). This would be the case here if duties of protection arising from fundamental rights took effect to the benefit of people living in Bangladesh and in Nepal. 176

There are two different ways in which the state fulfils its duty to protect the fundamental rights of people living in Germany against violations caused by the impacts of climate change. First, it is obliged to adopt measures that help to slow down global warming. Second, it can protect fundamental rights by implementing adaptation measures that, while not actually mitigating climate change, do alleviate its adverse impacts on the fundamental rights of people living in Germany (see paras. 34, 164 above). Notwithstanding any stricter climate-related obligations that may arise from Art. 20a GG, the task of fulfilling the duties of protection arising from fundamental rights involves a combination of mitigation and adaptation measures for which political accountability must be assumed. The forms ultimately chosen also result from a balancing with any potentially conflicting interests (cf. BVerfGE 88, 203 <254>). 177

It is true that by reducing the greenhouse gas emissions produced in Germany, the German state could protect people living abroad against the consequences of climate change just as it could protect those living in Germany. The fact that the German state cannot prevent climate change on its own but can do so only in the context of international involvement would not, in principle, rule out a duty of protection arising from fundamental rights here (see para. 149 above). However, with regard to people living abroad, the German state would not have the same options at its disposal for taking any additional protective action. Given the limits of German sovereignty under international law, it is practically impossible for the German state to afford protection to people living abroad by implementing adaptation measures there ([...]). Rather, it is the task of the states concerned to select and implement the necessary measures. Whereas steps such as minimising the further development of open spaces, restoring, unsealing, renaturing and reforesting suitable areas, and introducing resilient plant varieties are generally feasible at the domestic level, the German state clearly 178

cannot implement such measures abroad. This is illustrated by examining some of the adaptation measures considered by the IPCC to be viable and necessary worldwide (IPCC, *Climate Change 2014, Impacts, Adaptations and Vulnerability*, 2014, p. 840 ff.). These particularly include the modification of existing infrastructure in order to provide better protection against heat, wind and flooding. For areas prone to tropical cyclones and flooding, the IPCC mentions houses with low and aerodynamic design, sewage systems, dykes, flood levees, beach nourishment and the retrofitting of buildings; for cities it names sustainable infrastructure such as green roofs, urban parks and porous pavements; and for agriculture it mentions efficient irrigation systems and the introduction of plants with high drought tolerance as well as resettlement (IPCC, *op. cit.*, p. 844 ff.). None of this could be carried out by the German state in the countries where the complainants live. For this reason alone, a duty of protection could not have the same content as it has vis-à-vis people living in Germany.

This does not exclude Germany from assuming responsibility, either politically or under international law, for ensuring that positive steps are taken to protect people in poorer and harder-hit countries (Federal Government, *German Strategy for Adaptation to Climate Change*, 2008, p. 51 ff.; Federal Government, *Zweiter Fortschrittsbericht zur Deutschen Anpassungsstrategie an den Klimawandel*, 2020, p. 60 f.). Art. 9(1) PA explicitly states that developed country Parties must provide financial resources to assist developing country Parties, also with respect to adaptation (on differentiated responsibilities in the response to climate change, see in particular Art. 2(2) PA).

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3. Even if the German state were obliged under Art. 2(2) first sentence and Art. 14(1) GG to afford protection to the complainants in Bangladesh and Nepal by taking action to limit the rise in temperature, such a duty of protection would not be violated by the challenged provisions. As has already been seen, it cannot be claimed that the legislator has taken no measures whatsoever to limit climate change or has only adopted provisions and taken measures that would be manifestly unsuitable or completely inadequate for achieving the required protection goal (see para. 154 ff. above). In particular, Germany has ratified the Paris Agreement and the federal legislator – as declared in § 1 third sentence KSG – has based the Federal Climate Change Act upon the obligation to observe the Agreement and upon the commitment made by the Federal Republic of Germany to pursue the long-term goal of greenhouse gas neutrality by 2050. § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 specify concrete reduction targets for the period up to 2030. Numerous other laws set out measures for limiting climate change.

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The further criterion applicable to precautionary measures in the domestic context, namely that they must not fall significantly short of the protection goal (see BVerfGE 142, 313 <337 et seq., para. 70>; established case-law), would not be applicable to a duty of protection vis-à-vis the complainants living abroad against the risks posed by climate change. Here too, the standard of review would need to be modified in light of the unique characteristics of duties of protection vis-à-vis people outside Ger-

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many. The question of whether or not precautionary measures against the risks posed by climate change had fallen significantly short of the protection goal could not be answered by conducting an isolated examination of the measures taken to prevent climate change. The assessment would also depend on what adaptation measures are actually possible for protecting against the consequences of climate change. Domestic and overseas cases are basically the same in this respect (see paras. 154, 164, 177 above). The difference lies in the fact that with overseas cases, the German state would not have the option of implementing adaptation measures as a precaution (see para. 178 above). It would therefore have only some of the precautionary measures at its disposal that are possible and necessary for protecting against climate change abroad. And yet whether or not the measures are sufficient to protect fundamental rights could only be evaluated by comparing the climate action measures taken with the possible adaptation options. In terms of fulfilling duties of protection arising from fundamental rights, emission reductions and adaptation measures complement one another and are inextricably linked. In this respect, it would not be possible to ascertain whether a possible duty of protection had been violated. Rather, the Federal Republic of Germany – and the German legislator in particular – would have fulfilled this duty of protection through their international commitment to preventing climate change and through specific measures aimed at implementing the internationally agreed climate action (see para. 154 ff. above).

III.

However, the legislator has violated fundamental rights by failing to take sufficient precautionary measures to manage the obligations to reduce emissions in ways that respect fundamental rights – obligations that could be substantial in later periods due to the emissions allowed by law until 2030. In this respect, § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 already violate the fundamental rights of the complainants in proceedings 1 BvR 96/20 and 1 BvR 288/20 and of complainants no. 1 to 11 in proceedings 1 BvR 2656/18.

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The legislator's decision to allow the amounts of CO₂ specified in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 to be emitted until the year 2030 has an advance interference-like effect (*eingriffsähnliche Vorwirkung*) on the freedom of the complainants – freedom that is comprehensively protected under the Basic Law. As such, the decision requires constitutional justification (1). It is true that this risk to fundamental freedoms is not unconstitutional on the grounds of any violation of objective constitutional law. No violation of Art. 20a GG can ultimately be ascertained (2 a). However, § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 are unconstitutional to the extent that they create disproportionate risks that freedom protected by fundamental rights will be impaired in the future. Since the two provisions specify emission amounts until 2030 which – in fulfilling the obligation arising from constitutional law to take climate action – significantly narrow the emission possibilities available after 2030, the legislator must take sufficient precautionary measures to ensure that freedom is respected

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when making a transition to climate neutrality. Under certain conditions, the Basic Law imposes an obligation to safeguard fundamental freedom over time and to spread the opportunities associated with freedom proportionately across generations. As intertemporal guarantees of freedom, fundamental rights afford the complainants protection against the greenhouse gas reduction burdens imposed by Art. 20a GG being unilaterally offloaded onto the future (see para. 117 ff. above). In this respect, there is a lack of a legal framework specifying minimum reduction requirements after 2030 that would be suitable for providing orientation and incentives in time for the necessary development of climate-neutral technologies and practices (2 b).

1. a) The legislator's decision to allow the CO₂ amounts specified in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 to be emitted until 2030 has an advance interference-like effect on the freedom of the complainants – freedom that is comprehensively protected under the Basic Law. The Basic Law protects all human exercise of freedom through special fundamental rights to freedom, as well as through the general freedom of action enshrined in Art. 2(1) GG as the elementary fundamental right to freedom (foundationally, see BVerfGE 6, 32 <36 f.>; established case-law). Currently, the numerous forms of private, professional and economic activity (see para. 37 above) that still directly or indirectly cause CO₂ to be released into the Earth's atmosphere are also protected. 184

However, any such exercise of freedom is subject to limits that the legislator must impose in order to take climate action in accordance with Art. 20a GG and to fulfil duties of protection arising from fundamental rights. The possibilities for exercising freedom protected by fundamental rights in ways that directly or indirectly involve CO₂ emissions come up against constitutional limits because, as things currently stand, CO₂ emissions make an essentially irreversible contribution towards global warming and, under constitutional law, the legislator may not allow climate change to progress *ad infinitum* without taking action. In this respect, the relevant aspect in terms of constitutional law is the obligation to take climate action enshrined in Art. 20a GG (cf. BVerfGE 118, 79 <110 f.>; 137, 350 <368 f. para. 47, 378 para. 73>; 155, 238 <278 para. 100>) – an obligation which the legislator has specified by formulating the target of limiting global warming to well below 2°C and preferably to 1.5°C above pre-industrial levels (see para. 208 ff. below for more details). If the CO₂ budget correlating with this temperature runs out, activities directly or indirectly involving CO₂ emissions can then only be allowed where the relevant fundamental rights are able to prevail within the balancing process over climate action requirements. As climate change intensifies, such exercise of freedom will be accorded ever less weight within the balancing process due to its ever greater impact on the environment. 185

Against this backdrop, provisions that allow CO₂ emissions in the present pose an irreversible legal risk to future freedom because every amount of CO₂ that is allowed today irreversibly depletes the remaining budget that was predetermined in accordance with constitutional law, and any exercise of freedom involving CO₂ emissions 186

will be subject to more stringent restrictions that will be necessary under constitutional law (see para. 117 ff. above for more details). It is true that any exercise of freedom involving CO₂ emissions would essentially have to be prohibited at some point anyway because global warming can only be prevented if anthropogenic concentrations of CO₂ in the Earth's atmosphere do not rise any further. However, if the CO₂ budget were to have already been largely depleted by 2030, there would be a heightened risk of serious losses of freedom because there would then be a shorter timeframe for the technological and social developments needed to enable today's still heavily CO₂-oriented lifestyle to make the transition to climate-neutral behaviour in a way that respects freedom (see para. 121 above). The smaller the remaining budget and the higher the emission levels, the less time will be left for the necessary developments. Yet the less that such developments are readily accessible, the more profoundly will holders of fundamental rights be affected by restrictions on CO₂-relevant behaviour – restrictions that will become increasingly urgent under constitutional law as the CO₂ budget disappears.

This risk is specifically caused by the provisions that determine the amount of presently allowed CO₂ emissions. In the currently applicable climate change legislation, these are § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. Consuming the annual emission amounts that these provisions allow until 2030 inevitably and irreversibly uses up portions of the remaining CO₂ budget. These two provisions thus play a role in determining how much time is left for the transformations necessary to safeguard freedom while at the same time honouring the obligation to take climate action. The annual emission amounts allowed by § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 thus have an unavoidable, advance interference-like effect on the opportunities still available after 2030 for actually making use of the freedom protected by fundamental rights. This advance effect operates not only de facto but also de jure. As the finite CO₂ budget is increasingly consumed, it is constitutional law itself which makes it all the more urgent to prohibit any further exercise of freedom involving CO₂ emissions. Constitutional justification for this legal interference-like effect of the current emissions legislation is already required now because, as things currently stand, the allowed emissions have a largely irreversible impact once they have been released into the Earth's atmosphere.

b) In order for this risk of future losses of freedom to be justified under constitutional law, the two provisions of the Federal Climate Change Act which play a role in determining the extent of future losses of freedom must, firstly, be compatible with the Basic Law's elemental precepts (aa). Secondly, the provisions must not place disproportionate burdens on the future freedom of the complainants (bb).

aa) Interference with fundamental rights can only be justified under constitutional law if the underlying provisions comply with the elemental precepts and general constitutional principles of the Basic Law (foundationally, see BVerfGE 6, 32 <41>; established case-law). Given their advance interference-like effect on freedom protect-

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ed by fundamental rights, this also applies to § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2.

Art. 20a GG contains a constitutional provision of the elemental type mentioned above (cf. BVerfGE 128, 1 <48>; 134, 242 <339 para. 289>). Compatibility with Art. 20a GG is thus required in order to justify under constitutional law any interference with fundamental rights (cf. BVerfGE 134, 242 <339 para. 289, 342 f. para. 298, 354 f. para. 327>; [references to German legal scholarship]; left open in BVerfG, Order of the Third Chamber of the First Senate of 10 November 2009 - 1 BvR 1178/07 -, para. 32). The risk to future freedom posed by § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 would therefore be unjustifiable under constitutional law if these provisions violated Art. 20a GG because the climate action required under constitutional law might no longer be achievable post-2030 due to the emission amounts allowed until 2030.

[...]

bb) Further requirements for justification under constitutional law arise from the principle of proportionality. Fundamental rights oblige the legislator to manage the CO₂ emission reductions that are constitutionally required under Art. 20a GG in a forward-looking way to the point of climate neutrality such that the associated losses of freedom continue to be reasonable despite the ever-increasing climate action requirements, and the reduction burdens are not unevenly distributed over time and between generations to the detriment of the future ([references to German legal scholarship]). It follows from the principle of proportionality that one generation must not be allowed to consume large portions of the CO₂ budget while bearing a relatively minor share of the reduction effort, if this would involve leaving subsequent generations with a drastic reduction burden and expose their lives to serious losses of freedom – something the complainants describe as an “emergency stop”. It is true that even severe losses of freedom may, at some point in the future, be deemed proportionate and justified in order to prevent climate change. This is precisely what gives rise to the risk of having to accept considerable losses of freedom (see paras. 117, 120 above). However, since the current provisions on allowed emission amounts have now already established a path to future burdens on freedom, the impacts on future freedom must be proportionate from the standpoint of today – while it is still possible to change course.

This is confirmed by the objective protection mandate of Art. 20a GG. When Art. 20a GG obliges the state to protect the natural foundations of life – partly out of responsibility towards future generations – it is aimed first and foremost at preserving the natural foundations of life for future generations. But at the same time, it also concerns how environmental burdens are spread out between different generations. The objective protection mandate of Art. 20a GG encompasses the necessity to treat the natural foundations of life with such care and to leave them in such condition that future generations who wish to carry on preserving these foundations are not forced to

engage in radical abstinence ([...]).

It is thus imperative to prevent an overly short-sighted and thus one-sided distribution of freedom and reduction burdens to the detriment of the future. This demands that the limited remaining CO₂ budget be consumed in a sufficiently prudent manner, thereby helping to gain the critical time needed to initiate the transformations that – by making CO₂-neutral forms of alternative behaviour available – are necessary to alleviate the losses of freedom arising from the reduction of CO₂ emissions and the restrictions on any CO₂-relevant exercise of freedom. The challenged provisions would be unconstitutional if they allowed so much of the remaining budget to be consumed that future losses of freedom would inevitably assume unreasonable proportions from today's perspective on account of there being insufficient time for developments and transformations that might bring alleviation. Even if it is impossible – given the multiple uncertainties regarding how large the remaining CO₂ budget will actually be in future (see para. 220 ff. below) – to definitively ascertain whether or not losses of freedom considered unreasonable from today's perspective are bound to occur, measures may nevertheless be required today that at least minimise the risk. Where legislative provisions inherently accept the risk of fundamental rights being impaired in some significant way, then fundamental rights may – depending on the nature and severity of the consequences – require that the provisions be designed in a way that keeps the risk of fundamental rights violations to a minimum (foundationally, see BVerfGE 49, 89 <141 f.>). In any case, the principle of proportionality does not start affording protection only after an absolute level of unreasonableness has been reached, but rather demands that freedom protected by fundamental rights also be treated with respect prior to this. Accordingly, the legislator may be obliged to act in a forward-looking manner by taking precautionary measures in order to manage the reduction burdens anticipated after 2030 in ways that respect fundamental rights (see para. 244 ff. below).

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2. In view of the considerable risk to freedom that it poses in later reduction phases, the legal framework in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 specifying the emission amounts allowed until 2030 is not constitutional without further precautionary measures being taken. The advance effects that these provisions specifying emission amounts have on fundamental rights is not fully justifiable under constitutional law. It is true that no serious concerns ultimately exist in terms of compatibility with the objective standards of constitutional law. It cannot be ascertained that § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 violate the obligation to take climate action arising from Art. 20a GG (a). However, the provisions are unconstitutional insofar as they give rise to a risk of serious impairments of fundamental rights in the future – a risk that is not sufficiently contained at present. Since the emission amounts specified until 2030 in the two provisions significantly narrow the emission possibilities that will be available in accordance with Art. 20a GG thereafter, the legislator must take sufficient precautionary measures to ensure that a transition to climate neutrality is made in a way that

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respects freedom, in order to alleviate the reduction burdens faced by the complainants from 2031 onwards and to contain the associated risks to fundamental rights. The specifications drawn up in this regard for the reductions required after 2030 must provide sufficient orientation and incentives for the development and comprehensive implementation of climate-neutral technologies and practices. These have so far been lacking (b).

a) Justification of the advance effect on fundamental rights of § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 requires that the challenged provisions also be compatible with objective constitutional law (see para. 189 ff. above). Applicable requirements also arise in this respect from Art. 20a GG, which contains the obligation to take climate action (aa). It cannot presently be ascertained that § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 (bb) or the individual measures specifically taken to date (cc) violate the obligation to take climate action. Nor has the legislator violated Art. 20a GG on the grounds of failing to investigate the facts or to state reasons with regard to the Federal Climate Change Act (dd). However, the legislator does remain obliged to limit the temperature increase to preferably 1.5°C – a target that it formulated when specifying Art. 20a GG (ee).

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aa) Art. 20a GG obliges the state to take climate action (1). The fact that no state can resolve the problems of climate change on its own due to the worldwide nature of the climate and global warming does not invalidate the obligation to take climate action, but it does have an effect on the obligation's content. Since the German legislator would not on its own be capable of protecting the climate as required under Art. 20a GG due to the global nature of climate change, Art. 20a GG also requires that solutions be sought at the international level (2). The open normative content of Art. 20a GG and its explicitly formulated reference to legislation do not prevent the Federal Constitutional Court from reviewing compliance with the obligation to take climate action; Art. 20a GG is a justiciable legal provision designed to commit the political process to a favouring of ecological interests, partly with a view to future generations who will be particularly affected (3). Its climate goal has been permissibly specified by § 1 third sentence KSG, which formulates the target – now the relevant standard under constitutional law – of limiting the increase in the global average temperature to well below 2°C and preferably to 1.5°C above pre-industrial levels (4).

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(1) Art. 20a GG obliges the state to take climate action (cf. BVerfGE 118, 79 <110 f.>; 137, 350 <368 f. para. 47, 378 para. 73>; 155, 238 <278 para. 100>). One key indicator for the overall state of the Earth system is the global average temperature. Accordingly, the obligation to take climate action primarily manifests itself in efforts to ensure that human-induced global warming does not exceed a certain temperature limit. The global warming that is currently observable results from anthropogenic greenhouse gas emissions being released into the Earth's atmosphere. In order to prevent global warming from exceeding the temperature limit that is relevant under constitutional law (see para. 208 ff. below), it is necessary to stop

further greenhouse gas concentrations from accumulating in the Earth's atmosphere. This is because, as things currently stand, greenhouse gas concentrations and the resultant global warming that leads to climate change are largely irreversible. The main onus is therefore on measures to reduce greenhouse gas emissions (cf. BVerfGE 118, 79 <110>). Once the constitutionally relevant limits of global warming have been reached, the constitutional obligation to take climate action will make it mandatory to restrict greenhouse gas emissions to levels that have a net zero impact on greenhouse gas concentrations in the Earth's atmosphere (cf. § 1 third sentence and § 2 no. 9 KSG). In this respect, Art. 20a GG is also aimed at achieving climate neutrality. Art. 20a GG does not however take absolute precedence over other interests. In cases of conflict, it must be balanced against other constitutional interests and principles (cf. BTDrucks 12/6633, p. 6 f.; BVerfGE 127, 293 <328> [...]). The same applies to the obligation contained in Art. 20a GG to take climate action. However, given that climate change is almost entirely irreversible as things currently stand, any overshoot of the critical temperature for preventing climate change would only be justifiable under strict conditions – such as for the purpose of protecting fundamental rights. Within the balancing process, the obligation to take climate action is accorded increasing weight as climate change intensifies.

(2) The obligation to take climate action arising from Art. 20a GG is not invalidated by the fact that the climate and global warming are worldwide phenomena and that the problems of climate change cannot therefore be resolved by the mitigation efforts of any one state on its own. The climate action mandate enshrined in Art. 20a GG possesses – like global warming itself – a special international dimension from the outset. Art. 20a GG obliges the state to involve the supranational level in seeking to resolve the climate problem (a). Embedded within an international framework, national climate action measures are capable of having the impact required by Art. 20a GG. Even if such measures would be incapable of resolving the climate problem on their own, they must be taken in order to fulfil the climate action mandate under constitutional law (b).

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(a) In requiring that the natural foundations of life also be protected for future generations, Art. 20a GG makes it obligatory to pursue a goal that the national legislator is not capable of reaching on its own but can only achieve through international cooperation. This is due to the physical realities of climate change and climate action. The problem of climate change and the (legal) activities involved in its prevention are genuinely global in nature ([...]). No state can stop global warming on its own. Furthermore, emissions from every state contribute to climate change in the same way (see also Rechtbank Den Haag, Judgment of 24 June 2015, C/09/456689 / HA ZA 13-1396, para. 4.90). Resolving the global climate problem will only be possible if climate action is taken worldwide.

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As an obligation to take climate action, Art. 20a GG thus contains a duty that necessarily looks beyond the domestic legal system under the sole responsibility of the individual state, and must be understood as also pointing towards the level of inter-

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national activity. The constitutional obligation to take climate action therefore possesses an “international dimension” from the outset ([...]). This compels the state to engage in internationally oriented activities to tackle climate change at the global level and requires it – the Federal Government in particular – to promote climate action within the international framework (for example through negotiations, via treaties or in organisations) (see earlier mention in Federal Constitutional Court, Order of the Third Chamber of the First Senate of 26 May 1998 - 1 BvR 180/88 -, para. 23; [references to German legal scholarship]). However, the international dimension of the obligation to take climate action arising from Art. 20a GG is not confined to the task of seeking to resolve the climate problem at the international level and ideally reaching some agreement to that effect. Rather, the constitutional obligation to take climate action also extends to the implementation of agreed solutions ([...]). Moreover, Art. 20a GG also makes it obligatory to take national climate action even in cases where it proves impossible for international cooperation to be legally formalised in an agreement. State organs are obliged to take climate action irrespective of any such agreement and would have to continue seeking opportunities to make national climate action efforts more effective within a framework of international involvement.

(b) Either way, the obligation to take national climate action cannot be invalidated by arguing that such action would be incapable of stopping climate change. It is true that Germany would not be capable of preventing climate change on its own. Its isolated activity is clearly not the only causal factor determining the progression of climate change and the effectiveness of climate action. Climate change can only be stopped if climate neutrality is achieved worldwide. In view of the global reduction requirements, Germany’s 2% share of worldwide CO₂ emissions (BMU, Climate Action in Figures, 2020 edition, p. 12) is only a small factor, but if Germany’s climate action measures are embedded within global efforts, they are capable of playing a part in the overall drive to bring climate change to a halt ([...]).

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The state may not evade its responsibility here by pointing to greenhouse gas emissions in other states (cf. VG Berlin, Judgment of 31 October 2019 - 10 K 412.18 -, para. 74; also BVerwG, Judgment of 30 June 2005 - 7 C 26/04 -, para. 35 f.; High Court of New Zealand, Judgment of 2 November 2017, CIV 2015-485-919 [2017] NZHC 733, para. 133 f.; Gerechtshof Den Haag, Judgment of 9 October 2018, 200.178.245/01, no. 64; Hoge Raad of the Netherlands, Judgment of 20 December 2019, 19/00135, no. 5.7.7; United States Court of Appeals for the Ninth Circuit, Judgment of 17 January 2020, no. 18-36082, p. 19 f.). On the contrary, the particular reliance on the international community gives rise to a constitutional necessity to actually implement one’s own climate action measures at the national level – in international agreement wherever possible. It is precisely because the state is dependent on international cooperation in order to effectively carry out its obligation to take climate action under Art. 20a GG that it must avoid creating incentives for other states to undermine this cooperation. Its own activities should serve to strengthen international confidence in the fact that climate action – particularly the pursuit of treaty-

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based climate targets – can be successful while safeguarding decent living conditions, including in terms of fundamental freedoms. In practice, resolving the global climate problem is thus largely dependent on the existence of mutual trust that others will also strive to achieve the targets.

The Paris Agreement very much relies on mutual trust as a precondition for effectiveness. In Art. 2(1)(a) PA, the Parties agreed on a climate target (well below 2°C and preferably 1.5°C) without committing themselves to any specific reduction measures. In this respect, the Paris Agreement establishes a voluntary mechanism by which the Parties determine their own measures for reaching the agreed temperature target. These measures must, however, be made transparent. The purpose of the transparency provisions is to ensure that all states are able to trust that other states will act in conformity with the target ([...]). Creating and fostering trust in the willingness of the Parties to achieve the target is therefore seen as a key to the effectiveness of the Paris Agreement. Indeed, the Agreement is highly reliant on the individual states making their own contributions. This is significant from the constitutional law perspective to the extent that the route signposted by Art. 20a GG towards globally effective climate action is largely directed through this Agreement.

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(3) The Federal Constitutional Court is not excluded from reviewing § 3(1) third sentence and § 4(1) third sentence KSG in conjunction with Annex 2 by the fact that Art. 20a GG does not contain any justiciable standard that would enable specific greenhouse gas reduction targets to be assessed within the framework of constitutional law, but rather places the determination of such targets entirely in the hands of the legislator. Art. 20a GG is a justiciable legal provision. The same applies to the obligation to take climate action contained therein. It is true that the content of Art. 20a GG requires further specification. The particular significance accorded to legislation is already evident from the wording of Art. 20a GG (“[...] the state shall protect the natural foundations of life [...] by legislation [...]”), with the legislator enjoying a prerogative to specify the law here ([...]). However, this does not mean that Art. 20a GG is a non-binding proclamation. It is a legal provision and is binding on the legislator (cf. BVerfGE 118, 79 <110> - Emissions Trading; [references to German legal scholarship]).

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This binding effect may not be abandoned by leaving the task of specifying the protection mandate arising from Art. 20a GG to the legislator alone ([...]). Even though Art. 20a GG does give the legislator a role in specifying its material content, it does so partly in order to provide a counterweight to the political process. The Constitution sets limits here on the leeway enjoyed in the political decision-making process to determine whether environmental protection measures should be taken or not. In Art. 20a GG, environmental protection is elevated to a matter of constitutional significance because the democratic political process is organised along more short-term lines based on election cycles, placing it at a structural risk of being less responsive to tackling the ecological issues that need to be pursued over the long term. It is also because future generations - those who will be most affected - naturally have no voice of their own in shaping the current political agenda. In view of these institutional

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conditions, Art. 20a GG imposes substantive constraints on democratic decision-making ([...]). This binding of the political process as envisaged by Art. 20a GG would be in danger of being lost if the material content of Art. 20a GG were fully determined by the day-to-day political process with its more short-term approach and its orientation towards directly expressible interests.

However, Art. 20a GG does leave the legislator considerable leeway to design. It is not, in principle, for the courts to translate the open wording of Art. 20a GG into quantifiable global warming limits and corresponding emission amounts or reduction targets. At the same time, however, Art. 20a GG may not be drained of substance as an obligation to take climate action. In this respect too, it remains for the Federal Constitutional Court to review whether the boundaries of Art. 20a GG are respected ([...]). There is nothing to indicate that Art. 20a GG - as a singular exception among the provisions of the Basic Law - is beyond the scope of judicial review with regard to how its regulatory content is interpreted and applied. 206

(4) In exercising its mandate and prerogative to specify the law, the legislator has formulated the climate goal of Art. 20a GG in § 1 third sentence KSG by setting out that the increase in the global average temperature must be limited to well below 2°C and preferably to 1.5°C above pre-industrial levels. This is not currently beyond the legislator's leeway under Art. 20a GG. The temperature limit specified in § 1 third sentence KSG is the relevant standard under constitutional law and must also form the basis of the Federal Constitutional Court's review. 207

(a) The temperature limit stated in § 1 third sentence KSG is to be regarded as the constitutionally relevant specification of the climate goal contained in the Basic Law. § 1 KSG defines the purpose of the Federal Climate Change Act. It is worded as follows (emphasis added in third sentence): 208

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 two degrees Celsius and, if possible, to 1.5 degrees Celsius, 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.

In § 1 third sentence KSG, the obligation according to the Paris Agreement is referred to as being the *basis*. The Act thus intends the specified temperature limit to 209

be understood as providing fundamental orientation for climate action. No objective of an equally fundamental nature is to be found anywhere else in the German climate change legislation. Rather than being purely an expression of political will, the chosen temperature limit must indeed also be understood as being a specification of the climate action required under constitutional law. This is primarily supported by the fact that the climate target specified in § 1 third sentence KSG is the internationally agreed temperature limit of Art. 2(1)(a) PA, which the legislator has deliberately and explicitly taken as a basis. Its constitutional law significance goes beyond the consent given by the German legislator to the Paris Agreement in passing the act of approval. The fact that the Paris target is explicitly named as the basis of Germany's Federal Climate Change Act is closely related to the obligation to take climate action arising from Art. 20a GG. Due to the genuinely global dimension of climate change, the state can ultimately achieve the objective of slowing down climate change enshrined in Art. 20a GG only through international cooperation. It has taken action to this end by ratifying the Paris Agreement, which provides the framework within which it is now also fulfilling its more extensive climate action obligations arising from Art. 20a GG (see para. 201 above). By adopting the temperature limit of Art. 2(1)(a) PA, the legislator has set the fundamental course of national climate change law in a direction that gives the German state an opportunity to effectively fulfil its constitutional mandate to take climate action through its own efforts embedded within an international framework.

(b) The legislator is not entirely free in how it specifies the obligation to take climate action under Art. 20a GG. However, with the temperature target contained in the Paris Agreement and then explicitly chosen for the Federal Climate Change Act, the legislator is currently operating within the leeway to specify the law granted by Article 20a GG. The chosen climate target is covered by the legislator's prerogative to specify the law, as established in Art. 20a GG. The Paris Agreement was adopted in December 2015 on the basis of scientific findings compiled in preparation for the Paris Climate Change Conference (UNFCCC, Report on the structured expert dialogue 2013-2015 review, 2015, p. 18 Message 5, p. 31 para. 108). In the opinion of the complainants, global warming must be limited to the stricter maximum of 1.5°C. This is a broadly held view and is supported in particular by the IPCC Special Report from 2018 on the impacts of global warming of 1.5°C. The Special Report's assessment that the climate-related risks for natural and human systems - especially the probability of crossing tipping points - are higher in a 2°C warming scenario than in a 1.5°C scenario (see para. 161 above) gives cause for concern. However, in view of the considerable lack of certainty reflected in the ranges and uncertainties stated by the IPCC, Art. 20a GG - like the duties of protection arising from fundamental rights (see para. 162 f. above) - leaves the legislator with leeway to determine the climate goal in terms of how it evaluates the dangers and risks from the standpoint of political responsibility (cf. BVerfGE 128, 1 <39>). It is not apparent that the limits of this legislative leeway have been violated by the choice of the Paris target, at least not at present.

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However, new and sufficiently reliable findings on the development of anthropogenic global warming, its consequences and controllability, might make it necessary to set different targets within the framework of Art. 20a GG, even when taking the legislator's decision-making leeway into account. This is subject to review by the Federal Constitutional Court. Art. 20a GG places the legislator under a permanent obligation to adapt environmental law to the latest scientific developments and findings (cf. BVerfGE 49, 89 <130, 132> on Art. 1(1) first sentence GG). If the temperature target agreed in Art. 2(1)(a) PA proves inadequate to sufficiently prevent climate change, the obligation arising from Art. 20a GG to involve the international level in seeking to resolve the climate problem is also modified. In particular, attempts would have to be made to reach more stringent international agreements. On the other hand, any reorientation towards weaker climate goals would have to be justified in the light of Art. 20a GG due to the associated ecological setback ([references to German legal scholarship]; see also Art. 4(3) PA, § 3(3) second sentence KSG), unless more recent and sufficiently substantiated findings in climate research show that global warming is less potentially damaging than is currently feared.

(c) The temperature limit specified as the basis for climate action in § 1 third sentence KSG is a constitutionally essential and fundamental specification of Art. 20a GG and, in turn, provides orientation of its own under constitutional law. It is also the relevant specification of the climate action mandate contained in Art. 20a GG for the purposes of review by the Federal Constitutional Court (on the legislative specification of Art. 20a GG with regard to animal protection, see BVerfGE 127, 293 <328 f.>). Assessing the challenged provisions governing the allowed emission amounts against this standard is not ruled out by the fact that the legislator could have redefined the fundamental climate goal with these very same provisions. It is true that the legislator could alter the decisive climate goal by respecifying the climate action mandate arising from the Constitution. This does not mean, however, that every new provision that is incompatible with the existing legal framework specifying the constitutional climate goal must then immediately be regarded as an updated specification by the legislator of the constitutional mandate to take climate action. If the legislator wanted to move climate change law in a fundamentally new direction, this fact would need to be recognisable as such and therefore open for political discussion. The reason behind the explicit emphasis on legislation in Art. 20a GG and the acknowledgment of the legislator's prerogative to specify the law is that the special importance of the interests protected under Art. 20a GG and their tensions with any conflicting interests must be reconciled in a democratically accountable manner, and legislation provides the appropriate framework to do this ([...]). The legislative process gives the required legitimacy to the necessary balancing of interests. The parliamentary process - with its inherently public function and the essentially public nature of the deliberations - ensures through its transparency and the involvement of parliamentary opposition that decisions are also discussed in the broader public, thereby creating the conditions by which the legislative process is made accountable to the citizenry. With the help of media reporting, this process also offers the general public an

opportunity to form and convey its own opinions (cf. BVerfGE 143, 246 <344 para. 274> with further references; 150, 1 <96 f. para. 192> with further references). Yet if the transparency and public function of the legislative process are the very reasons why Art. 20a GG places such importance on being specified by legislation, then any reorientation of the fundamental goal of climate change law would have to be conducted in a similarly public and transparent manner. Unless the legislator redefines the fundamental climate goal in a recognisable way and in a transparent process, it must be held to its own specification of the goal arising from constitutional law.

bb) Measured against the target of limiting global warming to well below 2°C and preferably to 1.5°C, it is not presently ascertainable that § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 violate the obligation to take climate action arising from Art. 20a GG. 213

(1) That being said, it is not actually possible to directly assess the constitutionality of the emission amounts specified in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 against the standard of the constitutionally relevant temperature target. In order to serve as a benchmark for evaluating the level of CO₂ emissions, the temperature measurement must be converted into an emission measurement. Despite the inherent difficulties of precise quantification, this type of conversion is used in the IPCC's budget approach (a). However, the process of calculating a remaining national budget on the basis of this conversion (b) is associated with considerable uncertainties and involves evaluations being made. Some decision-making leeway is therefore retained by the legislator, although the legislator is not entirely free when it comes to using this leeway. If reliable data suggest that the constitutionally relevant temperature limit might be exceeded, such data must be taken into account - albeit not as highly precise measurements (c). 214

(a) The temperature limit of well below 2°C and preferably 1.5°C can, in principle, be converted into a corresponding global CO₂ emission amount which can then be allocated to states. As has already been seen, this type of conversion is permissible due to the roughly linear relationship between the total amount of anthropogenic CO₂ emissions accumulated over time and the global temperature increase (see para. 32 above). In order to perform this conversion, the first step is to ascertain the amount of global emissions that can still be produced if the temperature is to be kept within the specified limit - this amount is the specific remaining global CO₂ budget. The second step is to determine how much of this is attributable to Germany - this is the specific remaining national CO₂ budget. The IPCC has defined specific remaining global CO₂ budgets for various temperature limits and different probabilities of occurrence. On this basis, the Advisory Council has calculated a specific remaining national budget for Germany. This can be used to measure whether the emission amounts allowed in § 3(1) second sentence and § 4(1) third sentence KSG are compatible with the temperature limit. 215

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(b) The IPCC has provided numerical figures quantifying the size of the remaining global CO₂ budget for different temperature limits and different probabilities of staying within those limits. For example, with a 67% probability of limiting global warming to 1.5°C, it has estimated the remaining global CO₂ budget from 2018 onwards as being 420 gigatonnes. For a 2°C target, it has estimated the remaining budget from 2018 onwards as being 1,170 gigatonnes (IPCC, Special Report, Global Warming of 1.5°C, 2018, Chapter 2, p. 108, Table 2.2). On the basis of the IPCC figures, the Advisory Council has calculated the specific remaining national budget from 2020 onwards as being 6.7 gigatonnes. This is based on the target of limiting the rise in the global average temperature to 1.75°C with a 67% probability of success (SRU, *Für eine entschlossene Umweltpolitik in Deutschland und Europa, Umweltgutachten 2020*, pp. 52, 88 para. 111). 219

(c) The Advisory Council's budget is calculated using verifiable figures and sound calculation methods (foundationally, see BVerfGE 125, 175 <226>; 137, 34 <75 para. 82>) and is based on the IPCC's scientifically justified assumptions, which were reached using a quality assurance process. However, it does contain significant uncertainties regarding the size of the remaining global (aa) and national (bb) budgets and therefore does not allow highly precise legal conclusions to be drawn. The uncertainties go in both directions. That is to say, the remaining budget could also be smaller than assumed by the Advisory Council (cc). Estimates in the IPCC Special Report indicating the possibility of irreversible impairments must also be taken into account here, even if they do not qualify as comprehensively verified scientific conclusions (dd). 220

(aa) The Advisory Council initially based its calculations on the IPCC's data regarding the remaining *global* CO₂ budget. These data are generally reliable. The IPCC's estimates are the specific result of a quality assurance process. The IPCC formulates its assessments after extensively evaluating the state of scientific research. Any degree of residual uncertainty is made transparent (see para. 16 f. above). 221

The IPCC itself draws attention to significant uncertainties. The fact that conversions can, in principle, be made between the total amount of anthropogenic emissions of the most important greenhouse gas CO₂ and the rise in global temperature is not disputed. However, due to the complexity of the climate system, there are uncertainties associated with how the strength of the correlation between cumulative emissions and warming is evaluated. Uncertainties exist regarding how the climate responds to greenhouse gas emissions. With regard to the global budget, the IPCC quantifies these uncertainties as allowing possible discrepancies of 400 gigatonnes of CO₂ in either direction. Uncertainties about the actual extent of historical warming could account for a discrepancy of 250 gigatonnes of CO₂ in either direction. The potential additional release of CO₂ from future thawing of permafrost and the release of methane from wetlands would further reduce the budget by up to 100 gigatonnes of CO₂. Furthermore, the extent of future reductions of greenhouse gases other than CO₂ could change the remaining CO₂ budget by 250 gigatonnes of CO₂ in either 222

direction. The extent to which CO₂ removal from the atmosphere (so-called negative emissions) might become possible in the future is also unclear (on all of this, see IPCC, Special Report, Global Warming of 1.5°C, Summary for Policymakers, 2018, p. 16 f.; see also SRU, *Für eine entschlossene Umweltpolitik in Deutschland und Europa, Umweltgutachten 2020*, p. 44 f. para. 16 ff.). If such potential discrepancies are compared with the fact that, for a 67% probability of achieving the target of limiting global warming to 1.5°C, the IPCC estimates the remaining global CO₂ budget from 2018 onwards as being 420 gigatonnes, whereas for the 2°C target it estimates the remaining budget from 2018 onwards as being 1,170 gigatonnes, then these uncertainties are considerable.

No other data offering the same level of reliability as the estimates in the IPCC Special Report but with even greater accuracy are available. There is no evident reason to doubt the IPCC's estimates beyond the stated uncertainties. While the complainants do see indications to suggest that the IPCC's estimates are too generous, they do not doubt that they offer a reliable reflection of current scientific knowledge. The Federal Government does not doubt this either. It simply regards the uncertainties as being too large for conclusions to be drawn from the estimates.

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(bb) The Advisory Council's further conclusions with regard to the remaining *national* budget are based on verifiable assumptions and sound calculation methods. However, they do contain evaluations and inherent uncertainties.

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For example, the national share of the remaining global CO₂ budget can be calculated using various distribution methods. For its recommendations, the Advisory Council took a per capita approach to emissions law - i.e. a distribution based on current population size - and accordingly used Germany's 1.1% share of the total world population in 2016 as a basis (SRU, *Für eine entschlossenene Umweltpolitik in Deutschland und Europa, Umweltgutachten 2020*, p. 51). Other distribution methods are also conceivable (SRU, loc. cit., p. 48; Winter, *ZUR 2019*, 259 <263 f.>), but no exact mechanism can be derived from Art. 20a GG. In particular, Art. 20a GG does not specify what share of the overall burden would be appropriate for Germany in light of fairness considerations. However, this does not make it permissible under constitutional law for Germany's required contribution to be chosen arbitrarily. Nor can a specific constitutional obligation to reduce CO₂ emissions be invalidated by simply arguing that Germany's share of the reduction burden and of the global CO₂ budget are impossible to determine. Since Art. 20a GG also includes an obligation to reach the climate goal through international cooperation, Germany's contribution in this regard must be determined in a way that promotes mutual trust in the willingness of the Parties to take action, and does not create incentives to undermine it (see para. 203 above). Certain indications regarding the distribution method can be derived from international law, such as from Art. 2(2) and Art. 4(4) PA (on the principle of common but differentiated responsibilities, see also Art. 3 nos. 1 and 4 of the United Nations Framework Convention on Climate Change of 9 May 1992 (BGBl II 1993 p. 1784, UNTS Vol. 1771, p. 107, which entered into force on 21 May 1994), as well as from

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the third recital of the preamble to the Paris Agreement).

The Paris Agreement also provides for the option of practically enlarging the remaining national budget by transferring surplus emission reductions from other Parties (Art. 6(2) and (4) PA). However, it has not yet been possible to establish a reliable crediting system for internationally tradable emission reductions (cf. BTDrucks 19/15906, p. 1 ff.). Whether such a transfer and crediting system could be used to significantly enlarge the national budget in the future is not clear at present. Considering the substantial reduction efforts that the entire international community will still have to make in order to reach the Paris Agreement's temperature target (cf. UNFCCC, Nationally determined contributions under the Paris Agreement, Synthesis report by the secretariat, 2021, p. 5, para. 13), the competition for transferable surplus reductions is likely to be intense.

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Enlarging the remaining national budget by way of so-called negative emission technologies is also a possibility (see for example the Carbon Dioxide Storage Act (*Kohlendioxid-Speicherungsgesetz* - KSpG) of 17 April 2012, BGBl I, p. 1726). However, to what extent negative emission technologies will be implemented on a large scale and not just in isolated applications is currently impossible to predict in view of ecological, technical, economic, political and social concerns - notwithstanding the constitutional law issues that could be raised (see para. 33 above).

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(cc) The fact that there are uncertainties and evaluations in the Advisory Council's calculation does not, however, lead to the inevitable conclusion that the remaining emission possibilities would actually be larger than originally thought. The uncertainties involved in determining the remaining global budget and its distribution to individual states go in both directions. That is to say, they could also result in an overly generous estimate. Thus, while it cannot be ruled out that Germany's remaining budget might actually be larger than calculated, overall it seems equally possible that the remaining budget might be smaller.

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(dd) Even though the Advisory Council's specific quantification of the remaining budget contains significant uncertainties, it must be taken into consideration by the reduction targets set down in the legislation. Since uncertainties persist with regard to how the correlation between CO₂ emissions and global warming should be precisely quantified, Art. 20a GG leaves the legislator with a margin of evaluation (cf. BVerfGE 128, 1 <39>; on fundamental rights, see also BVerfGE 49, 89 <131 f.>; 83, 130 <141 f.>). The size of the remaining emission budget required for compliance with the temperature limit cannot be currently determined with enough accuracy to enable the budget size stated by the Advisory Council to serve as an exact numerical benchmark for the review by the Federal Constitutional Court. However, the legislator is not entirely free when it comes to using this margin of evaluation. Rather, if there is scientific uncertainty regarding causal relationships of environmental relevance, Art. 20a GG places constraints on the legislator's decisions – especially those with irreversible consequences for the environment – and imposes a special duty of care

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on the legislator, including a responsibility for future generations (cf. BVerfGE 128, 1 <37>; [references to German legal scholarship]). This special duty of care finds expression in the fact that the legislator must even take account of mere indications pointing to the possibility of serious or irreversible impairments, as long as these indications are sufficiently reliable. Furthermore, according to Art. 3 no. 3 second sentence of the Framework Convention on Climate Change, the lack of full scientific certainty should not be used as a reason for postponing precautionary measures where there are threats of “serious or irreversible” damage. In view of the risk of irreversible climate change, the law must therefore take into account the IPCC’s estimates on the size of the remaining global CO₂ budget and its consequences for remaining national emission budgets – estimates produced via a quality assurance process – if these point to a possibility of exceeding the constitutionally relevant temperature limit.

(2) § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 satisfy this requirement. Taking the leeway afforded to the legislator into account, the Federal Constitutional Court cannot presently ascertain that these provisions violate the constitutional obligation to take climate action arising from Art. 20a GG. 230

(a) Nonetheless, it does not seem certain that the remaining budget can be complied with on the basis of these provisions. If the specific amount of the remaining national CO₂ budget that is still available from 2020 onwards is taken to be 6.7 gigatonnes – in line with the Advisory Council’s calculation for the target of limiting the increase in the global average temperature to 1.75°C with a probability of 67% (SRU, *Für eine entschlossene Umweltpolitik in Deutschland und Europa, Umweltgutachten 2020*, pp. 52, 88 para. 111) – this remaining budget will have already been largely used up by 2030 by the CO₂ amounts allowed in § 4(1) third sentence KSG in conjunction with Annex 2. 231

The emission amounts stated per year and per sector in Annex 2 to § 4 KSG add up to approximately 7 gigatonnes (with a degree of uncertainty due to the emission amounts for the energy sector not being specified throughout). However, this figure refers to the so-called “CO₂ equivalent”. That is to say, it also includes other greenhouse gases alongside CO₂ emissions (cf. § 2 no. 2 KSG). However, due to the different properties of these other greenhouse gases – their short lifetimes in particular – they are not included in how the IPCC or the Advisory Council calculate the remaining budget. In Germany, CO₂ currently accounts for around 88% of overall greenhouse gas emissions (SRU, loc. cit., p. 40). Accordingly, the greenhouse gas emissions listed in Annex 2 – totalling around 7 gigatonnes of CO₂ equivalent – will contain a good 6 gigatonnes of CO₂ emissions. 232

This would mean that less than 1 gigatonne of the Advisory Council’s calculated remaining CO₂ budget of 6.7 gigatonnes would be left after 2030. Not yet included in Annex 2 to § 4 KSG are the additional CO₂ emissions from land use, land-use change and forestry, or the emissions from international aviation and shipping attrib- 233

utable to Germany (cf. BTDrucks 19/14337, p. 26 f.), which reduce the remaining budget even further.

In order to stay within the limits of the budget, climate neutrality would therefore have to be reached soon after 2030. However, this is unlikely to happen. The reduction pathway set down in the Federal Climate Change Act requires a 55% reduction in emission levels by 2030 compared to 1990 (§ 3(1) second sentence KSG). Yet even those emission levels are still a long way from being climate neutral. Realistically, the transition to climate neutrality would still then need a considerable amount of time due to the technical issues involved – quite apart from the challenges relating to freedom. A remaining CO₂ budget of 6.7 gigatonnes would almost certainly be exceeded. If, however, the remaining national budget were based on a slightly more lenient temperature target of between 1.75°C and 2°C, it would not appear impossible to stay within the remaining national budget calculated using the Advisory Council's methodology. The more the annual emission amounts continue to be reduced after 2030, the longer the budget still available after 2030 will last.

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It should be noted, however, that by basing the remaining national budget on the 1.75°C temperature limit, the Advisory Council did not take a particularly stringent approach. The legal requirement is defined as being to limit warming to well below 2°C and preferably to 1.5°C. Thus, while a 1.75°C limit is certainly within the range of what is legally permissible, it nonetheless fails to satisfy the requirement of pursuing efforts to limit the temperature increase to 1.5°C (cf. Art. 2(1)(a) PA). This would be all the more applicable to a higher limit between 1.75°C and 2°C.

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(b) Ultimately, it is not presently ascertainable that the legislator has overstepped the decision-making scope it enjoys under constitutional law. Any finding by the Federal Constitutional Court that the emission amounts specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 would exceed the CO₂ budget – which is itself limited under constitutional law by Art. 20a GG – is currently precluded by the uncertainty regarding the size of the remaining global CO₂ budget, which in turn gives rise to uncertainties regarding the calculation of the remaining national budget. It is true that the remaining budget of 6.7 gigatonnes calculated by the Advisory Council on the basis of the IPCC's estimates for staying within a 1.75°C temperature limit would be almost exhausted by 2030 by the emission amounts specified in Annex 2 (see para. 231 ff. above). However, the uncertainties regarding the global and national emission possibilities that would still be available while staying within the temperature limit are currently too great to allow the budget size calculated by the Advisory Council to serve as an exact numerical benchmark for review by the Federal Constitutional Court.

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It is true that the IPCC's estimates on the size of the remaining global CO₂ budget – along with the implicit warning about the danger of exceeding the constitutionally relevant temperature limit – must nevertheless be taken into account (see para. 229 above). However, it cannot presently be ascertained that the legislator has violated

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this duty of care with regard to § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2. The remaining budget of 6.7 gigatonnes calculated by the Advisory Council on the basis of the IPCC's estimates for staying within a 1.75°C temperature limit would be largely exhausted by 2030 by the emission amounts specified in Annex 2, but not actually overshoot. Given the uncertainties presently involved in the calculation of the remaining budget, such a compliance breach would not suffice to be considered objectionable under constitutional law by the Federal Constitutional Court. In view of the normative range incorporated in the temperature specification of "well below 2°C and preferably 1.5°C", it is also significant that the Advisory Council did not calculate its national budget of 6.7 gigatonnes for a 2°C limit – as the complainants in proceedings 1 BvR 78/20 and 1 BvR 96/20 assume – but for the stricter 1.75°C limit.

cc) In some of the constitutional complaints, it is pointed out that the climate action instruments currently deployed in Germany have been described by various studies as not sufficient to comply with the 55% reduction by 2030 compared to 1990 as specified in § 3(1) second sentence KSG (see para. 169 f. above). They allege that this situation is unconstitutional. However, a violation of § 3(1) second sentence KSG would not in itself amount to a violation of constitutional law. § 3(1) second sentence KSG is not a standard derived from specifying the climate action mandate arising from Art. 20a GG because, unlike § 1 third sentence KSG, it does not refer to the legislator's climate goal in its entirety (see para. 209 above). Regardless of this, it cannot be ruled out from the outset that the specific national climate action instruments will be adjusted in such a way that the reduction target specified for 2030 is achieved by compensating for any reduction deficits within this period. § 4(3) first sentence KSG provides for an obligation to make up any difference, where applicable, within the annual periods until 2030. 238

dd) The legislator has not violated obligations to provide rational justification for legislative action ("rationality obligations"). Art. 20a GG does not give rise to any separate obligation, alongside and detached from its substantive requirements, to investigate the facts and to state reasons – at least not for the constellation at issue here. 239

[...] 240-241

ee) However, the legislator does remain obliged to limit the increase in temperature to preferably 1.5°C – a target that it formulated when specifying Art. 20a GG (§ 1 third sentence KSG). There are indications to suggest that the 55% reduction specified for the year 2030 in § 3(1) second sentence KSG was not designed with the target of limiting global warming to well below 2°C and preferably to 1.5°C in mind. Rather, the history behind this figure indicates that the specified reduction was originally linked to a 2°C limit (see para. 166 above). This is consistent with the fact that it would be extremely difficult, using the total amount of emissions specified in § 4(1) third sentence KSG in conjunction with Annex 2, to stay within the remaining budget calculated by the Advisory Council on the basis of the IPCC's estimates for complying with a 1.75°C 242

target, whereas staying within a remaining budget that correlated with 2°C would appear possible.

b) § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 are unconstitutional insofar as they give rise to risks of future impairments of fundamental rights that are not sufficiently contained at present. In this respect, the legislator has violated its duty, arising from the principle of proportionality, to ensure that the reduction of CO2 emissions to the point of climate neutrality that is constitutionally necessary under Art. 20a GG is spread out over time in a forward-looking manner that respects fundamental rights (on the requirements, see para. 192 ff. above). 243

aa) The emission amounts specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 significantly narrow the emission possibilities that will be available thereafter for staying within the temperature limit of well below 2°C and preferably 1.5°C that was specified in accordance with the obligation to take climate action arising from Art. 20a GG. In view of the advance effect on fundamental rights, this can only be justified if sufficient precautionary measures are taken to ensure that freedom is respected when making the transition to climate neutrality, so that the reduction burdens faced by the complainants from 2031 onwards are alleviated and the associated risks to fundamental rights are contained (1). It is necessary that a development-friendly planning horizon be established (2). In turn, this places specific requirements on the further structuring of the reduction pathway (3). 244

(1) The efforts required under Art. 20a GG to reduce greenhouse gas emissions after 2030 will be considerable. Whether they will be so drastic as to inevitably entail unacceptable impairments of fundamental rights from today's perspective (a) is impossible to determine. Nevertheless, the risk of serious burdens is significant. Due to the obligation to contain the risks of significant impairments of fundamental rights, as well as the general obligation to respect fundamental rights, the emission amounts specified until 2030 in § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 can ultimately only be reconciled with the potentially affected fundamental freedoms if precautionary measures are taken in order to manage the reduction burdens anticipated after 2030 in ways that respect fundamental rights (b). 245

(a) In view of the constitutionally relevant target of keeping global warming to well below 2°C and preferably to 1.5°C, the amount of CO2 emissions that can be released into the Earth's atmosphere while still complying with the constitutional obligation to take climate action is limited. Pursuant to § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2, Germany's remaining emission possibilities will in any case be significantly diminished – irrespective of the exact size of the remaining budget. According to the Advisory Council's calculation, if a 1.75°C limit is pursued with a 67% probability of being reached, the remaining emission possibilities after 2030 will be minimal at best and, in view of the emission levels still anticipated for 2031, would barely last for a further year (see para. 231 ff. above). If the 246

emission regime required by Art. 20a GG is to be strictly complied with, reduction efforts of unreasonable proportions from today's perspective would then be necessary, especially since the general way of life is still likely to be characterised by a high degree of CO₂-dependence in 2031 and the annual emission amounts will only have been reduced by 55% compared to 1990 (cf. § 3(1) second sentence KSG). Even taking account of the fact that Art. 20a GG does not establish the absolute precedence of climate action (see para. 198 above) that would inevitably make it prevail over conflicting fundamental rights or other elemental constitutional interests or principles, the constitutional obligation to take climate action – reinforced by duties of protection arising from fundamental rights under Art. 2(2) first sentence and Article 14(1) GG – would require the acceptance of considerable restrictions on freedom, which would hardly be deemed reasonable from today's perspective.

However, the precise extent of the emission possibilities that will still be available after 2030 while complying with the Paris target cannot be ascertained because the remaining budget cannot, for the purposes of constitutional law, be accurately quantified with an exact figure due to residual uncertainties and inherent evaluations (see para. 224 ff. above). If the remaining national budget were several gigatonnes larger than the amount calculated by the Advisory Council, then organising the transition to climate neutrality in a way that complies with Art. 20a GG and is compatible with fundamental rights would still be conceivable with the challenged provisions. However, it would have to be initiated in good time. Yet it is by no means certain that the remaining budget will be larger than what the Advisory Council has estimated. It could also be smaller (see para. 228 above). Under these circumstances, the legislator must take precautionary measures in order to manage the reduction burdens anticipated after 2030 in ways that respect fundamental rights – both on account of the general obligation to respect fundamental rights and on account of the obligation to minimise the risk of significant violations of fundamental rights (see para. 194 above).

(2) In practical terms, respecting future freedom requires that the transition to climate neutrality be initiated in good time. In all areas of life – production, services, infrastructure, administration, culture, consumption, basically all activities that are currently still CO₂-relevant – developments need to be set in motion to ensure that in the future, meaningful use can still be made of freedom protected by fundamental rights, but then based on CO₂-free alternatives. However, the state itself has neither the capacity nor the sole responsibility for providing all the technological and social developments to replace and avoid greenhouse gas-intensive processes and products, and for setting up the necessary infrastructure. Furthermore, the legislator would not realistically be capable of specifying all the required developments in statutory provisions. Constitutional law nevertheless obliges the legislator to create the underlying conditions and incentives that would allow these developments to occur (cf. BVerfGE 118, 79 <110 f.> on Art. 20a GG; [...]).

In this respect also, the legislator has a certain amount of design leeway. The Basic Law does not specify exactly what needs to be set out in order to create precondi-

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tions and incentives conducive to the development of climate-neutral alternatives. However, in order for such development to occur – development that would respect future freedom in advance – one fundamental prerequisite is that the legislator provides orientation, including for the post-2030 period, for the earliest possible initiation of the required development and implementation processes, and in doing so also conveys a sufficient degree of developmental urgency and planning certainty. The necessary developmental urgency arises when it becomes foreseeable that certain products, services, infrastructure, administrative bodies, cultural facilities, consumer habits and other structures that are still CO₂-relevant today will soon have to be significantly reshaped. If, for example, the legislator specifies at an early stage that the transport sector will only have small annual emission amounts at its disposal from a certain point in time, this may provide incentives and pressure for the development and adoption of alternative technologies and the related infrastructure. Early signs that CO₂-relevant mobility is becoming more expensive or scarce might lead to key decisions and developments with regard to career choice, employment location, work patterns and business processes being taken and implemented in good time so that less mobility would be required from the outset. Once the specified point in time had been reached, it would then be possible to reduce the transport sector's CO₂ budget without any significant curtailment of freedoms.

The potential innovation boost to be gained from specifying reduction targets at an early stage would not necessarily be rendered meaningless by the fact that the legislator can only set its targets for Germany and that Germany is too small to initiate and establish the necessary developments in internationally oriented markets. In terms of how societal evolution and individual living patterns can be guided by specific reduction targets, the national framework remains of paramount importance. But in the field of technological development too, where innovation is driven by economic interests, it is conceivable that binding national reduction pathways might have a noticeable impact. On the one hand, the German market is already generating strong demand itself. On the other hand, similar challenges also exist elsewhere – and in any case, national legal frameworks are introduced within an environment of European and international coordination and interaction.

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(3) In the Federal Climate Change Act, attention is drawn in this respect to § 4(1) fifth sentence in conjunction with § 4(6) first sentence KSG, in which the legislator has provided for the greenhouse gas reduction pathway to be updated. Pursuant to § 4(1) fifth sentence KSG, the annual reduction targets from 2031 onwards – i.e. after completion of the reduction pathway until 2030 specified in Annex 2 to § 4(1) third sentence KSG – will be updated by means of an ordinance pursuant to § 4(6) KSG. Pursuant to § 4(6) first sentence KSG, in 2025 the Federal Government must set annually decreasing emission amounts for periods after 2030 by means of an ordinance. In terms of regulatory technique, the legislator is linking up here with the specification of annual emission amounts pursuant to § 4(1) third sentence KSG in conjunction with Annex 2. It could also select other regulatory techniques in order to

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establish the necessary planning horizon. However, since the route to setting out the post-2030 reduction scenario is now directed via the authorisation to issue ordinances in § 4(6) KSG, this provision must be capable of enabling the creation of the development-promoting planning horizon required by fundamental rights.

In practical terms, this means that when updating the pathway pursuant to § 4(1) third sentence KSG in conjunction with Annex 2, transparent specifications indicating how the remaining emission possibilities and reduction requirements are to be structured after 2030 must be formulated at the earliest possible stage. Only this will provide the fundamental orientation necessary for the essential development and planning of corresponding technologies and practices (see also BTDrucks 19/14337, p. 17). To this end, the further reduction targets specified when updating the pathway pursuant to § 4(1) third sentence KSG in conjunction with Annex 2 must be structured in such a way that they are capable of providing the required orientation. This too is largely in the hands of the legislator.

However, it is imperative under constitutional law that further reduction targets beyond 2030 are specified in good time, extending sufficiently far into the future (of prime relevance here: Supreme Court of Ireland, Judgment of 31 July 2020, 205/19, no. 6.45 ff.; [...]). This is the only way to establish a planning horizon capable of generating incentives and pressure to initiate the necessary and in some cases lengthy developments on a large scale. These developments must begin soon in order to avoid future freedom being curtailed suddenly, radically and with no alternatives. It is understandable that when the Federal Climate Change Act was drafted, it was not readily possible to specify the reduction pathways beyond the year 2030 – such as to 2050, the year identified as the target for reaching climate neutrality (§ 1 third sentence KSG). Technical developments and behavioural shifts cannot be predicted with sufficient accuracy for that. In the most unfavourable scenario, development potential could even be squandered if development pathways were fixed prematurely. Instead, the pathways – which so far have only been specified until 2030 – must be continuously developed and adapted over time, in gradual stages and in a timely fashion. This must be done at least early enough to enable clear planning horizons to be established.

In addition, further annual emission amounts and reduction targets must be defined in such detail that sufficiently specific orientation is provided. Only this will lead to the necessary planning urgency, because only this will help to identify which products and activities in the broadest sense will soon need to be significantly reshaped. Once it becomes clearly discernible if, when and how the possibility of emitting greenhouse gases is going to end, there will be an increased likelihood of climate-neutral technologies and behaviours being rapidly established in line with this development path.

In all of this, the obligation to take climate action arising from Art. 20a GG remains decisive. Any specifications made for the future must align with a reduction pathway that leads to climate neutrality while staying within the remaining emission budget.

This requires that the allowed emission amounts – as set down by the legislator in § 3(3) second sentence and § 4(6) first sentence KSG – be steadily reduced. Otherwise, it would not be possible to achieve climate neutrality – which is a constitutional requirement – in time (cf. Art. 4(3) PA). This does not exclude the possibility of carrying amounts over to following years, as specified in particular in § 4(3) first sentence KSG, as long as emissions continue to decrease overall.

bb) The regulatory technique chosen in § 4(6) first sentence KSG of updating the reduction pathway by specifying annual emission amounts of decreasing size is basically suitable for providing orientation for further development going forward. The provision creates transparency as to where the relevant reduction pathway is to be found – namely in the ordinance to be issued specifically for this purpose in accordance with § 4(6) first sentence KSG. This clarity is essential. However, the specific updating process has not been sufficiently laid out in § 4(6) first sentence KSG. As a result, it does not meet the constitutional requirements for a structuring mechanism aimed at providing sufficient orientation for further development going forward. This applies irrespective of the fact that the legislator – in compliance with Art. 80(1) second sentence GG and the principle of the requirement of a statutory provision – must set down more detailed provisions on the size of the annual emission amounts if it continues to rely on the involvement of an executive authority for issuing ordinances (see para. 259 ff. below). 256

(1) [...] 257-258

(2) Insofar as the legislator wishes to continue relying on the involvement of an executive ordinance-issuing authority to update the specifications on the annual emission amounts for periods after 2030, it may do so in principle but – in compliance with Art. 80(1) GG and the principle of the requirement of a statutory provision – it must set out a legal framework on the size of the annual emission amounts itself. It may itself directly specify the annual emission amounts in gradual steps. Alternatively, it may also lay down essential criteria to be observed by the executive ordinance-issuing authority when calculating the annual amounts. § 4(6) KSG does not yet satisfy these constitutional requirements. 259

(a) [...] Where provisions that essentially affect the fundamental freedoms and equality rights of the persons concerned are to be issued, it is not impermissible per se to involve an executive ordinance-issuing authority in the regulatory task (cf. BVerfGE 147, 310 <311 f. para. 120>). However, the essential matters must then be clarified in formal parliamentary legislation – provided that no functional limits stand in the way of legislation – either directly by the legislator itself or via appropriately detailed legislative specifications on the content, purpose and scope of the authorisation to issue an ordinance. 260

(b) § 4(6) KSG has yet to satisfy this requirement. Insofar as the legislator continues to rely on the involvement of an executive ordinance-issuing authority in the further specification of annual emission amounts, the legislator must define the scope of the 261

authorisation in greater detail by at least determining itself the size of the annual emission amounts to be defined, or by setting out more detailed requirements for their definition by the executive ordinance-issuing authority.

(aa) [...] 262

(bb) [...] 263-264

(cc) The legislator's failure to enact a legal framework as required by Art. 80(1) second sentence GG cannot be compensated by the involvement of the *Bundestag* in the Federal Government's ordinances as provided for under § 4(6) third and fourth sentences KSG because this cannot make up for the lack of a legislative procedure and its legitimising effect ([...]). The mere involvement of the *Bundestag* does not do justice to the exceptional importance of the specification of annual emission amounts. Mere parliamentary involvement cannot replace a legislative process, the special public function of which provides a powerful reason for applying the principle of the requirement of a statutory provision ([...]).

D.

I.

Ultimately, § 3(1) second sentence and § 4(1) third sentence KSG in conjunction with Annex 2 are unconstitutional insofar as they lack provisions that satisfy the requirements of fundamental rights (see para. 251 ff. above) on the updating of reduction targets from 2031 until the point when climate neutrality is reached as required by Art. 20a GG. To this extent, the constitutional complaint in proceedings 1 BvR 2656/18 – insofar as it is admissible – and the constitutional complaints in proceedings 1 BvR 96/20 and 1 BvR 288/20 are successful, whereas the constitutional complaint in proceedings 1 BvR 78/20 is unfounded.

[...] 267-268

II.

[...] 269

E.

The decision is unanimous. 270

Harbarth

Paulus

Baer

Britz

Ott

Christ

Radtko

Härtel

**Bundesverfassungsgericht, Beschluss des Ersten Senats vom 24. März 2021 -
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18, 1 BvR 288/20, 1 BvR 96/20, 1 BvR 78/20 - Rn. (1 - 270),
http://www.bverfg.de/e/rs20210324_1bvr265618en.html

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