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CLIMATE CHANGE REGULATIONS: GLOBAL PRACTICE AND PERSPECTIVES

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ABBREVIATIONS

2014–2020 Plan	China's National Climate Change Plan for 2014–2020
2050 Plan	Climate Action Plan 2050 (*Klimaschutzplan 2050)*, Germany
AB 32	California Global Warming Solutions Act of 2006
Action Plan	A coherent policy for the climate — climate policy action plan (*En samlad politik för klimatet — klimatpolitisk handlingsplan*), Germany
Adaptation strategy	National Climate Resilience and Adaptation Strategy, Australia
BNDES	Brazilian National Development Bank
CalEPA	California Environmental Protection Agency
Carbon Plan	The Carbon Plan: Delivering our low carbon future of 2011
CBAM	Carbon border adjustment mechanism
CBIO	Biofuel decarbonization credits
CCC	Committee on Climate Change
CCUS	Carbon capture, utilization, and storage
CECC	Council of Experts on Climate Change, Germany
CES	Canadian Energy Strategy
CFI	Carbon Farming Initiative
CJEU, The Court	Court of Justice of the European Union
CLCPA	New York State Climate Leadership and Community Protection Act
Climate Change Act	Climate Change Act 2008
Climate Strategy, Strategy	Climate strategy for Sweden (*En klimatstrategi för Sverige)*

CO_2e	Carbon dioxide equivalent
COP	Conference of the Parties
CRA	Canada Revenue Agency
CSR	Corporate social responsibility
DEC	New York State Department of Environmental Conservation
Decree No. 9,578/2018	Decree No. 9,578/2018 of November 22, 2018, consolidating and regulating the normative provisions of Law No. 12,187 of December 29, 2009, establishing Brazilian national policy on climate change
DEHSt	German Emissions Trading Authority
ECCC	Environment and Climate Change Canada
EIA	Environment Impact Assessment
EPA	The United States Environmental Protection Agency
EPL	The Environmental Protection Law of the People's Republic of China
ERF	Emissions Reduction Fund
ESR	Effort Sharing Regulation
ETS	Emission Trading System
GGPPA	The Greenhouse Gas Pollution Pricing Act
GHG	Greenhouse gas
GLCC	General Law on Climate Change (*Ley General de Cambio Climático*), Mexico
Governance Regulation	Regulation 2018/1999 on the Governance of the Energy Union and Climate Action
IMCCC	Inter-Ministerial Commission on Climate Change, Mexico
Industry Plan	Sectoral Climate Change Mitigation Plan for the Consolidation of a Low Carbon Economy in the Manufacturing Industry (*Plano Setorial de Mitigação e*

	Adaptação à Mudança do Clima para a Consolidação de uma Economia de Baixa Emissão de Carbono na Indústria de Transformação), Brazil
INECC	National Institute on Ecology and Climate Change *(Instituto Nacional de Ecología y Cambio Climático*), Mexico
IPCC	Intergovernmental Panel on Climate Change
Kyoto Protocol	The Kyoto Protocol to the United Nations Framework Convention on Climate Change, adopted on 11 December 1997
Law No. 12,187/2009	Law No. 12,187 of December 29, 2009 (*Lei Nº 12.187, de 29 de Dezembro de 2009*) establishing Brazilian national policy on climate change
LRET	Large-Scale Renewable Energy Target
LULUCF	Land Use, Land-Use Change, and Forestry Regulation
MBRE	Brazilian Emissions Reduction Market (*Mercado Brasileiro de Redução de Emissões*)
MEE	China's Ministry of Ecology and Environment
MS	European Union Member State
MVR	Measurement, reporting, and verification
NAP	The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting: Making the country resilient to a changing climate of 2018
NDC	Nationally Determined Contribution
NECPs	Integrated national energy and climate plans
NGER	National Greenhouse and Energy Reporting, Australia
NPCC	National Policy on Climate Change (*Política Nacional de Mudanças Climáticas*), Brazil
NSCC	National Strategy on Climate Change (*Estrategia Nacional de Cambio Climático*), Mexico
OBPS	Canadian Output-Based Pricing System

PCF	Pan-Canadian Framework on Clean Growth and Climate Change: Canada's plan to address climate change and grow the economy
PDE	Ten-Year Energy Expansion Plan (*Plano Decenal de Expansão de Energia 2030*), Brazil
PECC	Special Program on Climate Change (*Programa Especial de Cambio Climático*), Mexico
Plano ABC	Sectoral Plan for Mitigation and Adaptation to Climate Change for the Consolidation of a Low Carbon Economy in Agriculture (*Agricultura de Baixa Emissão de Carbono*), Brazil
PPCDAm	Action Plan for Prevention and Control of Deforestation in the Legal Amazon (*Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia*), Brazil
PPCerrado	Action Plan for Prevention and Control of Deforestation and Burning in the Cerrado (*Plano de Ação para prevenção e controle do desmatamento e das queimadas no Cerrado*), Brazil
Program	China's National Climate Change Program
RET	Renewable Energy Target Scheme, Australia
SDGs	Sustainable Development Goals
SEMARNAT	Ministry of Environment (Secretariat of Environment and Natural Resources — *Secretaría de Medio Ambiente y Recursos Naturales*), Mexico
SEPA	Swedish Environmental Protection Agency
SIRENE	National Emissions Registry System (*Sistema de Registro Nacional de Emissões*), Brazil
SRES	Small-Scale Renewable Energy Scheme
Ten Point Plan	Ten Point Plan for a green industrial revolution of 2020
The 2020 Plan	A Healthy Environment and a Healthy Economy
UNFCCC	The United Nations Framework Convention on Climate Change, adopted on May 9, 1992

INTRODUCTION

The international community and countries individually have developed and continue to expand climate change law. The ongoing expansion of climate regulations directly affects a number of global industries and creates a challenge for Russia as one of the largest emitters of greenhouse gases. In this light, the purpose of this study is to identify trends in the legal regulation of climate change and the potential risks caused by such changes. The results of the research can be used in developing national regimes of combating and adapting to climate change, strategies for improving the competitiveness of the Russian economy, corporate ESG strategies.

The study provides an overview of legal rules and instruments that determine: 1) the international climate change law; measures taken at the international level to regulate greenhouse gas emissions, to adapt to climate change; 2) national climate strategies and legislation, as well as application of national climate standards, incentive measures, and liability for their violation; 3) measures to combat climate change adopted by the global businesses.

Therefore, the study analyzes the international legal regime of climate change and the practice of ten particular jurisdictions, selected in order to comprehensively address the topic:

- in terms of the share of Russian exports: the European Union, which accounts for the most of the total trade turnover;
- the largest greenhouse gas emitters: China, the USA, the EU;
- countries of a comparable level of economic development with Russia: Brazil, Mexico;
- countries with developed climate change law: Australia, the EU (in particular, Sweden, Germany, where emission trading system exists/is expected);
- countries with case law on climate change: Brazil, Canada, the EU, Mexico, the UK.

The study also observes corporate climate strategies of twenty prominent representatives of the most carbon-intensive industries: oil&gas, energy, transportation, and steel (BP, Shell, Enel, E.ON, Delta Airlines, Lufthansa, ArcelorMittal, Thyssenkrupp Group, etc.).

Although the United Nations Framework Convention on Climate Change was the first comprehensive international tool, the Paris Agreement of 2015 plays currently a key role in combatting climate change. The Agreement has 191 parties (including the Russian Federation, the United States, China) and sets a common goal — to hold the increase in the global average temperature below 2°C and pursue efforts to limit the temperature increase to 1.5°C. It also covers mitigation, adaptation, finance, technology development and transfer, transparency of actions in relation to climate change.

2030 and 2050 are set as main control points to evaluate the effectiveness of national measures under Nationally Determined Contributions. If the set goals are not achieved, more stringent measures are quite likely to be introduced.

Information in the research is relevant as of April 2021.

CONCLUSIONS

1. **The main trend** of the climate change law is the aspiration to reach "carbon neutrality" — a state of balance between anthropogenic emission of greenhouse gases and their absorption. At the same time, **international regulation only sets a general goal: specific measures are determined at the national levels and depend on the political will of states**.

2. **Emissions trading systems are recognized as the most effective instruments** to implement climate strategies on the national level (the EU, the UK, Mexico, California, New York, Canada). The proceeds from emissions trading systems are used, in particular, to finance "green" projects. Carbon and energy taxes are also applied. Australia's abandonment of the national emission trading system and decision to finance projects that reduce carbon emissions with minimal input is unpopular and criticized for its low efficiency.

3. **The trend towards a reduction of emissions** due to shifting to renewables, increasing energy efficiency becomes comprehensive: incentive measures for companies and individuals are taken in the form of financial, tax incentives, support for public transport and the transition to electric transport, public investment, including into sustainable housing and urban development.

4. Each of the jurisdictions reviewed imposes **environmental and climate obligations on organizations**. Under the 'polluter pays' principle, private parties, among other measures, pay for greenhouse gas emissions and report their rates of emissions; the environmental performance of those projects that may potentially influence climate change is regularly assessed. Various **measures of legal liability** are provided for violations, including fines and imprisonment. In China, 'whistle-blowers' are rewarded for reporting violations of climate or environmental laws.

5. Currently, there are **almost no requirements for importers** to comply with national / European climate standards (the exception is China). However, at the EU level, there is a **high probability of new stringent requirements with the introduction of a "carbon tax"** on imports in order to combat the transfer of production to countries with softer climate restrictions.

6. The decision on the introduction of the carbon tax and its specific mechanism is expected in June 2021. After that, it will be possible to assess its impact on the market. However, a few forecasts are already made that Russian exporters may lose EUR 3-50 billion per year from the introduction of the carbon tax. The tax is most likely to be adopted in the form of a carbon border charge, however, there are versions about extending the EU Emission Trading System to importers. In any case, the essence of the mechanism lies in an **additional payment that compensates for the tariff differences for carbon emissions in the EU and the exporting state**.

7. **Litigation of climate change issues** differs in themes and parties, but certain trends in this area can be noted. Plaintiffs **base their claims on fundamental human rights** (right to life and to a healthy environment), arguing that the government has not established or met adequate emission reduction targets (the EU, Mexico, Canada, Brazil). **Class actions on behalf of young people**, with a focus on the rights of the younger generation, are also filed. In addition, misleading information from fossil fuel companies (the UK) may be subject to litigation. Existing case law indirectly testifies **expansion of the legal influence instruments**, that may be used in relation to state and corporate climate strategies.

8. **Neither international nor national regimes of the jurisdictions reviewed establish mandatory climate requirements for corporate strategies**. At the same time, **climate issues are the most significant component of the ESG agenda**, as part of which governments and investors are paying increasingly more attention to the companies' involvement in solving global problems: incorporation of **environmental**, social, and governance factors into business. There is a **positive correlation** between the

ESG-rating of the issuer and the yield on its securities. In this regard, companies develop such strategies to improve their competitiveness more and more often.

EXECUTIVE SUMMARY

9. The United Nations General Assembly recognized that climate change[1] is a common concern of mankind in 1988. Since then States reached several milestone international agreements and channeled their efforts to adapt to and mitigate the effects of climate change on the regional and national levels.

10. The United Nations Framework Convention on Climate Change of 1992 is the very first comprehensive source of international law on climate change (**paras. 63-78 of the Analytical Report**).

11. For now, the major treaty determining the combatting climate change on the international level is **the Paris Agreement** adopted in 2015. As of March 2021, it has 191 parties, including the world's largest GHG emitters (the USA, China, the EU, Russia, etc.). The Paris Agreement sets a universal temperature goal — "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" (**paras. 98-100 of the Analytical Report**). It contains obligations for all parties taking into account different national circumstances and covers, *inter alia*, mitigation, adaptation, finance, technology development and transfer, transparency of actions in relation to climate change (**paras. 101-104 of the Analytical Report**).

12. Parties to the Paris Agreement are required to submit at least every five years Nationally Determined Contributions outlining their efforts to reduce GHG and adapt to the impacts of climate change (**paras. 105-110 of the Analytical Report**). However, there are no established requirements and rules for preparing NDCs, and the issue of effective burden sharing among States remains unresolved. In addition, States delay communications of their NDCs, which also affects long-term national strategies to combat climate change. All jurisdictions reviewed in the Analytical Note have submitted or even had a chance to update their NDCs. International commitments differ in terms of ambition and willingness to contribute efforts to deal with the climate change problem. 2030 and 2050 are milestone years for assessing the effectiveness of NDCs.

13. Despite the existing international mechanism on adapting to climate change, the fate of the climate regulation mechanism is not clear: a substantial part of the common effort depends on the climate policies adopted by the states (**paras. 111-116 of the Analytical Report**).

National Climate Policies

14. Noteworthy, national climate strategies of reviewed States are either largely driven by international commitments or duly consider those. Nevertheless, on the national level, some of the reviewed States set more detailed, gradual, and sometimes **more ambitious targets than set in their NDSc**.

15. For instance, in its national legislation, Brazil sets up a voluntary target to reduce GHG emissions by 36.1–38.9% by 2020 compared to 2005 levels (**paras. 576-577 of the Analytical Report**), while in its NDC Brazil commits for 43% reduction by 2030 (**para. 593 of the Analytical Report**).

16. Sweden sets up a system of gradual GHG emission reduction targets and aims to consequently reach zero-net GHG emission level: by 2040 — at least 75% reduction, by 2040 — at least 85% reduction and consequently reach net-zero GHG emission level (**paras. 305–309 of the Analytical Report**). Likewise, Germany commits to become climate neutral by 2050 (**paras. 258–260 of the Analytical Report**).

[1] This Analytical Note deals with the issues of climate change and does not concern an interconnecting and broader topic of ESG. Eventhough climate change may be observed as a substantial part of the ESG agenda, the latter should be the subject of a separate study.

Noteworthy, the European Union (including Germany and Sweden which do not submit separate NDCs) commits to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels (**paras. 147, 269, 320 of the Analytical Report**).

17. Subject to financial and technological support for developing countries, Mexico included, Mexico sets (1) a conditional goal to reduce GHG emissions by 50% compared to 2000 baseline by 2050 – in case of performance of such support; (2) an unconditional goal to reduce its GHG emissions by 22% and its black carbon emissions by 51% compared to 2000 baseline (**para. 644 of the Analytical Report**).

18. In the United States, California and New York set up a system of gradual GHG emission reduction targets, and both aim to achieve carbon neutrality (California — by 2045, if not earlier) (**paras. 426–428, 485–488 of the Analytical Report**).

19. National climate strategies are typically envisaged in legislative acts, action plans, or both:

- Brazil, Sweden, Mexico, Germany, the United Kingdom, California, and New York have framework legislative acts devoted specifically to climate issues (**paras. 572–577, 298–302, 634–642, 250–255, 201–208, 420–428, 483–489 of the Analytical Report**);

- Canada's framework climate change document is presented in a form of a plan (**paras. 347–353 of the Analytical Report**);

- the European Union climate law is in its final stages of the legislative process (**paras. 124–130 of the Analytical Report**);

- the Chinese climate act has been under development since 2009 (**paras. 693–694 of the Analytical Report**).

20. There is no specific climate act or a project thereof in Australia, as apparently, the current government does not seem to view comprehensive law on climate change as one of Australia's priorities (**paras. 515–522 of the Analytical Report**).

21. In addition, climate-related acts are often built in the general environmental policies of a State, supplemented or developed by other legislative or regulatory acts, or are interconnected with other documents.

National Sectoral Targets

22. National climate policy or program documents often set **sector-specific targets and measures**. States concentrate their efforts to reduce GHG emissions and develop sustainable approaches in the following sectors of the economy: electricity, industry, transportation, built environment, agriculture (and waste), forestry. Whether an action program in a sector is well-elaborated and detailed depends, *inter alia*, on whether a sector appears to be more problematic, for instance, in terms of accounting for the largest number of GHG emissions, or more promising, for instance, in terms of its potential to absorb and store CO_2, or availability of sustainable technologies or suitable conditions to effectively reduce GHG emissions.

23. In the **transportation sector**, the majority of States (Sweden, Germany, Mexico, Canada, the UK) together with the EU and California consider the use of climate-smart / zero-waste / electric vehicles as an efficient tool to mitigate the effects of climate change:

- in the EU it is proposed to place focus on alternative fuels and technologies (**para. 145 of the Analytical Report**);

- Canada and California encourage more widespread use of electric and hybrid vehicles by way of providing financial or tax incentives, including, in Canada's case, in infrastructure (**paras. 363–367 of the Analytical Report**).

- Germany is taking measures to support public transport, rail transport, as well as cycling to achieve almost GHG-neutral transport (**para. 264 of the Analytical Report**).

- California's measures to reduce vehicle miles traveled overlap with its land-use planning efforts (**paras. 436–442 of the Analytical Report**).

24. In the **electricity sector**, Brazil, Australia, Germany, China, Canada, the EU, New York, and California set goals regarding the increased use of renewable energy (**paras. 587, 526, 262, 758, 356–358, 139–140, 492–495, 432–435 of the Analytical Report**). California gradually phases out natural gas, which is facing unsuccessful attempts by the natural gas industry to challenge these measures in court (**para. 480 of the Analytical Report**). In this light, Mexico's call to expand oil exploration and exploitation, as envisaged in the energy sector plan, has been widely criticized (**para. 651 of the Analytical Report**). In Australia, the Renewable Energy Target scheme was established, under which liable entities such as electricity retailers and large industrial users must purchase a specified percentage of their electricity from renewable sources each year (**para. 558 of the Analytical Report**).

25. The **building sector** is often affiliated with the energy one in terms of mitigation of the effects of climate change. For instance, Canada plans to invest in the modernization of Canadian households, public, municipal, large commercial buildings. The National Housing Co-Investment Fund of Canada also supports the construction of modern low-carbon housing with affordable loans (**paras. 359–362 of the Analytical Report**).

Emission Trading Systems

26. **Emission pricing or trading systems** have shown to be one of the key and most efficient tools to implement climate strategies. Emission trading systems are introduced in the EU, Sweden, Germany (expected in 2021), the UK, California, New York, Mexico (**paras. 161–176, 329–333, 278–280, 234–237, 460–465, 504, 671–677 of the Analytical Report**). These ETSs operate on a cap-and-trade basis, meaning that a State sets an overall cap (permissible quantity) on GHG emissions and provides for mechanisms of allocation of allowances that normally equal to 1 tonne of CO_2 equivalent.

27. Allowances are either distributed and/or auctioned. In a number of countries (the UK, Sweden), enterprises can sell and otherwise transfer the rights to the received allowances (**paras. 237, 333 of the Analytical Report**).

28. The EU ETS was launched in 2005 and **became the first largest system of its kind**. Participants in the ETS include power stations, oil refineries, offshore platforms, and industries that produce iron, steel and aluminum, cement and lime, pulp, paper and cardboard, glass, ceramics, and chemicals. According to the EU ETS, if a company emits more GHG than covered by its allowances, it buys additional allowances or pays a fine (**paras. 161-165 of the Analytical Report**).

29. The **ETSs have proven their efficiency** when it comes to controlling the level of GHG emissions, gradually lowering the limit of emissions and allocating revenues to climate-friendly projects. The proceeds from emissions trading systems are used, in particular, to finance climate projects and initiatives. For example, in 2020-2030 the EU expects to receive EUR 10 billion from allowance distribution and plans to use revenue to fund "green" projects (**para. 179 of the Analytical Report**).

30. Canada has a federal carbon polluting pricing system. The pricing standards are divided into two parts: a regulatory charge on fuel and the regulatory trading system for industry (output-based pricing system) that bears similarities to an ETS (**paras. 398–401 of the Analytical Report**).

31. China's ETS is currently focused on electricity generation only and operates via the distribution of quotas for GHG emissions (**paras. 733–737 of the Analytical Report**).

32. Australia's carbon pricing scheme that had operated on a cap-and-trade basis was replaced by a scheme under which the government pays for projects that will reduce CO_2 emissions at a minimal cost. This transition was criticized for inefficiency and absence of genuine concern for challenges posed by climate change (**paras. 542–557 of the Analytical Report**).

33. Other measures, such as carbon and energy taxes, are employed by the reviewed States (**paras. 150, 281–282, 334, 667–670, 740 of the Analytical Report**). **Incentives** to encourage sustainability are also adopted (**paras. 281–283, 336, 503, 558, 615–618, 667–670, 738–739 of the Analytical Report**). For instance, California has created some tax incentives for activities that produce climate benefits, i.e. exceptions from sales taxes for some products associated with renewable energy use (**paras. 466–467 of the Analytical Report**). The EU is actively investing in low carbon technologies, carbon capture and utilization, construction and operation of carbon capture and storage, innovative renewable energy and energy storage via the Innovation Fund of the EU funded, in particular, by revenues from the EU ETS (**paras. 177–179 of the Analytical Report**).

Restrictions on Importers

34. Among the reviewed States, only the Chinese Government strictly obliges importers (suppliers) of foreign goods/services to comply with national climate standards (**para. 724 of the Analytical Report**). In the rest of the jurisdictions at issue, only residents of a certain country are subjected to its national climate regulations.

35. The extra-territorial application of climate regulations and standards is of special interest to the EU in its attempts to combat the carbon leakage effect, i.e. transfer of production to other countries with more lenient GHG emission constraints. Although now the EU does not require importers to comply with the EU-wide climate standards, with the future adoption of the European Climate Law and undergoing review of the ETS Directive, among other measures, this situation may change. In addition, the EU is considering imposing **carbon border adjustment mechanism** on imports from non-EU countries (**para. 192 of the Analytical Report**). On July 23, 2020, the European Commission launched public consultations on two initiatives that would improve the EU capacity to use carbon taxes to control imports from non-EU countries: a proposed revision of the Energy Tax Directive and the creation of a carbon border adjustment mechanism. The European Commission makes it clear that a carbon border adjustment mechanism is viewed as a last resort if the global effort on climate action continues to be dissimilar.

Obligations of Private Parties

36. Each of the reviewed States vests certain climate-related obligations on private parties on the domestic level (**paras. 157–160, 231–233, 276–277, 327–328, 388–392, 455–459, 501–502, 538–541, 599–606, 664–666, 727–731 of the Analytical Report**). Apart from the obligation to pay for GHG emissions in the realization of the "polluter pays" principle, private parties should also submit information on their GHG emissions to competent authorities.

37. In Canada, the requirement to disclose such information applies to public companies (**para. 390 of the Analytical Report**). In the UK, the Secretary of State may compel CEOs to disclose internal information

pertaining to GHG emissions or issue regulations compelling the information to be included in formal directors' reports (**para. 231 of the Analytical Report**).

38. In addition, there are legal requirements to conduct environmental impact assessments of projects that may have an adverse impact on the environment and touch upon climate-related issues.

39. In case of breach of climate laws and regulations, different negative consequences, including sanctions and penalties, can follow (**paras. 180–183, 241, 284, 337–338, 402, 468–472, 505–506, 559–560, 619–625, 678–680, 740–743 of the Analytical Report**).

40. China has specific provisions regarding complaints to competent authorities about instances of environmental pollution and activities causing ecological damage carried out by any enterprises and individuals. If the reported information is verified, the informer receives a reward (**para. 732 of the Analytical Report**).

Litigation

41. Climate issues are litigated in all reviewed States. Although cases involving climate change issues vary in terms of subject matter and parties, a few trends appear to be forming.

42. At least in the EU, Mexico, and Canada claimants rely on their fundamental human rights (such as the right to life or a healthy environment) to argue the alleged failure of a respective government to either set proper GHG emission reduction targets or to comply with them (**paras. 185–189, 683–685, 404–406 of the Analytical Report**).

43. Claimants tend to file class actions on behalf of young people and rely on the rights of the younger generation (**paras. 289, 405, 564, 684 of the Analytical Report**).

44. In the UK there are challenges concerning alleged misleading advertising by fossil fuel companies (**paras. 242–245 of the Analytical Report**).

Corporate Climate Strategies

45. In neither of the reviewed countries there exists an obligation vested on private parties to elaborate climate strategies. Meanwhile, in China companies are expected to introduce environmental strategies into their corporate strategies (**para. 731 of the Analytical Report**).

46. In order to assess general trends in corporate climate strategies, this Analytical Report also observes corporate climate strategies of twenty prominent representatives of the most carbon-intensive industries: oil&gas, energy, transportation, and steel.

47. There is a general trend across all sectors towards a sustainable business. Trends in direct GHG emissions reduction and energy efficiency are common. Switching to renewable energy sources, CCUS, improving energy efficiency are the most frequently mentioned tools for achieving emission reduction targets.

48. The most common measures among the companies under consideration are:

- oil&gas: reduction of direct emissions from operations, CCUS; with the growing importance of energy transitions (switching to renewable sources) (**paras. 784-787 of the Analytical Report**);

- power: growing reliance on renewables sources of electricity (**paras. 798-805 of the Analytical Report**);

- transportation: energy efficiency (low-emission fleet, fuel efficiency) (**paras. 812-814 of the Analytical Report**);

- steel: CCUS, hydrogen steel making (**paras. 824-827 of the Analytical Report**).

49. Although almost no company in its climate strategy refers to the Paris Agreement or national commitments, corporate declarations and climate policies still indicate that companies formulate their GHG emissions targets with due regard to the Paris Agreement and, in some cases, NDCs. In addition, the target years chosen by some companies tend to be very close to the generally accepted control points (2030 and 2050). The steel sector companies more readily point out that their strategies follow the national climate goals of the respective countries, while companies from other sectors mostly invoke the necessity to limit the temperature increase — an aim that echoes the targets of the Paris Agreement.

50. The majority of the companies choose to undertake climate-related commitments as part of their corporate social responsibility policy, which is driven by humanitarian purposes, reporting obligations owed to shareholders and investors, and consumers' needs and demands for "green" products and services (especially in the power sector) (**paras. 782, 794–795, 811, 820 of the Analytical Report**).

51. Companies of the oil&gas sector tend to be cautious about setting specific GHG reduction targets (**paras. 766–774 of the Analytical Report**). Nevertheless, ambitious zero-emission by 2050 targets are set by BP and Shell (**para. 781 of the Analytical Report**).

52. In the power sector, it is common to set quantitative mid- and long-term emission reduction targets (**paras. 788–793 of the Analytical Report**). In particular, Enel is determined to achieve full decarbonization, while EDF, E.ON, and Iberdrola are aimed at carbon neutrality, all by 2050 (**para. 790 of the Analytical Report**).

53. In the transportation sector, Maersk and Deutsche Post aim to reduce their emissions to net-zero (**para. 809 of the Analytical Report**). Despite the absence of technologies allowing aviation and shipping companies to substitute their fleet with zero-emission airplanes and vessels, Delta Airlines and Lufthansa plan to have a reduction in net aviation CO2 emissions of 50% by 2050 compared to 2005 levels (**para. 808 of the Analytical Report**). At the same time, companies from the transportation sector note a common obstacle in setting climate targets: there are currently no technologies that allow aviation and shipping companies to promptly replace their fleets with aircraft and ships with zero emissions.

54. The steel sector companies set different short-term goals, but at the same time aim to become carbon neutral by 2050 (**paras. 815–819 of the Analytical Report**).

55. Renewables, carbon capture, utilization, and storage, energy efficiency improvements are the most commonly cited tools for achieving emission reduction targets; green financing becomes an increasingly important and frequently used tool to implement "green transition" initiatives (**paras. 784–787, 798–805, 812–814, 824–827 of the Analytical Report**).

I. INTERNATIONAL LAW

Executive Summary

56. The United Nations created an international legal regime to combat climate change. It is based on the UNFCCC, decisions by the Conference of the Parties, and the protocols adopted.

57. The ultimate objective as declared by the UNFCCC is to protect the atmosphere from the excessive anthropogenic impact caused by greenhouse gas emissions. According to the principle of common but differentiated responsibility, the UNFCCC establishes different obligations for specific groups of States.

58. The UNFCCC contains neither obligation to attain precise results nor a respective strict time frame. It creates the institutional framework for the legal regime of climate regime, a platform for further negotiations.

59. The Kyoto Protocol to the UNFCCC, adopted in 1997 by the COP, introduced specific international obligations. It prescribed emission limits for developed countries, had a system of enforcement and market-based regulations to achieve its goals. The Kyoto Protocol had a commitment period from 2008 to 2012. The second commitment period from 2012 to 2020 was established by the 2012 Doha Amendment which entered into force as late as December 31, 2020, thus urging the COP to search for an alternative approach to interest more States in new international legal instruments in the climate change sphere.

60. In 2015 as a result of these efforts, the Paris Agreement was concluded. Along with several binding provisions, the Paris Agreement offers State parties substantial autonomy to determine their contribution to the achievement of the overall goal.

61. Despite the conclusion of the Paris Agreement, the fate of this mechanism is not clear. States are delaying to submit Nationally Determined Contributions within a five-year period while previously submitted NDCs would not allow achieving the temperature goals set forth by the Paris Agreement.

62. The Assessment Report of the Intergovernmental Panel on Climate Change in 2022 and the first global stocktake by the COP are likely to shape the further development of international law on climate change.

1. The United Nations Climate Change Regime

1.1. The UNFCCC

a. Adoption and Scope of Regulation

63. Concerns about the negative impact of climate change began to emerge in the second half of the 20th century.[2] The UN General Assembly recognized that climate change is a common concern of mankind in 1988.[3] The report of the newly formed[4] IPCC in 1990 scientifically confirmed the need for cooperation between States on the issue of climate change[5] and urged them to act.[6]

64. The same year, the UN General Assembly established an Intergovernmental Negotiating Committee to prepare a framework convention on climate change.[7] In five sessions[8] the Committee developed and adopted the UNFCCC text,[9] calling upon States to sign it[10] during the UN Conference on

[2] See *Weart S.* The discovery of Global Warming. London: Harvard University Press, 2008.

[3] General Assembly UN. Protection of global climate for present and future generations of mankind 43/53. URL: https://undocs.org/en/A/RES/43/53 (the date of access: March 22, 2021).

[4] World Meteorological Organization. Thirty-Ninth Session of the Executive Council 1987. P. 7. URL https://library.wmo.int/doc_num.php?explnum_id=6067 (the date of access: March 22, 2021); About the Intergovernmental Panel on Climate Change see: *Ghaleigh N.* Science and Climate Change Law – The Role of the IPCC in International Decision-Making // The Oxford Handbook of International Climate Change Law / ed. by. K. Gray, R. Tarasofsky, C. Carlarne New York: Oxford University Press, 2016. P. 55-71.

[5] Intergovernmental Panel on Climate Change First Assessment report. 1990. URL: https://www.ipcc.ch/reports/?rp=ar1 (the date of access: March 22, 2021); *Mayer B.* The International Law on Climate Change. Cambridge: Cambridge University Press, 2018. P. 35.

[6] *Louka E.* International environmental law. Cambridge: Cambridge University Press, 2006. P. 357-358; Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the work of its 1st session, held at Washington, D.C., from 4 to 14 February 1991. P. 12-13. URL: https://digitallibrary.un.org/record/196808 (the date of access: March 22, 2021).

[7] General Assembly UN. Protection of global climate for present and future generations of mankind 45/212. URL: https://undocs.org/en/A/RES/45/212 (the date of access: March 22, 2021).

[8] Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the work of its 1st–5th sessions. URL: https://digitallibrary.un.org/record/196808 (the date of access: March 22, 2021); https://digitallibrary.un.org/record/126763 (the date of access: March 22, 2021); https://digitallibrary.un.org/record/131895 (the date of access: March 22, 2021); https://digitallibrary.un.org/record/138838 (the date of access: March 22, 2021); https://digitallibrary.un.org/record/161260 (the date of access: March 22, 2021).

[9] United Nations Framework Convention on Climate Change. New York, 9 May 1992. 1771 UNTS 107. URL: https://unfccc.int/resource/docs/convkp/conveng.pdf (the date of access: March 22, 2021).

[10] Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the work of the 2nd part of its 5th session. Annex II. URL: https://digitallibrary.un.org/record/151412 (the date of access: March 22, 2021).

Environment and Development in Rio de Janeiro.[11] The UNFCCC, a binding treaty,[12] entered into force on March 21, 1994,[13] and today it has 197 parties.[14]

65. The UNFCCC not only legally recognized the existence of climate change caused by ongoing anthropogenic interference[15] and its adverse effects[16] for the first time but also created a platform for further discussion of climate change, including the development of additional instruments.[17]

66. The UNFCCC contains provisions on anthropogenic GHG emissions outside the scope of the Montreal Protocol,[18] procedures for adaptation to climate change, assistance, and cooperation.

67. The ultimate objective of the UNFCCC is to "to achieve <...> stabilization of [GHG] concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[19] The UNFCCC does not specify distinct steps and the timeline to achieve this goal and, therefore, lacks criteria to test its implementation.[20] The UNFCCC objective is thus considered declarative and not creating a specific legal obligation.[21] Therefore, all work within the UNFCCC regime is aimed at elaborating obligations arising from this goal.

b. Obligations

68. The UNFCCC divides States into four groups:

- States listed in Annex I to the UNFCCC, that have taken on special commitments to limit emissions;

- States listed in Annex I to the UNFCCC, but not included in Annex II to the UNFCCC (countries that are undergoing the process of transition to a market economy);

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[11] Also known as the Earth Summit. *Bodansky D.* The Art and Craft of International Environmental Law. Cambridge: Harvard University Press, 2010. P. 31.

[12] *Redgwell C.* Sources of International Environmental Law: Formality and Informality in the Dynamic Evolution of International Environmental Law Norms // The Oxford Handbook of the Sources of International Law / ed. by S. Besson S., J. d'Aspremont. Oxford: Oxford University Press. P. 944-945.

[13] UNFCCC, Article 23.

[14] UN Treaty Collection. 196 States and European Union. Full list. URL: https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=IND&mtdsg_no=XXVII-7&chapter=27&Temp=mtdsg3&clang=_en#1 (the date of access: March 22, 2021).

[15] *Sands P, Jacqueline P. et al.* Principles of International Environmental Law. New York: Cambridge University Press, 2012. P. 277.

[16] UNFCCC, Articles 1-2.

[17] *Louka E.* International environmental law. P. 361.

[18] The Montreal Protocol on Substances that Deplete the Ozone Layer. Montreal, September 16, 1987. URL: https://www.un.org/en/documents/decl_conv/conventions/montreal_prot.shtml (the date of access: March 22, 2021); 198 Parties, URL: https://ozone.unep.org/all-ratifications (the date of access: March 22, 2021).

[19] UNFCCC, Article 2.

[20] *Bodansky D.* The Art and Craft of International Environmental Law. P. 254.

[21] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. New York: Oxford University Press, 2017. P. 126; *Kiss A., Shelton D.* Guide to International Environmental Law. Leiden: Koninklijke Brill NV, 2007. P. 172-173.

- States that are not listed in Annex I to the UNFCCC (developing countries);[22]

- developed States listed in Annex II to the UNFCCC (member states of the Organisation for Economic Co-operation and Development that committed to helping developing countries).

69. This distinction manifests the principle of common but differentiated responsibility,[23] one of the unique features of the UNFCCC.[24] Differentiation of the countries has remained practically unchanged since the UNFCCC hasty adoption, despite significant changes in the global economy that occurred since.[25]

70. Despite the general nature of its provisions,[26] the UNFCCC obliges all State parties to:

- develop "national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol";[27]

- "formulate, implement, publish and regularly update national and regional programmes containing measures to mitigate climate change";[28]

- promote technology transfer;[29]

- promote the development of GHG sinks;[30]

- communicate to the COP information related to the implementation of the UNFCCC.[31]

71. The remaining obligations are divided between States included in Annex I to the UNFCCC and developed countries.

72. States included in Annex I to the UNFCCC are required to adopt and periodically communicate to the COP national policies and measures taken to mitigate the effects of climate change.[32] States should aim to return to 1990 levels of anthropogenic emissions of GHGs.[33] This provision is not an obligation result,

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[22] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 28.

[23] UNFCCC, Article 3(1).

[24] *Brunnée J., Streck C.* The UNFCCC as a Negotiation Forum: Towards Common but More Differentiated Responsibilities // Climate Policy. Vol.13. 2013. No.5. P. 589–607.

[25] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 122-123.

[26] *Freestone D.* The United Nations Framework Convention on Climate Change — The Basis for the Climate Change Regime // The Oxford Handbook of International Climate Change Law / ed. by. K. Gray, R. Tarasofsky, C. Carlarne New York: Oxford University Press, 2016. P. 103.

[27] UNFCCC, Article 4 (1) (a) of the UNFCCC; *Barrett S., Carraro C., de Melo J.* Towards a Workable and Effective Climate Regime. London: CEPR Press, 2015. P. 158.

[28] UNFCCC, Article 4 (1) (b).

[29] Ibid., Article 4 (1) (c).

[30] Ibid., Article 4 (1) (d).

[31] Ibid., Article 4 (1) (j).

[32] Ibid., Article 4 (2) (a, b, d).

[33] Ibid., Article 4 (2) (b).

since there is no time frame when such an emission level should be achieved.[34] Moreover, countries that are undergoing the process of transition to a market economy are provided with "a certain degree of flexibility" to implement such obligations.[35]

73. Developed States are required to provide financial resources to meet the agreed full costs incurred by developing States[36] while communicating information[37] to the COP. The rest of the obligations, including the one of financing the implementation of the mitigation measures, are not as self-sufficient and depend on additional agreements between States, which is why their legal character is not ascertained.[38]

c. COP and the Significance of Its Decisions

74. The COP, established by the UNFCCC as its supreme body, controls the implementation of the UNFCCC and is mandated with decision-making competence.[39] The COP is also entitled to the right to adopt protocols to the UNFCCC.[40] The COP has been held annually[41] since 1995.

75. Decisions of the COP, except for ones on procedural issues, are not binding.[42] For instance, decisions on prescribing methodologies for an inventory of anthropogenic emissions by sources and removals by sinks of all GHGs are obligatory.[43]

76. In any case, the COP's decisions are crucial to the implementation and interpretation of the UNFCCC provisions, and States generally seek to execute them[44].

77. At the third COP, the Kyoto Protocol was adopted (**paras. 79-87 of the Analytical Report**). Then COP set a new course to regulate climate change in Bali (**para. 89 of the Analytical Report**) and Copenhagen (**para. 90 of the Analytical Report**) after the advancement of the Kyoto Protocol. The twenty-first COP is most relevant today since it adopted the Paris Agreement (**paras. 98-110 of the Analytical Report**).

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[34] Decision 1/CP.1. Report of the COP on its First Session. UN Doc FCCC/CP/1995/7/Add.1. URL: https://unfccc.int/resource/docs/cop1/07a01.pdf (the date of access: March 22, 2021); *Birnie P., Boyle A., Redgwell C.* International Law and the Environment. New York: Oxford University Press, 2009. P. 360.

[35] UNFCCC, Article 4 (6).

[36] Ibid., Article 4 (3).

[37] As required from all parties by Article 12 of the UNFCCC.

[38] UNFCCC, Article 4 (3).

[39] Ibid., Article 7 (2).

[40] Ibid., Article 17.

[41] Ibid., Article 7 (4). Except 2020: New dates agreed for COP26 United Nations Climate Change Conference. URL: https://www.gov.uk/government/news/new-dates-agreed-for-cop26-united-nations-climate-change-conference (the date of access: March 22, 2021).

[42] *Barrett S., Carraro C., de Melo J.* Towards a Workable and Effective Climate Regime. P.157.

[43] UNFCCC, Article 4 (1).

[44] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 19-20.

78. The upcoming twenty-sixth COP in Glasgow[45] is expected to determine the procedures for the functioning of certain provisions of the Paris Agreement, discuss the methodological issues of the Kyoto Protocol, as well as review scientific and structural reports.[46]

1.2. Development of the UN Climate Regime Before the Paris Agreement

a. The Kyoto Protocol

79. Despite the adoption of the UNFCCC, GHG emissions continued to grow in the vast majority of countries.[47] The lack of specific legal obligations in the UNFCCC stimulated the first COP to seek solutions.[48] The Kyoto Protocol, an international treaty[49] adopted at the COP in 1997,[50] entered into force[51] on December 16, 2005. As of March 2021, it has 192 participants.[52] The US did not ratify the document, Canada withdrew from it on December 12, 2012.

80. The Kyoto Protocol contains specific personalized obligations of State parties, as well as a list of GHGs[53]. It established in Annex B mandatory quantitative restrictions on GHG emissions with an account of absorption by sinks[54]. The goal of the Kyoto Protocol, as opposed to the UNFCCC, is expressed as an obligation of result with a strict time frame: in the period from 2008 to 2012 to reduce the total GHG emissions of the States included in Annex I to the UNFCCC by at least five per cent compared to 1990[55]. Obligations do not affect developing States[56].

81. The Kyoto Protocol allows for an opportunity to fulfill States' obligations not only nationally but also through interstate market-based mechanisms.[57] To this end, the Kyoto Protocol provides three flexible

[45] To be held on November 1-12, 2021.

[46] UNFCCC. Provisional agenda and annotations. UN Doc. FCCC/SBSTA/2020/1. URL: https://unfccc.int/sites/default/files/resource/sbsta2020_01E.pdf (the date of access: March 22, 2021).

[47] *Louka E.* International environmental law. P. 360.

[48] Decision 1/CP.1. UN Doc FCCC/CP/1995/7/Add.1.

[49] *Carlarne C., Gray K., Tarasofsky R.* International Climate Change Law: Mapping the Field. P. 4.

[50] Decision 1/CP.3. Report of the COP on Its Third Session. UN Doc. FCCC/CP/1997/7/Add.1. URL: https://undocs.org/FCCC/CP/1997/7/Add.1 (the date of access: March 22, 2021).

[51] Kyoto Protocol, Article 25: "This Protocol shall enter into force on the ninetieth day after the date on which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990 of the Parties included in Annex I, have deposited their instruments of ratification, acceptance, approval or accession." URL: https://unfccc.int/kyoto-protocol-html-version (the date of access: March 22, 2021).

[52] UN Treaty Collection. Status of the Kyoto Protocol. URL: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-a&chapter=27 (the date of access: March 22, 2021).

[53] Kyoto Protocol, Annex A; *Louka E.* International environmental law. P. 359.

[54] Ibid., Article 3 (3).

[55] Ibid., Article 3 (1).

[56] *Carlarne C., Gray K., Tarasofsky R.* International Climate Change Law: Mapping the Field. P. 8.

[57] *Birnie P., Boyle A., Redgwell C.* International Law and the Environment. P. 363-364.

mechanisms: emissions trading, joint implementation, and clean development.[58] They can be used if States rely on established methodologies and the inventory requirements are met.[59] In order for these mechanisms to operate, the COP established four types of transferable rights on emissions: certified emission reductions, emission reduction units, assigned amount units, and removal units.[60] The right of States from Annex B to the Kyoto Protocol to emit GHGs is determined by way of allocation of assigned amount units among the Annex B States.[61] Emissions cannot exceed the prescribed assigned amount units, except in cases where other rights are acquired through flexibility mechanisms.

82. The emissions trading[62] allows States to transfer rights to emit GHGs. For example, one State has more assigned amount units than the quantity of GHGs it actually emits. The remaining units can be sold to another State whose emissions exceed the allocated number. Profits must be spent on green environmental projects.[63]

83. A joint implementation mechanism[64] provides for investment project activities of States that allow reallocating emission requirements among themselves in such a way that the common goal of the two parties is achieved with a deviation from specific commitments for each of them. Thus, it is possible to achieve a reduction in emissions at the expense of regions where it is cheapest. If the investment project is successful, the investor State acquires a commensurate number of emission reduction units converted from the assigned amount units of the State where the project is implemented.[65] Thus, neither emissions trading nor joint implementation creates new emission rights but reallocates the established obligations under the Kyoto Protocol.

84. The clean development mechanism[66] also covers investment projects. Such projects may concern afforestation and reforestation, but not nuclear power plants activity.[67] Successful projects are encouraged by the creation of new units — certified emission reductions that can be sold,[68] while two per cent of the

[58] Decision 2/CMP.1. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session. UN Doc. FCCC/KP/CMP/2005/8/Add.1. URL: https://cdm.unfccc.int/Reference/COPMOP/08a01.pdf (the date of access: March 22, 2021); UNFCCC. Kyoto Protocol Reference manual. P. 15-18. URL: https://unfccc.int/sites/default/files/08_unfccc_kp_ref_manual.pdf (the date of access: March 22, 2021).

[59] UNFCCC, Articles 5 (1, 2), 7 (1, 4).

[60] Decisions 2-3/CMP.1. UN Doc. FCCC/KP/CMP/2005/8/Add.1.

[61] *Freestone D., Streck C.* Legal aspects of carbon trading. Kyoto, Copenhagen, and Beyond. New York: Oxford University Press, 2009. P.158.

[62] Kyoto Protocol, Article 17; Decision 11/CMP.1. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session. UN Doc. FCCC/KP/CMP/2005/8/Add.2. URL: https://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf (the date of access: March 22, 2021).

[63] *Freestone D., Streck C.* Legal aspects of carbon trading. Kyoto, Copenhagen, and Beyond. P. 159-175.

[64] Kyoto Protocol, Article 6; Decisions 9-10/CMP.1 UN Doc. FCCC/KP/CMP/2005/8/Add.2.

[65] *Freestone D., Streck C.* Legal aspects of carbon trading. Kyoto, Copenhagen, and Beyond. P. 176-212.

[66] Kyoto Protocol, Article 12; Decisions 3-8/CMP.1. UN Doc. FCCC/KP/CMP/2005/8/Add.2.

[67] Decision 1/CP.6. Report of the COP on the First Part of its Sixth Session. UN Doc. FCCC/CP/2000/5/Add.2. URL: https://unfccc.int/sites/default/files/resource/docs/cop6/05a02.pdf (the date of access: March 22, 2021).

[68] *Freestone D., Streck C.* Legal aspects of carbon trading. Kyoto, Copenhagen, and Beyond. P. 213-230.

proceeds are allocated to the Adaptation Fund.[69] The clean development mechanism is considered to be the most effective among the novelties of the Kyoto Protocol[70].

85. The COP monitors enforcement of the Kyoto Protocol and implementation of all flexibility mechanisms;[71] its decisions play a critical role in understanding the Kyoto Protocol.[72] A dedicated Compliance Committee has been established with broad powers including the exclusion from emissions market mechanisms.[73]

86. Commitments under the Kyoto Protocol exist only for States listed in Annex I to the UNFCCC. Countries undergoing the process of transition to a market economy may choose an alternative year to 1990 as a way to soften their obligations.[74]

87. Since the end of the first commitment period on the emissions in 2012, flexible mechanisms were no longer relevant. This caused a price collapse in the emissions market, which is still a debated topic at the COP.[75] However, the mechanisms have not been revoked, the Adaptation Fund continues to operate[76] and the clean development mechanism is still applied.[77]

88. Several issues prevented the decline in emissions globally under the terms of the Kyoto Protocol.[78] Such circumstances include the rejection of the Kyoto Protocol by the United States, Canada's withdrawal from the Protocol. Since its development, parties lacked commitments under the Kyoto Protocol, States

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[69] Decision 1/Cp.3. Report of the COP on the First Part of its Sixth Session. FCCC/KP/CMP/2007/9/Add.1.URL: https://undocs.org/ru/FCCC/KP/CMP/2007/9/Add.1 (the date of access: March 22, 2021). The Adaptation Fund helps developing countries build resilience and adapt to climate change. URL: https://www.adaptation-fund.org/ (the date of access: March 22, 2021).

[70] *Freestone D., Streck C.* Legal aspects of carbon trading. Kyoto, Copenhagen, and Beyond. P. 231.

[71] Kyoto Protocol, Article 18 and Article 13 (6).

[72] For example, Marrakesh accord: Report of the COP on its Seventh Session. UN. Doc. FCCC/CP/2001/13/Add.1–Add.4. URL: https://undocs.org/en/FCCC/CP/2001/13/Add.1 (the date of access: March 22, 2021).

[73] Decision 27/CMP.1. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session. UN Doc. FCCC/KP/CMP/2005/8/Add.3. URL: https://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf (the date of access: March 22, 2021).

[74] Kyoto Protocol, Article 3 (5).

[75] *Gulati V.* Climate Talks: Setback to India, China on Carbon Market. URL: https://weather.com/en-IN/india/news/news/2019-12-17-climate-talks-setback-india-china-carbon-markets (the date of access: March 22, 2021).

[76] Adaptation Fund. Projects & Programmes. URL: https://www.adaptation-fund.org/projects-programmes/ (the date of access: March 22, 2021); Decision 1/CP.21. Report of the COP on its Twenty-First Session. UN Doc. FCCC/CP/2015/10/Add.1. Para. 60, 61. URL: https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf (the date of access: March 22, 2021).

[77] Decision 2/CMP.15. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its Fifteenth Session. UN Doc. FCCC/KP/CMP/2019/8/Add.1. URL: https://undocs.org/en/FCCC/KP/CMP/2019/8/ADD.1 (the date of access: March 22, 2021); UNFCCC. Countries Urge Continued Use of Clean Development Mechanism. URL: https://unfccc.int/news/countries-urge-continued-use-of-clean-development-mechanism (the date of access: March 22, 2021).

[78] Intergovernmental Panel on Climate Change. Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. URL: https://www.ipcc.ch/report/ar5/wg1/ (the date of access: March 22, 2021); *Boyle A., Ghaleigh N.* Climate Change and International Law Beyond the UNFCCC // The Oxford Handbook of International Climate Change Law / ed. by. K. Gray, R. Tarasofsky, C. Carlarne New York: Oxford University Press. P. 33.

such as China and India became the forefront in emission amounts,[79] which has prompted claims of unfair distribution of responsibilities among developed countries. All of these problems resulted in untimely entry into force of the second commitment period (**para. 93 of the Analytical Report**).

b. Post-Kyoto Negotiations and Instruments

89. The array of issues States faced during the adoption and functioning of the Kyoto Protocol made them seek alternative ways of climate regulation. This search can be traced through the work of the COP. For example, the **Bali Action Plan**[80] of 2007 declares the need for urgent and significant emission reductions in connection with the publication of the fourth report of the Intergovernmental Panel on Climate Change. Bali Action Plan was aimed at creating a roadmap for negotiations at the end of the first commitment period of the Kyoto Protocol in 2012. Five pillars were proposed for effective implementation of the UNFCCC: a shared vision for long-term cooperative action, enhanced action on mitigation of climate change, adaptation, development of technology, and financing. Its key methodological change in contrast to the Kyoto Protocol was that the developing States had agreed with the prospect of making commitments.[81] However, the COP in Bali only set guidance for the years to come and did not formulate any legal obligations.[82]

90. **Copenhagen Accord**, endorsed by 114 States[83] during the COP's fifteenth session in 2009 is a political agreement rather than a legal instrument.[84] Despite this, the Copenhagen Accord laid down the important elements of the climate regime[85] introducing the "bottom-up" approach — the opposite of the one underlying the Kyoto Protocol.[86] In particular, States' right to quantify emission targets was recognized.[87] For the first time, the temperature target is set at 2°C.[88] Following the path set forth by the Bali Action Plan, the Copenhagen Accord proposes a financing arrangement,[89] the undertaking of both

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[79] *Birnie P., Boyle A., Redgwell C.* International Law and the Environment. P. 372.

[80] Decision 1/CP.13. Report of the COP on its Thirteenth Session. UN Doc. FCCC/CP/2007/6/Add.1 https://undocs.org/FCCC/CP/2007/6/Add.1 (the date of access: March 22, 2021).

[81] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 110.

[82] *Birnie P., Boyle A., Redgwell C.* International Law and the Environment. P. 375; House of Commons, Environmental Audit Committee. 6th Report: Reaching an International Agreement on Climate Change. 2008. URL: https://publications.parliament.uk/pa/cm200708/cmselect/cmenvaud/355/355.pdf (the date of access: March 22, 2021).

[83] Decision 2/CP.15. Report of the COP on its Fifteenth Session. UN Doc. FCCC/CP/2009/11/Add.1 URL: https://unfccc.int/sites/default/files/resource/docs/2009/cop15/eng/11a01.pdf (the date of access: March 22, 2021); *Bodansky D.,* The Copenhagen Climate Change Conference: A Postmortem // American Journal of International Law. Vol.104. 2010. Issue 2. P. 230-240.

[84] UNFCCC. Notification to Parties, Clarification relating to the Notification of 18 January 2010. 25 January 2010. URL: https://unfccc.int/files/parties_and_observers/notifications/application/pdf/100125_noti_clarification.pdf (the date of access: March 22, 2021); *Rajamani L.* The Making and Unmaking of the Copenhagen Accord // International and Comparative Law Quarterly. Vol.59. 2010. No.3. P. 828–831.

[85] *Bodansky D.* The Paris Climate Agreement: A New Hope? // American Journal of International Law Vol.110 2016. No.2. P. 288-319.

[86] *Bodansky D.* A Tale of Two Architectures: The Once and Future U.N. Climate Change Regime (March 1, 2011). URL: https://ssrn.com/abstract=1773865 (the date of access: March 22, 2021); *Hare W. et al.* The Architecture of the Global Climate Regime: A Top-Down Perspective // Climate Policy. Vol.6. 2010. Issue 10. P. 600-614.

[87] Decision 2/CP.15. UN Doc. FCCC/CP/2009/11/Add.1. Para. 5.

[88] Ibid. Para. 2.

[89] Ibid. Para. 8.

developed and developing States to take action on mitigation of climate change.[90] The Copenhagen Accord established the Technology Mechanism[91] and suggested the creation of the Copenhagen Green Fund[92] (formally established during COP's sixteenth session in 2010). Funding commitments are considered the most successful outcome of the Copenhagen Accord,[93] while the temperature commitments had been controversial.[94] No agreement was reached on the fate of the Kyoto Protocol.[95]

91. **The Cancun Agreements.** The two most significant decisions were adopted during the COP's sixteenth session in 2010: the Cancun agreement under the UNFCCC[96] and the Cancun agreement under the Kyoto Protocol.[97] These documents cover the main elements of the Bali Action Plan and the Copenhagen Accord[98] (mitigation, transparency of actions, technology, finance, adaptation, forests, capacity building[99]). This time it is recognized that a stricter emission target is needed to limit the temperature increase by 1.5°C.[100] The COP also established the Adaptation Committee[101] and the Green Climate Fund.[102] The question about the future of the Kyoto Protocol remained unanswered.

92. At the **COP in Durban** in 2011, States finally agreed on the need to adopt a single legal instrument to implement the objectives of the UNFCCC.[103] To this end, the COP established an *ad hoc* working group on the Durban Platform for enhanced action,[104] replacing the Bali Action Plan.[105] Negotiations based on this platform led to the adoption of the Paris Agreement. The COP approved the Guidance Document for the

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[90] Ibid. Para. 4, 5.

[91] Ibid. Para. 11.

[92] Ibid. Para. 10.

[93] IISD Reporting Services. Summary of the Copenhagen Climate Change Conference: 7–19 December 2009. URL: https://enb.iisd.org/vol12/enb12459e.html (the date of access: March 22, 2021).

[94] *Bradley R., Levin K.* Comparability of Annex I Emission Reduction Pledges. World Resources Institute Working Paper, February 2010. URL: www.wri.org/publication/comparability-of-annexi-emission-reduction-pledges (the date of access: March 22, 2021); *Sindico F.* The Copenhagen Accord and the Future of the International Climate Change Regime // Revista Catalana de Dret Ambiental 1(1) 2010. P. 4, 6; Also numerous clarifications from States on the voluntary nature of the measures prescribed: Compilation of information on nationally appropriate mitigation actions to be implemented by Parties not included in Annex I to the Convention. UN Doc. FCCC/AWGLCA/2011/INF.1. URL: https://unfccc.int/resource/docs/2011/awglca14/eng/inf01.pdf (the date of access: March 22, 2021).

[95] *Sands P., Peel J. et al.* Principles of International Environmental Law. P. 296

[96] Decision 1/CP16. Report of the COP on its Sixteenth Session. UN Doc. FCCC/CP/2010/7/Add.1. URL: https://undocs.org/ru/FCCC/CP/2010/7/Add.1 (the date of access: March 22, 2021).

[97] Decision 1/CMP6. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its Sixth Session. UN Doc. FCCC//KP/CMP/2010/12/Add.1. URL: https://undocs.org/en/FCCC/KP/CMP/2010/12/Add.1 (the date of access: March 22, 2021).

[98] *Sands P, Peel J. et al.* Principles of International Environmental Law. P. 296.

[99] UNFCCC. Intro to Cancun Agreements. URL: https://unfccc.int/process/conferences/the-big-picture/milestones/the-cancun-agreements (the date of access: March 22, 2021).

[100] Decision 1/CP16. UN Doc. FCCC/CP/2010/7/Add.1. Para. 4.

[101] Ibid. Para. 20.

[102] Ibid. Para. 102-112.

[103] Decision 1/CP.17. Report of the COP on its Seventeenth Session. UN Doc FCCC/CP/2011/9/Add.1. Preamble. URL: https://undocs.org/en/FCCC/CP/2011/9/Add.1 (the date of access: March 22, 2021).

[104] Decision 1/CP.17. UN Doc. FCCC/CP/2011/9/Add.1. Para. 2.

[105] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 110.

Green Climate Fund, finally implementing the provisions of previous COPs.[106] A second commitment period has been proposed for the Kyoto Protocol, starting in 2013.[107] Also, the decisions addressed issues of adaptation[108] and reporting guidelines.[109]

93. The 2012 **Doha COP** adopted an amendment to the Kyoto Protocol, the legal basis for a second commitment period until December 31, 2020.[110] This amendment entered into force on December 31, 2020.[111] The UNFCCC Executive Secretary indicated that this demonstrates a political commitment to tackling climate change.[112] Entry into force of the Doha amendment means that the assigned amount units for the second commitment period will be issued to participating countries, which will enable them to formally fulfill their obligations under the second commitment period. The Compliance Committee will assess the fulfillment by States of their prescribed obligations during the term of the amendment. As of March 2021, the amendment has 147 parties[113] that do **not** include several major GHG emitters: the United States, Canada, Japan, Russia. Non-parties to the amendment are not bound by it, even if they are parties to the Kyoto Protocol.[114]

94. The nineteenth **COP in Warsaw** in 2013 first contemplated NDC as means of combatting climate change and invited States to submit them.[115] NDC represents the amount of commitments each State decides to undertake to achieve common for all temperature goals.[116]

95. The twentieth **COP in Lima** in 2014 provided guidelines on how to submit NDC.[117]

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[106] Decision 3/CP.17. UN Doc. FCCC/CP/2011/9/Add.1.

[107] Decision 1/CMP.7. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its Seventh Session. UN Doc. FCCC/KP/CMP/2011/10/Add.1. URL: https://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf (the date of access: March 22, 2021).

[108] Decision 5/CP.17. UN Doc. FCCC/CP/2011/9/Add.1.

[109] Decision 15/CP.17, UN Doc. FCCC/CP/2011/9/Add.2.

[110] Decision 1/CMP.8. Report of the COP Serving as the Meeting of the Parties to the Kyoto Protocol on its Eighth Session. UN Doc. FCCC/KP/CMP/2012/13/Add.1. URL: https://unfccc.int/resource/docs/2012/cmp8/eng/13a01.pdf (the date of access: March 22, 2021).

[111] Decision 1/CMP.8. UN Doc. FCCC/KP/CMP/2012/13/Add.1. Annex I, Article 1; Kyoto Protocol, Article 20 (4).

[112] UNFCCC. Ratification of Multilateral Climate Agreement Gives Boost to Delivering Agreed Climate Pledges and to Tackling Climate Change. URL: https://unfccc.int/news/ratification-of-multilateral-climate-agreement-gives-boost-to-delivering-agreed-climate-pledges-and (the date of access: March 22, 2021).

[113] UN Treaty Collection. Status of Doha Amendment to the Kyoto Protocol. URL: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-c&chapter=27 (the date of access: March 22, 2021).

[114] Kyoto Protocol, Articles 20 (4), 21 (7).

[115] Decision 1/CP.19. Report of the COP on its Nineteenth Session. UN Doc. FCCC/CP/2013/10/Add.1. Para 2 (b). URL: https://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf (the date of access: March 22, 2021).

[116] United Nations Climate Change, NDC. URL: https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs (the date of access: March 22, 2021).

[117] Decision 1/CP.20. Report of the COP on its Twentieth Session. UN Doc. FCCC/CP/2014/10/Add.1. URL: https://undocs.org/en/FCCC/CP/2014/10/Add.1 (the date of access: March 22, 2021); UNFCCC. INDCs as communicated by the Parties. URL: http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx (the date of access: March 22, 2021).

96. The post-Kyoto COPs reflect States' search for an alternative approach to combat climate change. The documents led to the establishment of a new legal regime envisaged in the soon adopted Paris Agreement, clarified various procedural aspects of the functioning of the UNFCCC, established institutions of the regime which are still functioning, established structures of the program on Reducing emissions from deforestation and forest degradation[118] and adaptation.[119]

97. The fate of the Kyoto Protocol, still binding on its participants, however, has not been decided during post-Kyoto COPs to date.[120] Due to the end of the second commitment period in 2020, the COP may discuss termination of the Kyoto Protocol. Still, the loss of the Kyoto Protocol's relevance as well as its methods for combating global warming is apparent.[121]

1.3. Paris Agreement

98. By its essence, the Paris Agreement is a binding international treaty, despite the formal disguise of this fact.[122] Because of the US position,[123] the document did not receive the name "protocol" provided for under Article 17 of the UNFCCC, although technically all the requirements for this have been fulfilled.[124] 194 States and the European Union signed the Paris Agreement. As of March 2021, 191 States and the European Union have ratified or have acceded to the document.[125] The Paris Agreement entered into force on November 4, 2016, which is significantly earlier than originally envisaged (after the end of the second commitment period of the Kyoto Protocol).[126]

99. The Paris Agreement is a result of the post-Kyoto COPs. The document is aimed at implementing the UNFCCC, which implies "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."[127]

100. The Paris Agreement seeks to eradicate the ineffectiveness of the Kyoto Protocol in several ways. Firstly, it embodies both the "top-down" methodology, expressed in the obligatory nature of some

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[118] Decisions 9-15/CP.19. Report of the COP on its Nineteenth Session. UN Doc. FCCC/CP/2013/10/Add.1; UNFCCC. Warsaw Framework for REDD+. URL: https://redd.unfccc.int/fact-sheets/warsaw-framework-for-redd.html (the date of access: March 22, 2021); *Voigt C.* Research Handbook on REDD-Plus and International Law. Massachusetts: Edward Elgar Publishing, 2016.

[119] Decision 1/CP16. UN Doc. FCCC/CP/2010/7/Add.1. Para. 11-35.

[120] *Bodansky D., Brunnée J., Rajamani L.* P. 205.

[121] *Carlarne C., Gray K., Tarasofsky R.* International Climate Change Law: Mapping The Field. P. 4.

[122] *Bodansky D., Rajamani L.* Key Legal Issues in the 2015 Climate Negotiations. Center for Climate and Energy Solutions Policy Brief. 2015. URL: https://ssrn.com/abstract=2652001 (the date of access: March 22, 2021); *Rajamani L.* The Devilish Details Key Legal Issues in the 2015 Climate Negotiations // The Modern Law Review. Vol.78. 2015. Issue 5. P. 835.

[123] The term "agreement" allowed the President of the United States to adopt the document unilaterally, bypassing Congress. *Feldman N.* The Paris Accord and the Reality of Presidential Power. URL: https://www.iene.eu/the-paris-accord-and-the-reality-of-presidential-power-p3447.html (the date of access: March 22, 2021).

[124] *Rajamani L.* The Devilish Details Key Legal Issues in the 2015 Climate Negotiations. P. 835; Paris Agreement, Article 17.

[125] UN Treaty Collection. Status of Paris Agreement. URL: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27 (the date of access: March 22, 2021).

[126] Decision 1/CP.17, UN Doc. FCCC/CP/2011/9/Add.1. Para. 4.

[127] Paris Agreement, Article 2. This was already mentioned in the Copenhagen and Cancun Agreements.

provisions established "from above", and the "bottom-up" methodology featuring NDCs.[128] The concept of differentiated responsibility embedded in the Paris Agreement differs from the one in the Kyoto Protocol. Following the roadmap set during post-Kyoto COPs, the Paris Agreement covers mitigation, adaptation, finance, technology development and transfer, transparency of actions, support and capacity building,[129] as well as introduces the issues of loss and damage,[130] a mechanism to facilitate implementation of the Paris Agreement itself.[131] The latter is "facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive,"[132] — a distinguishing feature of the Paris Agreement.[133]

101. The Paris Agreement includes both obligatory and non-mandatory provisions. All parties shall:

- undertake ambitious efforts to fulfill the objective of the Paris Agreement;[134]
- communicate NDC[135] transparently[136] with notification of the secretariat of joint action;[137]
- engage in the planning process and implementation of adaptation actions;[138]
- regularly provide information (of a national inventory of anthropogenic emissions by sources and removals by sinks of GHGs, and the information needed to track progress in the implementation and achievement of NDCs);[139]
- participate in a facilitative, multilateral consideration of progress for the achievement of NDCs;[140]
- cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation, and public access to information;[141]
- strengthen cooperative actions on technology development and transfer;[142]
- regularly report on capacity-building actions or measures.[143]

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[128] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 214-215.

[129] Decision 1/CP.17. UN Doc. FCCC/CP/2011/9/Add.1. Para. 5.

[130] Paris Agreement, Article 8.

[131] Ibid., Article 15.

[132] Ibid., Article 15 (2).

[133] *Bodansky D., Rajamani L.* The Paris Rulebook-Balancing International Prescriptiveness with National Discretion // International and Comparative Law Quarterly. Vol.68. 2019. Issue 4. P. 1037-1040.

[134] Paris Agreement, Article 3.

[135] Ibid., Article, 4 (2, 9, 17).

[136] Ibid., Article 4 (8, 13).

[137] Ibid., Article 4 (16).

[138] Ibid., Article 7 (9).

[139] Ibid., Article 13 (7).

[140] Ibid., Article 13 (11).

[141] Ibid., Article 12.

[142] Ibid., Article 10 (2).

[143] Ibid., Article 11 (4).

102. For developed States, there are also financial commitments on both mitigation and adaptation that must also be implemented transparently.[144]

103. Many provisions of the Paris Agreement are non-binding. For instance, States are *expected* to have each new NDC to be more ambitious than the last.[145] In some cases, the provisions are advisory: parties *should* take action to conserve and enhance sinks and reservoirs of GHGs;[146] should strengthen their cooperation on enhancing action on adaptation.[147] Some provisions encourage States, rather than strictly prescribe behavior.[148]

104. The most significant commitments of the Paris Agreement relate to mitigation measures. This is accomplished through individual commitments[149] to prepare, communicate, and maintain successive NDC[150] that the party intends to achieve.[151] Unlike the Kyoto Protocol, this is an obligation of conduct, not of result,[152] since the amount of GHG emissions for a specific period has not been established.

105. In order to ensure integrity of the parties and to track progress, participants must provide information regularly.[153] Parties must communicate NDCs every five years,[154] provide information "necessary for clarity, transparency, and understanding."[155] All NDCs are recorded in a public registry maintained by the secretariat.[156]

106. States first submitted intended NDCs before the adoption of the Paris Agreement.[157] It became clear that temperature goals were unachievable due to the insufficiency of the measures proposed.[158] Therefore, it was decided to "convene a stimulating dialogue in 2018" between the parties, who were to communicate new NDCs by 2020.[159]

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[144] Ibid., Articles 9 (1, 5, 7), 13 (9).

[145] Ibid., Article 4 (3).

[146] Ibid., Article 5 (1).

[147] Ibid., Article 7 (7).

[148] Ibid., Articles 4 (4), 5 (2), 9 (2, 5, 7).

[149] *Mayer, B.* International Law Obligations Arising in relation to Nationally Determined Contributions // Transnational Environmental Law. Vol.7. 2018. Issue 2. P. 251–275.

[150] *Doelle, M.* The heart of the Paris Rulebook: Communicating NDCs and accounting for their implementation // Climate Law. Vol.9. 2019. No.1-2. P. 3-20.

[151] Paris Agreement, Article 4 (2).

[152] *Mayer, B.* Obligations of conduct in the international law on climate change: A defence // Review of European, Comparative & International Environmental Law. Vol. 27. 2018. Issue 2. P. 130–140.

[153] Paris Agreement, Article 13 (7.b).

[154] Ibid., Article 4 (9).

[155] Ibid., Article 4 (8, 9).

[156] Ibid., Article 4 (12).

[157] UFCCC. NDC as communicated by the Parties. URL: http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx (the date of access: March 22, 2021).

[158] Synthesis Report on the Aggregate Effect of the Intended Nationally Determined Contributions. UN Doc. FCCC/CP/2015/7. URL: https://unfccc.int/resource/docs/2015/cop21/eng/07.pdf (the date of access: March 22, 2021).

[159] Decision 1/CP.21. UN Doc. FCCC/CP/2015/10/Add.1. Para. 20, 23, 24.

107. By the end of 2020,[160] 190 States have communicated their first NDCs[161] (71 States, including 27 EU countries, have submitted new or updated NDCs),[162] and 8 have reported their second NDCs.[163] The updated NDC of Norway has become more ambitious by setting an additional ten per cent reduction in emissions, while the goals of other countries, including Japan, remained mostly unchanged.[164] After providing updated data, a new report on climate change perspectives will be issued. The first global stocktake will take place in 2023 and every five years thereafter.[165]

108. An alternative interpretation of the UNFCCC principle of differentiated responsibility, which began with the Bali Plan and the Durban Platform (principle CBDR–RC: "Common but Differentiated Responsibilities and Respective Capabilities") is fully implemented in the Paris Agreement.[166] The Paris Agreement still refers to this principle, but only in the following context: "the principle of common but differentiated responsibilities and respective capabilities, *in the light of different national circumstances.*"[167] There is no definition of developed and developing States or references to the UNFCCC Annexes. Differentiation of States has become much more flexible and universal[168] since all parties determine and submit NDCs, strive to achieve them, regardless of whether they are developing or developed.[169] Transparency requirements have also practically lost their differentiation[170] compared to the UNFCCC.[171]

109. The remaining differentiation of commitments relates mainly to financial ones, since developed countries provide financial resources to assist developing countries with both mitigation and adaptation in continuation of their existing UNFCCC commitments.[172] However, this is also offered, albeit voluntarily, to other participants.[173]

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[160] The deadline for posting updated NDC is December 31, 2020. See UNFCCC. UN Climate Change Secretariat. Notification. Publication of nationally determined contribution synthesis report. August 13, 2020. EC-2020-306. URL: https://unfccc.int/sites/default/files/resource/notification_on_ndc_synthesis_2020_ec_2020_306.pdf (the date of access: March 22, 2021).

[161] Intended NDC automatically recognized as NDC: Decision 1/CP.21. UN Doc. FCCC/CP/2015/10/Add.1. Para. 20.

[162] Climate Watch. 2020 NDC Tracker. URL: https://www.climatewatchdata.org/2020-ndc-tracker (the date of access: March 22, 2021).

[163] NDC Registry. URL: https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx (the date of access: March 22, 2021).

[164] NDC Registry. Update of Norway's nationally determined contribution. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Norway%20First/Norway_updatedNDC_2020%20(Updated%20submission).pdf (the date of access: March 22, 2021); NDC Registry. Submission of Japan's NDC. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Japan%20First/SUBMISSION%20OF%20JAPAN'S%20NATIONALLY%20DETERMINED%20CONTRIBUTION%20(NDC).PDF (the date of access: March 22, 2021).

[165] Paris Agreement, Article 14.

[166] *Winkler H., Rajamani L.* CBDR&RC in a Regime Applicable to All // Climate Policy. Vol.14. 2014. Issue 1. P. 102-121.

[167] Paris Agreement, Preamble, Articles 2 (2), 4 (3), 4 (19).

[168] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 222-224.

[169] Paris Agreement, Article 4(2).

[170] Ibid., Article 13.

[171] UNFCCC, Article 12.

[172] Paris Agreement, Article 9.

[173] Ibid., Article 9 (2).

110. At the same time, participants of the Paris Agreement failed to agree on the general terms and features of NDC,[174] as well as on the use of market instruments.[175] The issue of burden-sharing remains ambiguous.[176] The significant problem is that States are slow in providing their NDCs and it is impossible to achieve the temperature goals on the basis of the first reported NDCs. Similar difficulties arise as regards long-term strategies.[177]

2. Trends in the Development of Legal Regulation at the International and Regional Levels

111. The UNFCCC, together with the Paris Agreement, constitutes the backbone of the international legal regime for combating global warming.[178] For example, the G20[179] in its declarations refers specifically to the provisions of the Paris Agreement.[180] Similar references can be found in the documents of the Organization for Economic Cooperation and Development.[181] States in their negotiations also refer to the general UN climate change regime.[182] Relevant objectives for climate change regulation, including temperature goals, are enshrined in the Paris Agreement. At the moment, the participants' NDCs are the main instrument for achieving these objectives. At the same time, the main difficulties on the way of achieving goals are primarily political rather than legal.[183]

112. As for the use of internationally developed mechanisms to combat climate change at the regional level, only emissions trading mechanisms are implemented. The best example is the EU Emissions Trading

[174] Decision 4/CMA.1. Report of the COP Serving as the Meeting of the Parties to the Paris Agreement on the Third Part of its First Session. UN Doc. FCCC/PA/CMA/2018/3/Add.1. Para. 19-20. URL: https://unfccc.int/sites/default/files/resource/cma2018_3_add1_advance.pdf (the date of access: March 22, 2021).

[175] Decision 9/CMA.2. Report of the COP Serving as the Meeting of the Parties to the Paris Agreement on its Second Session. UN Doc. FCCC/PA/CMA/2019/6/Add.1. URL: https://unfccc.int/sites/default/files/resource/cma2019_06a01E.pdf (the date of access: March 22, 2021).

[176] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 249.

[177] Communicated by 19 parties: https://unfccc.int/ru/node/520 (the date of access: March 22, 2021); in accordance with Article 4(19) of the Paris Agreement.

[178] Intergovernmental Panel on Climate Change. Assessment Report 5 Climate change 2014. Mitigation of Climate Change. Chapter 13. International Cooperation: Agreements & Instruments. P. 1005. URL: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter13.pdf (the date of access: March 22, 2021).

[179] The G20 is the international forum that brings together the world's major economies. Its members account for more than 80% of world GDP, 75% of global trade and 60% of the population of the planet. Italian G20 Presidency. URL: https://www.g20.org/about-the-g20.html (the date of access: March 22, 2021).

[180] G20 Osaka Leaders' Declaration. 2019. Para. 34-36. URL: https://www.consilium.europa.eu/media/40124/final_g20_osaka_leaders_declaration.pdf (the date of access: March 22, 2021).

[181] Organisation for Economic Co-operation and Development. OECD work in support of climate action. 2019. URL http://www.oecd.org/env/cc/OECD-work-in-support-of-climate-action.pdf (the date of access: March 22, 2021).

[182] US-China Joint Announcement on Climate Change. Beijing, China, November 12, 2014. URL: https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change (the date of access: March 22, 2021).

[183] *Boyle A., Ghaleigh N.* Climate change and International Law Beyond the UNFCCC. P. 53.

System.[184] In turn, the Nairobi work programme[185] (the adaptation mechanism) and the Clean Development Mechanism operate under the legal regime of the UNFCCC.

113. Although the main initiatives in climate change regulation are still carried out within the framework of the global regime of the UNFCCC[186] being *lex specialis*, regional institutions also actively develop despite occasional protest against discussion of climate change issues bypassing the UNFCCC.[187] This situation was triggered by the US refusal to participate in the Kyoto Protocol and their active participation in alternative institutions[188] of international cooperation on climate change which did not create legal obligations. Experts, however, associate the development of regional mechanisms with the strengthening of the international regime.[189] On the other hand, this causes fragmentation of the regime and complicates the practical achievement of goals. There are also certain disagreements between States regarding the understanding of the global nature of the problem of climate change and goal setting.[190]

114. Some members of the UNFCCC, for example, the European Union,[191] treat climate change as a global issue. For small island States, this is not just a global problem, but a question of existence.[192] Meanwhile, some developed countries, including the US, look at climate change through the prism of economics,[193] striving to preserve their production and to solve environmental problems with economic instruments. The developing States seek to protect their economic development from external regulation and restrictions. Therefore, it is difficult to find a unified method to prevent climate change.

115. In the academic community, there are many approaches in setting directions for the development of international legal regulation of climate change. Some experts seek to identify common features that

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[184] European Commission. EU Emissions Trading System. URL: https://ec.europa.eu/clima/policies/ets_en (the date of access: March 22, 2021).

[185] UNFCCC. Nairobi work programme. URL: https://unfccc.int/topics/adaptation-and-resilience/workstreams/nairobi-work-programme-on-impacts-vulnerability-and-adaptation-to-climate-change (the date of access: March 22, 2021).

[186] *Keohane R, Victor D.* The Regime Complex for Climate Change // Perspectives on Politics. Vol.9. 2011. No.1. P. 7–24.

[187] *Draguljić G.* The Climate Change Regime Complex. Path Dependence amidst Institutional Change // Global Governance. Vol.25. 2019. Issue 3. P. 476-498. P. 490.

[188] International Partnership for Hydrogen and Fuel Cells in the Economy, the International Partnership for Hydrogen Economy и the Carbon Sequestration Leadership Forum of 2003; the Methane to Markets Partnership of 2004; the Asia-Pacific Partnership for Clean Energy and Climate of 2005; the Major Emitters/Economies Forum on Energy Security and Climate Change of 2007: see *Draguljić G.* The Climate Change Regime Complex. Path Dependence amidst Institutional Change. P. 488.

[189] *Balsiger J., VanDeveer S.* Navigating Regional Environmental Governance // Global Environmental Politics. Vol.12. 2012. No.3. P. 1–17; *Biermann F., Pattberg P., van Asselt H., Zelli, F.* The Fragmentation of Global Governance Architectures: A Framework for Analysis // Global Environmental Politics. Vol.9. 2009. No.4. P. 14–40; *Asheim G., Froyn, C., Hovi J., Menz F. C.* Regional versus global cooperation for climate control // Journal of Environmental Economics and Management. Vol.51. 2006. No.1. P. 93–109.

[190] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 4-11.

[191] European Commission. 2050 long-term strategy. URL: https://ec.europa.eu/clima/policies/strategies/2050_en (the date of access: March 22, 2021).

[192] *Walshe R., Stancioff C.* Small island perspectives on climate change // Island Studies Journal. Vol.13. 2018. No.1. P. 13–24.

[193] *Wagner G., Weitzman M.* Climate Shock: The Economic Consequences of a Hotter Planet. Princeton: Princeton University Press, 2015.

make regulation effective.[194] Others highlight specific shortcomings, such as the lack of attention to the role of the ocean in preventing climate change.[195] Prospects for cooperation on decarbonization to achieve global goals are considered.[196] Finally, alternative ways of studying international legal regulation are proposed, for example, using the methodology of global administrative law.[197]

116. In addition to States, there are other actors combating climate change.[198] For instance, the twenty-second COP created a platform under the UNFCCC regime for companies and individuals to combat climate change.[199] Nevertheless, at the moment, States play a key role in international regulation of climate change. Their focus is on how the Paris Agreement is implemented and interpreted. In 2022, the Intergovernmental Panel on Climate Change is planning to issue its sixth report,[200] the opinion of which the UNFCCC participants listen to intensively. Then in 2023, the COP will hold the first global stocktake. These events will most likely determine the new trajectories of international law development.

[194] *Owen G.* What makes climate change adaptation effective? A systematic review of the literature // Global Environmental Change. Vol.62. 2020.

[195] *Cooley, S. R., Bello B. et all.* Overlooked ocean strategies to address climate change // Global Environmental Change. Vol.59. 2019.

[196] *Mathy S., Menanteau P., Criqui, P.* After the Paris Agreement- Measuring the Global Decarbonization Wedges From National Energy Scenarios // Ecological Economics. Vol.150. P.273–289; *Gota S., Huizenga C., Peet K., Medimorec N., & Bakker S.* Decarbonising transport to achieve Paris Agreement targets // Energy Efficiency. Vol.12. 2019. P. 363–386; International Bank for Reconstruction and Development / The World Bank. Supporting Countries to Meet Long-Term Goals of Decarbonization. 2020. URL: https://openknowledge.worldbank.org/bitstream/handle/10986/33958/149871.pdf?sequence=3&isAllowed=y (the date of access: March 22, 2021).

[197] *Chandra R.* Climate change and the role of global administrative law: An overview // International Journal of Multidisciplinary Research and Development. Vol.6. 2019. Issue 5. P. 23-27.

[198] *Bodansky D., Brunnée J., Rajamani L.* International Climate Change Law. P. 264

[199] Non-state Actor Zone for Climate Action. Global Climate Action. URL: https://climateaction.unfccc.int (the date of access: March 22, 2021).

[200] Intergovernmental Panel on Climate Change. AR6 Synthesis Report: Climate Change 2022. URL: https://www.ipcc.ch/report/sixth-assessment-report-cycle (the date of access: March 22, 2021).

II. THE EUROPEAN UNION

Executive Summary

117. The proposed European Climate Law is soon to be adopted. It will become a framework climate law that will commit the European Union and the EU Member States to achieve climate neutrality and resilience by 2050 at the latest and will ensure that the EU and MSs' policies remain consistent with achieving those objectives.

118. At the moment there are three core pieces of the EU legislation that are essential to the EU climate objectives and targets: Directive 2003/87/EC establishing the European Union Emission Trading System, the Effort Sharing Regulation 2018/842, and the LULULCF Regulation 2018/841. In addition, the EU has a number of strategic documents and action plans: A Clean Planet for all, the European Green Deal, the Long-term low GHG emission development strategy of the EU and its MSs, the 2030 Climate target action plan, and the EU Strategy on Adaptation to Climate Change.

119. The aforementioned documents set climate objectives and targets and elaborate general and sectoral strategies in relation to mitigation of and adaptation to climate change. The climate change policy of the EU is largely driven by its international obligations. According to its Nationally Determined Contribution submitted under the Paris Agreement, the European Union and MSs commit to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.

120. In order to regulate GHG emission reductions, emitting sectors are divided into those falling within the ETS regime (power and manufacturing industry, the aviation sector, the shipping sector, and other specific sectors such as the aluminum, iron, steel, cement clinker, paper, and others) and those governed by the ESR and LULUCF (housing, industry and transportation, agriculture, waste). Noteworthy, participants in the EU ETS, operating on a cap-and-trade basis, are companies whereas the ESR and LULUCF impose obligations on MSs who are required to meet national targets for emission reductions. In view of the future adoption of the European Climate Law, among other reasons, the ETS and the ESR regimes are currently being reviewed.

121. For both the ETS and non-ETS sectors, the main EU body ensuring implementation of and monitoring compliance with climate policies is the European Commission.

122. Climate-related issues are litigated at the EU level and in the national courts of MSs. Although climate-related cases vary in terms of subject matter and participants to the proceedings, one of the current trends is the invocation of human rights norms in order to challenge allegedly insufficient effort of MSs to meet GHG emission reduction targets.

123. The current revision of the EU ETS is addressing, *inter alia*, the issue of extra-territorial application of the EU climate regulations which is closely linked to the need to prevent competitive disadvantages and undermining the EU action on climate protection.

1. European Union Climate Legislation and Policies

1.1. European Union Legislation and Policy Documents

a. European Union Legislation and Policy Documents

124. The proposed European Climate Law[201] is to become the EU basic climate law upon completion of its final stages of the ordinary legislative process.[202] When adopted, the European Climate Law will commit the EU and MSs to achieve climate neutrality and resilience by 2050 at the latest and will create a framework for ensuring that the EU and MSs' policies remain consistent with achieving those objectives.[203]

125. There are also three pieces of EU legislation that are essential to the EU's climate objectives and targets: Directive 2003/87/EC establishing the EU ETS,[204] the ESR,[205] and the LULUCF.[206]

126. The EU's long-term climate strategy is formed by the following documents: A Clean Planet for all communication,[207] the European Green Deal communication,[208] the Long-term low GHG emission

[201] Proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending regulation (EU) 2018/1999 (European Climate Law). COM/2020/80 final. URL: https://eur-lex.europa.eu/legal-content/en/txt/?uri=celex:52020pc0080 (the date of access: March 22, 2021).

[202] *Abnett K.* EU's landmark climate law to be finalised within months, Portugal says. URL: https://www.reuters.com/article/us-climate-change-eu-portugal-idUSKBN29B2FS (the date of access: March 22, 2021).

[203] European Commission. European Climate Law. URL: https://ec.europa.eu/clima/policies/eu-climate-action/law_en (the date of access: March 22, 2021).

[204] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0087-20200101&qid=1616087905524 (the date of access: March 22, 2021); See also European Commission. EU Emissions Trading System (EU ETS). URL: https://ec.europa.eu/clima/policies/ets_en (the date of access: March 22, 2021).

[205] 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. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R0842 (the date of access: March 22, 2021); See also European Commission. Implementation of the Effort Sharing Decision. URL: https://ec.europa.eu/clima/policies/effort/implementation_en (the date of access: March 22, 2021).

[206] Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.156.01.0001.01.ENG (the date of access: March 22, 2021). See also European Commission. Land use and forestry regulation for 2021-2030. URL: https://ec.europa.eu/clima/policies/forests/lulucf_en#tab-0-1 (the date of access: March 22, 2021).

[207] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy. COM/2018/773 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=EN (the date of access: March 22, 2021).

[208] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal. COM/2019/640 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN (the date of access: March 22, 2021).

development strategy of the EU and its MSs,[209] the 2030 Climate target action plan,[210] and the EU Strategy on Adaptation to Climate Change.[211]

127. The EU general climate strategy is largely driven by the Paris Agreement's objective to attain climate neutrality by 2050 and the UN Sustainable Development Goals.[212] Furthermore, the EU strategy is largely based on the Intergovernmental Panel on Climate Change scientific report[213] as regards tackling climate change, modernizing the economy, promoting sustainable development, and eradicating poverty.[214]

b. Scope of the Climate Change Strategy

128. The proposed European Climate Law enshrines long-term objectives for the EU to achieve the temperature target set by the Paris Agreement[215], to become climate neutral[216] and climate resilient by 2050.[217] Furthermore, the draft European Climate Law proposes reduction of GHG emissions by 50-55% compared to 1990 levels by 2030.[218] Despite the European Parliament's attempt to increase that target to 60%,[219] the EU Council voted to adopt the 55% emissions reduction target for 2030.[220] It is expected that this new 2030 target will be enshrined in the EU Climate Law when adopted later in 2021.[221]

129. According to Professor Sharon Turner, the mode of achievement of 2030 and 2050 targets under the draft European Climate Law (via EU collective action or requirements for individual MSs' actions) is yet to be determined. Nevertheless, the new law will certainly require policies of the EU and MSs to be consistent with achieving the 2050 objectives.

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[209] Croatia. Submission by Croatia and the European Commission on behalf of the EU and its Member States, Zagreb, March 6, 2020. URL: https://unfccc.int/sites/default/files/resource/HR-03-06-2020%20EU%20Submission%20on%20Long%20term%20strategy.pdf (the date of access: March 22, 2021).

[210] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Stepping up Europe's 2030 climate ambition: Investing in a climate-neutral future for the benefit of our people. COM/2020/562 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0562&from=EN (the date of access: March 22, 2021).

[211] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change. COM/2021/82 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0082&from=EN (the date of access: March 22, 2021).

[212] European Green Deal. COM/2019/640 final.

[213] The Intergovernmental Panel on Climate Change. Special Report: Global Warming of 1.5 ºC. URL: https://www.ipcc.ch/sr15/ (the date of access: March 22, 2021).

[214] A Clean Planet for all. COM/2018/773 final. P.2.

[215] Paris Agreement, Article 2(1)(a).

[216] A Clean Planet for all. COM/2018/773 final. P.3

[217] Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change. COM/2021/82 final.

[218] Proposal for a European Climate Law, Article 2.

[219] European Parliament. Amendments adopted by the European Parliament on 8 October 2020 on the proposal for a regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law) (COM(2020)0080 – COM(2020)0563 – C9-0077/2020 – 2020/0036(COD)). URL: https://www.europarl.europa.eu/doceo/document/TA-9-2020-0253_EN.html (the date of access: March 22, 2021).

[220] Council of the European Union. Council agrees on full general approach on European climate law proposal. URL: https://www.consilium.europa.eu/en/press/press-releases/2020/12/17/council-agrees-on-full-general-approach-on-european-climate-law-proposal/ (the date of access: March 22, 2021).

[221] European Parliament. Amendments adopted by the European Parliament on 8 October (COM(2020)0080 – COM(2020)0563 – C9-0077/2020 – 2020/0036(COD)).

130. The scope of the EU's climate strategy documents can be summarized as follows:

a. A Clean Planet for all (communication from the European Commission of 2018). The EU sets out the goal to be among the first to achieve net-zero GHG emissions worldwide.[222] A Clean Planet for all strategy sets out possible pathways that could be "feasible from a technological, economic, environmental and social perspective."[223] Rather than launching new policies or revising targets,[224] the strategy is meant to guide the EU climate policy and to lay out what the EU considers its long-term contribution to combating climate change;[225]

b. the European Green Deal (communication from the European Commission of 2019). The European Green Deal establishes a roadmap of key policies and measures to achieve the 2050 target[226] and is a key part of implementing the United Nations 2030 Agenda and sustainable development goals.[227] Importantly, all EU actions and policies have to support the targets of the European Green Deal.[228] One of the main commitments enshrined in the European Green Deal is the adoption of the European Climate Law.[229] Updating the European Green Deal is the main legislative goal for 2021;[230]

c. long-term low GHG emission development strategy (Communication of the EU to the United Nations Framework Convention on Climate Change Secretariat of 2020). The long-term strategy reaffirms the targets of the European Green Deal[231] and is largely based on the EU's long-term vision as regards the climate change issue (A Clean Planet for all).[232] Apart from reaffirming the climate goals, special attention is given to the global dimension of the climate change problem in view of the Paris Agreement objectives;[233]

d. the 2030 Climate target action plan (communication from the European Commission of 2020). While A Clean planet for all and the European Green Deal primarily focus on the 2050 target, the 2030 Climate target action plan focuses on GHG emission reduction by 55% by 2030 compared to 1990 levels.[234] Importantly, the plan sets out specific targets in key sectors of economy (**paras. 139–145 of the Analytical Report**);[235]

e. the new EU strategy on adaptation to climate change (Communication from the European Commission of 2021) sets out adaptation and resilience goals for the EU. The main objectives of

[222] A Clean Planet for all. COM/2018/773 final. P. 22.

[223] A Clean Planet for all. COM/2018/773 final. P. 23.

[224] A Clean Planet for all. COM/2018/773 final. P. 3.

[225] A Clean Planet for all. COM/2018/773 final.

[226] European Green Deal. COM/2019/640 final, Section 2.1.5.

[227] European Green Deal. COM/2019/640 final, Section 1.

[228] European Green Deal. COM/2019/640 final, Section 2.2.5.

[229] European Green Deal. COM/2019/640 final, Section 2.1.1.

[230] European Parliament. Legislative Train Schedule — Fit For 55 Package under the European Green Deal. URL: https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/package-fit-for-55 (the date of access: June 20, 2021).

[231] Croatia. Submission by Croatia and the European Commission on behalf of the EU and its Member States. P. 1.

[232] Croatia. Submission by Croatia and the European Commission on behalf of the EU and its Member States. P. 1.

[233] Ibid. P.3-4.

[234] Stepping up Europe's 2030 climate ambition. COM/2020/562 final.

[235] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 2.

the strategy are: "to make adaptation smarter, swifter and more systemic, and to step up international action on adaptation to climate change."[236]

c. Overview of EU Sectoral Strategies and Targets Regimes

131. The EU sets out a road to a net-zero GHG economy based on a standard set of seven main strategic building blocks:[237]

a. maximizing the benefits from energy efficiency, including zero-emission buildings;

b. maximizing the deployment of renewable energy sources and the use of electricity to decarbonize Europe's energy supply fully;

c. embracing clean, safe, and connected mobility;

d. fostering a competitive EU industry and the circular economy as a critical enabler to reduce GHG emissions;

e. developing an adequate smart network infrastructure and interconnections;

f. reaping the full benefits of bioeconomy and creating essential carbon sinks;

g. tackling remaining CO_2 emissions with carbon capture storage.

132. Achieving 55% GHG emissions reduction by 2030 as compared to 1990 levels (assuming that the European Climate Law will be adopted) requires reductions in all sectors.[238]

133. For the purposes of regulating GHG emission reductions, emitting sectors are divided into those falling within the ETS regime, referred to as the ETS sector (**paras. 161–176 of the Analytical Report**), and those falling outside the ETS regime, referred to as the non-ETS sector, which are governed by the ESR and LULUCF. Each of the two systems has defined ultimate and general targets; individual targets for sub-sectors of the economy are not set. Noteworthy, participants in the ETS are companies whereas ESR and LULUCF impose obligations on MSs who are required to meet national targets for emission reductions.

134. The ETS system regulates the power and manufacturing industry, the aviation sector (currently — flights within the EEA), the shipping sector, and other specific sectors such as aluminum, carbon capture and storage, petrochemicals and other chemicals, oil refineries, coke ovens, iron and steel, cement clinker, glass, lime, bricks, ceramics, pulp, paper, and board, aluminum, petrochemicals, ammonia, nitric, adipic and glyoxylic acid production, and CO_2 capture, transport in pipelines and geological storage.[239]

135. The ESR system governs GHG emission reduction effort for the non-ETS sector for the period of 2021–2030.[240] The ESR regime includes a wide range of important sectors, namely: housing, industry and transportation;[241] agriculture and waste.[242] Together these sectors account for almost 60% of the total

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[236] Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change. COM/2021/82 final.

[237] A Clean Planet for all. COM/2018/773 final. P. 8-15.

[238] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P.7.

[239] European Commission. EU ETS Handbook, 2015. P. 20. URL: https://ec.europa.eu/clima/sites/clima/files/docs/ets_handbook_en.pdf (the date of access: March 22, 2021).

[240] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P. 5. URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3594386 (the date of access: March 22, 2021).

[241] Ibid.

[242] European Commission. Effort sharing: Member States' emission targets. URL: https://ec.europa.eu/clima/policies/effort_en (the date of access: March 22, 2021).

domestic EU emissions.[243] Annex I to the ESR[244] allocates legally binding GHG emission reduction targets for each of the individual MS; the size of the national "share" of or responsibility for delivering the EU's 2030 target is based on the overall economic development measured on the basis of the gross domestic product *per capita.*[245] For example, Germany has to cut emissions by 38% by 2030 compared to 2005 levels, while Poland has to cut emissions by 7% within the same time frame.[246]

136. In addition to the ESR which drives national effort to reduce GHG emissions, the EU has also adopted several important legal acts designed to shape national actions and policies in the non-ETS sector, in particular, the revised Renewable Energy Directive 2018/2001,[247] the renewed Energy Efficiency Directive 2018/2002.[248] In addition, the EU has adopted LULUCF Regulation which has established a specific legal regime for GHG emissions and removals from land use, land-use change, and forestry.[249]

137. It is important to note that the European Commission has now launched a review of the ETS and ESR regimes to decide whether and how they should be revised to enable the EU to achieve its higher 2030 target (**para. 146 of the Analytical Report**).

138. Finally, the EU sets a goal for offshore renewable energy: at least 60 GW of offshore wind and at least 1 GW of ocean energy[250] to be used by 2030, and 300 GW[251] and 40 GW[252] respectively — by 2050.[253] The cost of this goal's implementation would be up to EUR 800 billion.[254] If the current trends continue, only approximately 90 GW of offshore renewable energy will be used by 2050, as seen from the National Energy Climate Plans adopted by MSs.[255] Under the first work program of Horizon Europe (2021 and 2022), the European Commission will support cooperation between the national grid transmission system operators

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[243] European Commission. Effort sharing 2021-2030: targets and flexibilities. URL: https://ec.europa.eu/clima/policies/effort/regulation_en (the date of access: March 22, 2021).

[244]Regulation (EU) 2018/842. Annex I.

[245] European Commission. Effort sharing 2021-2030: targets and flexibilities.

[246] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P.5.

[247] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG (the date of access: March 22, 2021).

[248] Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.328.01.0210.01.ENG (the date of access: March 22, 2021).

[249] Regulation (EU) 2018/841.

[250]Report from the Commission to the European Parliament and the Council on progress of clean energy competitiveness. COM/2020/953 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A953%3AFIN (the date of access: March 22, 2021).

[251] Stepping up Europe's 2030 climate ambition. COM/2020/562 final.

[252] *Magagna, D.* Ocean Energy: Technology Market Report, EUR 29924 EN, Publications Office of the European Union, Luxembourg, 2019. URL: https://ec.europa.eu/jrc/en/publication/ocean-energy-technology-market-report (the date of access: March 22, 2021).

[253] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future. COM/2020/741 final. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:741:FIN (the date of access: March 22, 2021).

[254] An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future. COM/2020/741 final. P. 2.

[255] European Commission. National energy and climate plans (NECPs). URL: https://ec.europa.eu/energy/topics/energy-strategy/national-energy-climate-plans_en?fbclid=IwAR2PSP_Yu4k6sij9chuZ2CzwlireYsErEDEtjQa4JfaVj2Tb3v6QExa4-GU#final-necps (the date of access: March 22, 2021).

to continue installation of cross-border interconnectors.[256] Further, the Commission will study how technology developments in the area of offshore renewable energy can be sustainably utilized.[257] Finally, the Commission will work with MSs to make use of funds to coordinate technology in order to achieve a total capacity of 100 MW across the EU by 2025 and of around 1 GW by 2030.[258]

d. Specific Sectoral Targets

Energy system transformation including buildings, transport, and industry

139. Buildings and power generation sectors can reduce GHG emissions by 60% or more compared to 2015 levels. By 2030 the renewable electricity production is expected to grow by 65% or more (compared to the current 32%).

140. As of now, 75% of the EU's building stock is not energy efficient. The renovation rate needs to be at least 2% (most likely more) leading up to 2030.[259]

Waste and agriculture

141. Gasses such as nitrous, methane, and so-called F-gases represent almost 20% of the EU's GHG emissions. The target is to reduce their emission by up to 35% compared to 2015 levels.[260]

142. As to the waste sector, the obligation to separately collect bio-waste (introduced in 2014) and the ban on bio-waste landfilling will strongly reduce emissions. Apart from enforcing the existing policies, a focus will be on improving the treatment of sewage sludge and turning waste into resources to reach a circular economy.[261]

143. In agriculture, it is planned, *inter alia,* to improve fertilizers, to adopt precision farming, to produce and use biogas, and to adapt "land use management and cultivating perennials on cropland in a sustainable manner for use of the harvested biomass in buildings, industry, and energy."[262]

Land use

144. The LULUCF sector not only emits GHG; CO_2 can likewise be absorbed in soil and biomass. The EU's sinks removed around 263 million tonnes of CO_2 by 2018 while in the previous years the amount of removed CO_2 was 300 million tonnes. If current trends continue, the sinks could shrink and remove around 225 million tonnes of CO_2 by 2030. To counter this trend, the following short-term actions are suggested: reforesting, forest protection and management, management of soil, restoration of wetlands, peatlands, and degraded land. The goal is to achieve storage and removal of at least 300 million tonnes of CO_2 by 2030.[263]

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[256] An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future. COM/2020/741 final. P. 21-22.

[257] An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future. COM/2020/741 final.

[258] Ibid.

[259] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 8.

[260] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 10.

[261] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 11.

[262] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 11.

[263] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 11-12.

Transportation

145. By June 2021, the Commission will propose standards for cars and vans for 2030. A focus will be placed on alternative fuels, technologies, and zero-emission vehicles.[264]

e. Climate Strategy Updating

146. The EU regularly updates its reduction goals and adopts corresponding legislation to remain aligned with the latest climate science and international obligations. The best example is the forthcoming adoption of the European Climate Law and yearly communications made by the European Commission (**paras. 124, 126 of the Analytical Report**). Furthermore, partially due to the future adoption of the draft law, the Commission is revising existing legislation starting with revision of the ESR. To prepare for this process, the Commission has published an inception impact assessment based on consultations with the public and scientists.[265] The ETS Directive, the LULUCF Regulation, and "CO_2 standards for cars and vans Regulation" are also undergoing the process of revision.[266]

1.2. Nationally Determined Contribution

147. The European Union and MSs commit to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels.[267]

2. Implementation and Enforcement of General Climate Policy

2.1. General Considerations

148. International climate treaties are binding upon MSs as individual countries and as a result of their ratification by the EU as a regional organization.[268] All EU law, including the EU climate law, is additionally binding on MSs by virtue of the Treaty on the Functioning of the EU.[269] The EU Commission monitors national compliance and has powers to enforce compliance by initiating proceedings in the CJEU which can lead to the imposition of financial sanctions. However, although the EU climate law is binding on MSs, the EU law also provides a degree of flexibility to MSs in terms of how they choose to achieve climate targets and goals.[270] This principle is reflected strongly for example, in the ESR.

149. The ETS sector is currently supranationally organized by the EU and regulated directly by the EU Commission.

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[264] Stepping up Europe's 2030 climate ambition. COM/2020/562 final. P. 20-21.

[265] European Commission. Effort sharing: Member States' emission targets.

[266] European Commission. Climate Target Plan. URL: https://ec.europa.eu/clima/policies/eu-climate-action/2030_ctp_en (the date of access: March 22, 2021).

[267] NDC Registry. EU home page. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=EUU (the date of access: March 22, 2021).

[268] *Neuweg I., Averchenkova A.* Climate change legislation and policy in China, the European Union and the United States // Trends in Climate Change Legislation / ed. by A. Averchenkova, S. Fankhauser, M. Nachmany M. Edward Elgar Publishing, 2017. P. 37.

[269] According to Article 288 of the Treaty on the Functioning of the European Union the target of a directive is binding, as to the result to be achieved, but shall leave to the national authorities the choice of form and methods. Regulations on the other hand are binding in all aspects (targets and methods).

[270] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P.5-6.

150. The non-ETS sector is organized by means of allocation of binding national targets for GHG emission reduction for individual MSs. These targets are relative to the overall economic development of each MS.[271] MSs are further obliged to adopt national instruments to reach the required reduction targets, for instance, by means of carbon taxation or setting sector or product-specific standards.[272] The EU does not prescribe exact means or pathways to achieve the GHG emission reduction target on the national level allowing MSs a degree of flexibility. Still, the EU Regulation 2018/1999 on the Governance of the Energy Union and Climate Action[273] vests obligations upon MSs to adopt national energy and climate plans for achieving ultimate 2030 climate targets (**para. 155 of the Analytical Report**).

151. For both the ETS and non-ETS sectors, the main EU body ensuring implementation of and monitoring compliance with climate policies is the European Commission. There are, however, several specialized bodies responsible for assisting the Commission with monitoring[274] and assessment of the GHG inventory.[275]

2.2. Implementation Mechanisms

a. The EU and MSs' Obligations Regarding Implementation of the Climate Strategy and Reporting

152. The EU has certain reporting obligations at the international level.[276] Under the UNFCCC and its Kyoto Protocol, the EU submits to the Secretariat a National Inventory Report[277] on GHG emissions on an annual basis; a Biennial Report[278] on EU's progress towards GHG emissions reduction target and on policies and measures as regards mitigation of and adaptation to combat climate change; and quadrennial National Communications.[279] The same reporting obligations are vested on MSs.[280]

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[271] Regulation (EU) 2018/842.

[272] *Rosenstock M.* Marktbasierte Instrumente in der EU: Status quo und Fortentwicklung // Der Markt im Klimaschutz: Welchen Beitrag leisten Emissionshandel und Ökosteuern zur Erreichung der Klimaziele in Deutschland und Europa? Ökologische Wirtschaftsforschung / ed. by S. Rudolph, S. Schmidt. Vol 81. Metropolis, 2009. P.125.

[273] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.328.01.0001.01.ENG (the date of access: March 22, 2021).

[274] European Commission. Union Registry. URL: https://ec.europa.eu/clima/policies/ets/registry_en (the date of access: March 22, 2021).

[275] European Environment Agency. Climate Change Mitigation. URL: https://www.eea.europa.eu/themes/climate (the date of access: March 22, 2021).

[276] European Commission. Emissions monitoring & reporting. URL: https://ec.europa.eu/clima/policies/strategies/progress/monitoring_en (the date of access: March 22, 2021).

[277] European Union. 2020 National Inventory Report (NIR). URL: https://unfccc.int/documents/228021 (the date of access: March 22, 2021). The GHG emissions inventory is prepared by the European Environment Agency on behalf of the Commission and transmitted to the UNFCCC Secretariat.

[278]European Commission. Fourth Biennial Report from the European Union under the UNFCCC. URL: https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/045612387_European%20Union-BR4-1-European%20Union-BR4_C_2019_8832_and_SWD_2019_432.pdf (the date of access: March 22, 2021).

[279]European Union. Biennial Reports (BR). BR 3. National Communication (NC). NC 7.. URL: https://unfccc.int/documents/198246 (the date of access: March 22, 2021).

[280] UNFCCC, Article 12; Governance Regulation, Article 17.

153. On the EU level, the Climate Monitoring Mechanism, established by Regulation No 525/2013[281] and further developed in implementing Regulation No 749/2014[282] (both are no longer in force) and in delegated Regulation No 666/2014 on requirements for the EU inventory system[283] (in force), used to be the relevant framework on monitoring and reporting until January 1, 2021; its key reporting provisions apply until 2022, when reporting for years 2019 and 2020 will be completed.[284] MSs are required to report on: GHG emissions in all sectors; projections, policies and measures as regards GHG emissions reduction; adaptation to climate change at the national level; low-carbon development strategies; support for developing countries; use of revenues from auctioning procedure established by the ETS.[285]

154. From January 1, 2021, the above-mentioned regulations on establishing and implementing the Climate Monitoring Mechanism were repealed and replaced by the Governance Regulation and further regulations.[286]

155. In accordance with the Governance Regulation and in order to achieve the 2030 target and fulfill the Paris Agreement commitments, MSs develop "integrated national energy and climate plans" and long-term strategies for periods of 10 years, and submit them to the EU Commission.[287] NECPs are to "ensure the transparency and predictability of national policies and measures to ensure investment certainty."[288] Long-term strategies must set a perspective of at least 30 years and be made available to the public. NECPs must be consistent with national long-term strategies to ensure a national embedding of the climate policy and consistency of national policies with achieving the EU's long-term climate objective. Failure to submit long-term strategies and NECPs can expose MSs to enforcement action.

156. The Governance Regulation contains provisions on reporting and monitoring. In particular, in March 2023 MSs will report on their progress in implementing climate strategies and policies.[289] The

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[281] Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC . URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0525 (the date of access: March 22, 2021).

[282]Commission Implementing Regulation (EU) No 749/2014 of 30 June 2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0749 (the date of access: March 22, 2021).

[283] Commission Delegated Regulation (EU) No 666/2014 of 12 March 2014 establishing substantive requirements for a Union inventory system and taking into account changes in the global warming potentials and internationally agreed inventory guidelines pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.179.01.0026.01.ENG (the date of access: March 22, 2021).

[284] European Commission. Emissions monitoring & reporting.

[285] European Commission. Emissions monitoring & reporting.

[286] Commission Implementing Regulation (EU) 2020/1208 of 7 August 2020 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 749/2014. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R1208 (the date of access: March 22, 2021); Commission Delegated Regulation (EU) 2020/1044 of 8 May 2020 supplementing Regulation (EU) 2018/1999 of the European Parliament and of the Council with regard to values for global warming potentials and the inventory guidelines and with regard to the Union inventory system and repealing Commission Delegated Regulation (EU) No 666/2014. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R1044 (the date of access: March 22, 2021).

[287] Governance Regulation, Article 3 (1) and Article 15.

[288] Governance Regulation, Paragraph 34.

[289] Governance Regulation, Article 17.

Commission asses the progress made in emission cutting and publishes a respective report every year.[290] The reports include both the ETS and non-ETS sectors.[291] In November 2020 the EU progress report was published.[292] The compliance-related information is made available to the public on the EU website(s).[293]

b. Private Parties Obligations

157. In the ETS sector, private entities have to create an account with the Union Registry — a central register with a list of all emitters — to be able to trade. Accordingly, all their emissions, certificates, and trades are automatically recorded.[294]

158. In the non-ETS sector, the EU yearly reviews the GHG inventory to ensure compliance with the set climate targets.[295] The EU inventory is a collection of national inventories, based on the emissions reported under the EU Climate Monitoring Mechanism.[296]

159. Under both ETS and non-ETS sector regimes companies are not required by the EU to develop climate strategies. However, as for the non-ETS regime, companies must comply with national measures introduced to achieve national effort sharing targets and will therefore necessarily develop strategies to improve their emission output, since otherwise, national governments would have to punish the companies with regulatory sanctions including fines or criminal prosecution. The companies are driven by financial and reputational motives to optimize their production; they are also increasingly incentivized by the growth in consumer demand for sustainable food, packaging, housing, and transport products (**paras. 161, 177, 178 of the Analytical Report**).

160. Noteworthy, there are requirements to carry out environmental impact assessments[297] for individual projects which are likely to have significant effects on the environment on the basis of Directive 2011/92/EU.[298] Some public projects are required to undergo strategic environmental assessment; conditions and procedure are enshrined in Directive 2001/42/EC.[299]

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[290] European Commission. Progress made in cutting emissions. URL: https://ec.europa.eu/clima/policies/strategies/progress_en#tab-0-1 (the date of access: March 22, 2021).

[291] Report from the Commission to the European Parliament and the Council: Preparing the ground for raising long-term ambition EU Climate Action Progress Report 2019. COM/2019/559 final. URL: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2019:559:FIN (the date of access: March 22, 2021).

[292] Kick-starting the journey towards a climate-neutral Europe by 2050: EU Climate Action Progress Report 2020. URL: https://ec.europa.eu/clima/sites/clima/files/strategies/progress/docs/com_2020_777_en.pdf (the date of access: March 22, 2021).

[293] Preparing the ground for raising long-term ambition. EU Climate Action Progress Report 2019. COM/2019/559 final.

[294] European Commission. Union Registry.

[295] European Commission. Emissions monitoring & reporting.

[296] European Commission. Emissions monitoring & reporting.

[297] For a brief description of the environmental assessment system see: European Commission. Environmental Assessment. URL: https://ec.europa.eu/environment/eia/index_en.htm (the date of access: March 22, 2021).

[298] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0092 (the date of access: March 22, 2021).

[299] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. URL: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32001L0042 (the date of access: March 22, 2021).

c. Emission Trading

161. One of the critical instruments to attain the EU's climate goals is the EU ETS (GHG emissions trading scheme), administered by the European Commission and established based on the Directive 2003/87/EC.[300]

162. Participants in the ETS include power stations, oil refineries, offshore platforms, and industries that produce iron, steel and aluminum, cement and lime, pulp, paper and cardboard, glass, ceramics and chemicals;[301] the ETS covers emissions of carbon dioxide (CO_2), nitrous oxide (N_2O) and perfluorocarbons (PFCs).[302]

163. The ETS operates on a cap-and-trade basis,[303] i.e. the overall volume of GHGs that can be emitted for a multi-year phase by power plants, factories, and other companies is limited to a cap set at the EU level.[304] MSs are required to implement the ETS into their domestic legal systems.[305]

164. GHG emission allowances function as a "currency" of the ETS: each allowance permits a user to emit 1 tonne of CO_2 equivalent.[306] If companies emit more GHGs than they can cover with allowances, they have to pay heavy fines or buy sufficient allowances to cover their emissions.[307] Companies may receive small allowances from their governments for free, buy additional allowances or draw on surplus allowances from the previous year.[308] Starting from 2013 auctioning is the default method of allocating GHG emission allowances.[309] This method is the most transparent and reflects a stronger implementation of the "polluter pays" principle.[310]

165. The ETS is organized in phases (periods). There are currently four phases.[311] Briefly, the first period served as a test phase when the ETS was decentralized.[312] Every MS had its allocation plan and its monitoring and verification structures.[313] In the third period, the European Commission replaced the national allocation plans with an EU-wide supranational trading system that determined the emission cap,

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[300] Directive 2003/87/EC.

[301] Regulation 9 requires that "no person may carry out a regulated activity at an installation except to the extent authorised by a permit held by the operator of the installation". Regulated activities are defined with reference to those activities set out in Annex 1 of Directive 2003/87/EC, as amended from time to time and as adapted by Annex 20 to the EEA agreement.

[302] European Commission. EU Emissions Trading System (EU ETS).

[303] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P.4-5.

[304] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). URL: https://ec.europa.eu/clima/sites/default/files/factsheet_ets_en.pdf (the date of access: March 22, 2021).

[305] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P.4.

[306] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). P. 2.

[307] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). P. 2.

[308] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). P. 2-3.

[309] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). P. 3.

[310] European Commission. The EU Emissions Trading System (EU ETS) (factsheet). P. 3.

[311] European Commission. EU ETS Handbook, 2015. P. 7.

[312] *Bodandy D. et al.* Facilitating Linkage of Heterogeneous Regional, National, and Sub-National Climate Policies Through a Future International Agreement. P. 19. URL: https://www.belfercenter.org/sites/default/files/files/publication/harvard-ieta-linkage-paper-nov-2014.pdf (the date of access: March 22, 2021).

[313] Ibid.

distribution, monitoring, and verification tasks.[314] In 2016, the Commission established a central register (Union Registry) to keep a list of all emitters, their certificates, and actual emissions and to monitor all certificate transfers.[315] Since the third period, the standard procedure for allocation of certificates is auctioning rather than free allocation of allowances.[316] For the next period (2021–2030), the ETS will decrease the distribution of annual allowances by 2.2% each year as of 2021 and reinforce the Market Stability Reserve mechanism[317] (**para. 172 of the Analytical Report**) to lead to a more robust carbon pricing.[318] Moreover, the ETS is likely to be further amended in view of the future adoption of the European Climate Law and the EU Council decision to increase the 2030 target to 55%. The potential expansion of the ETS to include additional sectors may also shape new developments in the EU ETS.

The first commitment period (2005–2007)

166. During the first commitment period, 1850 participants were included in the ETS (which included only the sectors of energy, iron and steel production and processing, processing of minerals, and the paper industry).[319] The certificates for CO_2 emission[320] were allocated to MSs based on historical emissions in the previous years (so-called grandfathering);[321] only 5% of the certificates could be auctioned.[322] MSs distributed certificates according to their national allocation plans.[323]

167. Emission of more CO_2 than allowed by a certificate was penalized by a fine of EUR 40 per tonne of CO_2.[324] At that point, ETS was criticized for low reduction targets, vast exemptions from the ETS regime and consequent low certificate prices, and for the weakness of incentives for climate protection.[325]

The second commitment period (2008–2012)

168. In the second period, more (non-EU) countries joined the ETS.[326] However, only 1650 participants were required to obtain certificates.[327] N_2O was (optionally) included as a new GHG under the ETS.[328] MSs were required to distribute reduction targets between the ETS and non-ETS sectors based on a national

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[314] European Commission. Monitoring, reporting and verification of EU ETS emissions. URL: https://ec.europa.eu/clima/policies/ets/monitoring_en (the date of access: March 22, 2021).

[315] European Commission. Union Registry.

[316] Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. Article 1 (11). URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32009L0029 (the date of access: March 22, 2021).

[317] European Commission. Market Stability Reserve. URL: https://ec.europa.eu/clima/policies/ets/reform_en (the date of access: March 22, 2021).

[318] European Commission. EU Emissions Trading System (EU ETS).

[319] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 42. URL: https://www.europa-uni.de/de/forschung/institut/recap15/downloads/recap15_DP025.pdf (the date of access: March 22, 2021).

[320] *Will U.* Climate border adjustments and WTO law. Extending the EU emissions trading system to imported goods and services // Nijhoff international trade law series. Vol. 17. 2019. P. 24.

[321] Ibid.

[322] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 42.

[323] Ibid.

[324] *Will U.* Climate border adjustments and WTO law. P. 24.

[325] Ibid.

[326] Lichtenstein, Norway, Iceland.

[327] *Will U.* Climate border adjustments and WTO law. P. 24.

[328] Ibid.

allocation plan[329] which had to be approved by the European Commission.[330] Since 2012, the aviation sector became included in the EU ETS: emissions from flights from or to airports situated in the EU, Norway, Iceland, and Liechtenstein[331] (EEA EFTA States)[332] became covered by the ETS.[333]

169. One key difference between the first and the second period was the mode of distribution of certificates. In addition to grandfathering, the Commission used benchmarking (a means of rewarding most efficient installations)[334] and auctioning to distribute certificates.[335] Although several MsS[336] allocated certificates via auctioning, a maximum of 10% of certificates could be auctioned by MSs.[337] Certificates from the Kyoto Clean Development Mechanism (CERS) and Joint Implementation (ERUS) have been recognized as eligible trading units.[338]

The third commitment period (2013–2020)

170. During the third period, Croatia joined the EU ETS, and N_2O and perfluorocarbon (PFC) were included as mandatory gases under the ETS.[339]

171. To resolve the problem of an excessive amount of certificates on the market, the cap was fixed directly by the European Commission.[340] It was decided that the cap will decrease linearly by 1.74% of the amount of allowances in 2010 per year.[341] In 2013, 20% of allowances were auctioned; while in 2020 — 70%.[342] Additionally, Certificates from the Kyoto Clean Development Mechanism were only exceptionally recognized as eligible for the least developed countries.[343]

172. Lastly, in order to deal with surplus allowances and further incite the EU ETS participants to reduce GHG emissions, the European Commission established the Market Stability Reserve that started operating

[329] *Rosenstock M.* Marktbasierte Instrumente in der EU: Status quo und Fortentwicklung.

[330] *Lueg B.* Ökonomik des Handels mit Umweltrechten: Umweltökonomische Grundlagen, Instrumente und Wirkungen - insbesondere in der EU. Bremen: Univ. Diss. 2009. P. 225–226.

[331] European Economic Area European Free Trade Association States.

[332] European Commission. EU ETS Handbook, 2015. P. 89.

[333] European Commission. Reducing emissions from aviation. URL: https://ec.europa.eu/clima/policies/transport/aviation_en (the date of access: March 22, 2021).

[334] European Commission. Allocation to industrial installations. URL: https://ec.europa.eu/clima/policies/ets/allowances/industrial_en (the date of access: March 22, 2021).

[335] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 16.

[336] European Commission. Phase 2 auctions (2008-2012). URL: https://ec.europa.eu/clima/policies/ets/pre2013/second_en (the date of access: March 22, 2021).

[337] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 42.

[338] Directive 2003/87/EC, Article 11a.

[339] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 42.

[340] Ibid.

[341] *Will U.* Climate border adjustments and WTO law. P. 24.

[342] *Will U.* Climate border adjustments and WTO law. P. 24.

[343] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 43.

on January 21, 2019.[344] The Market Stability Reserve maintains the number of allowances in circulation in order to balance the market of allowances and encourage further GHG emissions reduction.[345]

The fourth commitment period (2021–2028)

173. As part of a wider revision of EU climate legislation, the European Commission proposed reforming the ETS.[346] This proposal was developed further and voted on in the European Parliament in January 2017[347] and adopted by the Council and Parliament in March 2018.[348] These revisions led to the rules governing the fourth period.[349]

174. The number of free allowances was reduced to make the ETS more effective. Article 10a (5) of the ETS Directive was changed: only 5% of certificates could be distributed for free in 2021–2030.[350] The reduction factor for the ETS cap was set at 2.2% from 2021 onwards.[351]

Final considerations

175. The EU ETS covers only 40% of the EU's CO_2 emission.[352] The EU approach is to exclude sectors that have a high probability of carbon leakage effects (i.e. transfer of production to other countries with more lenient emission constraints) from auctioning. These sectors are included in the carbon leakage list.[353] Sectors that are not covered by the EU ETS are agriculture, buildings, and waste.[354] Still, special regulation of GHG emissions in these sectors exists at the EU level (**paras. 133, 135 of the Analytical Report**).

[344] Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015D1814 (the date of access: March 22, 2021).

[345] European Commission. EU ETS Handbook, 2015. P. 95.

[346] Proposal for a Directive the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. COM/2015/0337 final - 2015/0148 (COD). URL: https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:52015PC0337 (the date of access: March 22, 2021).

[347] Report on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. (COM(2015)0337 – C8-0190/2015 – 2015/0148(COD)). URL: https://www.europarl.europa.eu/doceo/document/A-8-2017-0003_EN.html (the date of access: March 22, 2021).

[348] 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. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0410 (the date of access: March 22, 2021).

[349] European Comission. Revision for phase 4 (2021-2030). URL: https://ec.europa.eu/clima/policies/ets/revision_en (the date of access: March 22, 2021).

[350] Directive (EU) 2018/410.

[351] Directive (EU) 2018/410.

[352] *Thompson J. R.* Return to Your Seats and Fasten Your Seatbelts: The European Union Encounters Turbulence in the Application of Its Airline Emissions Trading System // Washington International Law Review. Vol. 47. 2015. P. 385.

[353] European Commission. Carbon Leakage List 2021-2030. URL: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1146-Carbon-Leakage-List-2021-2030 (the date of access: March 22, 2021).

[354] *Victor D. et al*. Prove Paris was more than paper promises // Nature. Vol. 548. 2017. No. 7665. P. 26.

176. The EU ETS has been criticized, in particular, for low and unstable allowance prices, over-allocation of allowances, and for failing to meet its goals.[355] The process of review of ETS is underway, partially due to the future adoption of the European Climate Law.

d. Incentives

177. It is possible to sell superfluous certificates.[356]

178. If an operator uses the most efficient technology, that operator is exempt from the ETS (benchmarking).[357]

179. The Innovation Fund of the EU is one of the world's largest funding programs in the field of demonstration of innovative low-carbon technologies.[358] The EU ETS will auction over 450 million allowances between 2020 and 2030 (roughly amounting to EUR 10 billion) and use the revenue to fund projects.[359] The focus will be on low-carbon technologies, carbon capture and utilization, construction and operation of carbon capture and storage, innovative renewable energy, and energy storage.[360] The first call for proposals for large-scale projects closed on October 29, 2020, but new calls will follow.[361] The projects will be selected based on the effectiveness of emission avoidance, degree of innovation, project maturity, scalability, and cost-efficiency.[362]

2.3. Enforcement

180. For both ETS and non-ETS sectors, compliance is monitored and enforced by the European Commission. Private entities that do not have required certificates have to pay fines for over-emission.[363] MSs are additionally required to have effective regulatory systems in place to enforce compliance with any national instruments adopted in line with the MSs' duties under the EU climate legislation.

181. The EU climate laws can be enforced before MSs national courts and before the CJEU.

182. The infringement procedure, according to Articles 258-260 of the Treaty on the Functioning of the European Union, is the ordinary instrument to enforce EU law in MS.[364] This procedure is the most common

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[355] See *Borghesi S., Montini M.*, The Best (and Worst) of GHG Emission Trading Systems: Comparing the EU ETS with Its Followers // Frontiers in Energy Research. Vol. 49. 2016. No. 10; Corporate Europe Observatory. EU emissions trading: 5 reasons to scrap the ETS. URL: https://corporateeurope.org/en/environment/2015/10/eu-emissions-trading-5-reasons-scrap-ets (the date of access: March 22, 2021); *Abdel-Ati I.* The EU Emissions Trading System Seeking to Improve. URL: https://www.climatescorecard.org/2020/03/the-evolving-eu-emissions-trading-system/#:~:text=The%20EU%20ETS%20has%20been,failing%20to%20meet%20its%20goals (the date of access: March 22, 2021).

[356] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 8.

[357] *Martin R. et al* On the empirical content of carbon leakage criteria in the EU Emissions Trading Scheme // Ecological Economics. Vol. 105(C). 2014. P. 78.

[358] European Commission. Innovation Fund. URL: https://ec.europa.eu/clima/policies/innovation-fund_en#:~:text=The%20Innovation%20Fund%20is%20one,of%20innovative%20low%2Dcarbon%20technologies.&text=innovative%20low%2Dcarbon%20technologies%20and,carbon%20capture%20and%20utilisation%20(CCU) (the date of access: March 22, 2021).

[359] European Commission. Innovation Fund.

[360] European Commission. Innovation Fund.

[361] European Commission. Innovation Fund.

[362] European Commission. Innovation Fund.

[363] *Mauer E.M.* Linking von Emissionshandelssystemen: Die EU als Vorreiter für einen globalen CO2-Markt? P. 62-63.

[364] Ibid.

enforcement mechanism in the EU when it comes to environmental law.[365] Statistics of 2002–2013 show that most infringement procedures in the EU involved environmental issues.[366]

183. If the European Commission considers that a MS has not complied with its obligations, the Commission may issue a Reasoned Opinion on the matter. If the MS does not comply with the observations, the Commission can institute proceedings before the CJEU.[367] The Court's judgments may impose lump sums and penalty payments upon the individual MS.[368]

184. Noteworthy, while the EU climate laws may be enforced in courts, MSs are susceptible to litigation by both the European Commission and NGOs, while the EU institutions themselves can also be challenged for alleged failure to comply with their duties under the climate law before the CJEU. Although the current jurisprudence of the Court shows that it is not that easy for NGOs to establish standing in order to hold EU institutions accountable, it appears that this trend might currently be shifting.

3. Climate Litigation

185. Climate matters are litigated before national courts of MSs and at the EU level before the CJEU.

186. One of the trends in climate change litigation in MSs' national courts is application of human rights norms (in particular, those of the European Convention on Human Rights).[369] As of now, the most notable case in this regard is the *Urgenda*[370] judgment by the Dutch Supreme Court of December 2019. The court held that the Dutch government's climate change plan violated the right to life and the right to respect for private and family life (in the aspect of a healthy environment). The judgment focused on the serious risks posed by climate change. The case is notable since the Netherlands now have a positive obligation to reduce its GHG emissions by at least 25% by the end of 2020 compared to 1990 levels.[371] Although it is not yet clear whether the Netherlands were able to comply with and effectively execute the judgment, climate activists argue that the progress is not sufficient.[372]

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[365] *Kingston S. et al.* European environmental law. Cambridge University Press, 2017. P. 186.

[366] *Hedemann-Robinson M.* Enforcement of European Union environmental law: Legal issues and challenges. 2nd edition, 2016. P. 247 et seq.

[367] Consolidated version of The Treaty on the Function of the European Union, Article 258. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT (the date of access: March 22, 2021).

[368] *Purnhagen K., Saurer J.* Climate Change Litigation: Liability of EU Member States under EU law. P.28.

[369] *Pedersen O. W.* The European Convention of Human Rights and Climate Change – Finally! URL: https://www.ejiltalk.org/the-european-convention-of-human-rights-and-climate-change-finally/?utm_source=mailpoet&utm_medium=email&utm_campaign=ejil-talk-newsletter-post-title_2 (the date of access: March 22, 2021).

[370] *Urgenda Foundation v. State of the Netherlands*. URL: http://climatecasechart.com/non-us-case/urgenda-foundation-v-kingdom-of-the-netherlands/ (the date of access: March 22, 2021).

[371] *Nollkaemper A., Burgers L.* A New Classic in Climate Change Litigation: The Dutch Supreme Court Decision in the Urgenda Case. URL: https://www.ejiltalk.org/a-new-classic-in-climate-change-litigation-the-dutch-supreme-court-decision-in-the-urgenda-case/ (the date of access: March 22, 2021).

[372] The Netherlands faces pressure as global 'test case' for deep emissions cuts in 2020. URL: https://www.climatechangenews.com/2020/02/26/netherlands-faces-pressure-global-test-case-deep-emissions-cuts-2020/ (the date of access: March 22, 2021).

187. In another recent *Friends of the Irish Environment vs. the Government of Ireland*[373] case it was found that the climate mitigation plans lacked important details: specifically, it failed to set out how Ireland would reduce GHG emissions and achieve the national transitional objective.[374] Human rights arguments were rejected.

188. At the supranational level as of April 2021, there have been in total 56 climate-related cases in CJEU:[375] 35 before the Court of Justice[376] and 21 cases before the General Court.[377] From those 56 cases, the vast majority deal in some shape or form with the interpretation of the ETS Directive.[378] In these cases, the climate issues are litigated between private entities and MS; MS and the European Commission; and between private entities and the European Commission.[379]

189. The same trend on the application of human rights norms exists at the CJEU level. In *People's Climate Case* of CJEU the plaintiffs challenge existing GHG emissions reduction targets as not stringent enough and allege breach of the right to life and the right to private life containing a positive obligation to protect from harm caused by environmental pollution. The initial decision to dismiss the case for lack of standing is currently being appealed against.[380]

4. Extra-Territorial Aspects of Climate Regulation. Trade Implications

190. The issue of extra-territorial application of the climate regulations is closely linked to the need to prevent competitive disadvantages and undermining the EU action on climate protection in light of the carbon leakage effect (**para. 175 of the Analytical Report**).[381]

191. As of now, the EU has exempted exports from the ETS sector. Nonetheless, the EU tried to include *international* flights within the EU ETS and suggested a border adjustment for imported cement and clinker.[382] Two options are being discussed on how to deal with the carbon leakage problem. The first is to

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[373] *Friends of the Irish Environment v Ireland*. URL: http://climatecasechart.com/non-us-case/friends-of-the-irish-environment-v-ireland/#:~:text=An%20advocacy%20group%2C%20Friends%20of,and%20obligations%20under%20the%20European (the date of access: March 22, 2021).

[374] *Pedersen O. W.* The European Convention of Human Rights and Climate Change – Finally!

[375] On the EU level, 56 climate-related cases are recorded by Climate Change Litigation Databases (URL: http://climatecasechart.com/non-us-jurisdiction/eu/ (the date of access: March 22, 2021)) and by the Grantham Research institute on climate change and the environment. URL: https://climate-laws.org/litigation_cases?geography%5B%5D=59 (the date of access: March 22, 2021).

[376] Subdivision of the CJEU, that deals with requests for preliminary rulings from national courts, certain actions for annulment and appeals. See European Court of Justice. URL: http://climatecasechart.com/non-us-jurisdiction/european-court-of-justice/ (the date of access: March 22, 2021).

[377] Subdivision of the CJEU, that rules on actions for annulment brought by individuals, companies and, in some cases, EU governments. See General Court. URL: http://climatecasechart.com/non-us-jurisdiction/general-court-known-as-court-of-first-instance-before-2010/ (the date of access: March 22, 2021).

[378] Directive 2003/87/EC. URL: http://climatecasechart.com/non-us-principle-law/200387ec/ (the date of access: March 22, 2021).

[379] Directive 2003/87/EC.

[380] *Armando Ferrão Carvalho and Others v. The European Parliament and the Council*. URL: http://climatecasechart.com/non-us-case/armando-ferrao-carvalho-and-others-v-the-european-parliament-and-the-council/ (the date of access: March 22, 2021).

[381] *Will U.* Climate border adjustments and WTO law. P. 35.

[382] Ibid.

establish an equalization system *in lieu* of the obligation to pay for ETS certificates,[383] the second is to integrate imported goods into the ETS.[384] However, as of now, the EU does not require importers to comply with the EU-wide climate standards.

4.1. Carbon Border Adjustment Mechanism

192. One potential solution to the carbon leakage problem is the imposition of carbon tariffs on imports from non-EU countries.[385] On July 23, 2020, the European Commission launched public consultations on two initiatives that would improve the EU capacity to use carbon taxes to control imports from non-EU countries:[386] proposed revision of the Energy Tax Directive[387] and creation of a CBAM.[388] The Commission makes it clear that the creation of CBAM is viewed as a measure of last resort if the global effort on climate action continues to be dissimilar.[389] The Commission also indicates that CBAM would be in line with the WTO's rules and the EU's international obligations.[390] A proposal regarding the creation of CBAM for selected sectors is expected by July of 2021.[391]

4.2. Product Labeling

193. According to Article 2 Para (12)(14) of Regulation (EU) 2017/1369/EU, if a product from a third country is placed on the European market, it falls under the scope of the regulation.[392]

194. According to Article 6, a supplier (a person that places a product from a third country on the European market) has a duty to: (a) make reference on its product as to the energy efficiency class of the product, (b) cooperate with market surveillance authorities, and (c) take remedial action in cases of non-compliance.[393] The supplier also has the right to be consulted by the Commission concerning the product database (Article 12) and the adoption of new delegated acts by the Commission (Article 16).[394]

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[383] Directive 2009/29/EC.

[384] Directive 2003/87/EC.

[385] *Kuusi T. et al.* Carbon Border Adjustment Mechanisms and their Economic Impact on Finland and the EU. P. 25. URL: https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/162510/VNTEAS_2020_48.pdf (the date of access: March 22, 2021).

[386] Ibid.

[387] Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32003L0096 (the date of access: March 22, 2021).

[388] European Green Deal. COM/2019/640 final, Section 2.1.1.

[389] European Green Deal. COM/2019/640 final, Section 2.1.1.

[390] European Parliament Legislative Train. European Green Deal. Carbon Border Adjustment Mechanism as Part of The European Green Deal / Before 2021-7.

[391] CBAM Proposal was by the Comission on July 14, 2021. See European Comission. Proposal for a Regulation of the European Parliament and of the Council Establishing a Carbon Border Adjustment Mechanism. URL: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021PC0564 (дата обращения: 15.07.2021).

[392] Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU. URL: https://eur-lex.europa.eu/eli/reg/2017/1369/oj (the date of access: March 22, 2021).

[393] Regulation (EU) 2017/1369, Article 6 (a),(b).

[394] Regulation (EU) 2017/1369, Article 14.

195. As of now, no taxes for suppliers from third countries exist. The European Green Deal only provides for the carbon border adjustment as a potential tool to address the dissimilar levels of climate change protection globally.[395]

[395] European Green Deal. COM/2019/640 final, Section 2.1.1.

III. THE UNITED KINGDOM

Executive Summary

196. The current climate change policy in the United Kingdom is formed by the framework Climate Change Act 2008 and several policy documents containing strategies and goals in relation to mitigation of and adaptation to climate change. All these documents are guided by the UK's international climate obligations, in particular, those arising under the UNFCCC and the Paris Agreement.

197. In its Nationally Determined Contribution submitted under the Paris Agreement on December 12, 2020, the UK commits to reduce economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels.

198. Although the development of specific sectoral strategies and targets is not required by the Climate Change Act, the latest strategical document, The Ten Point Plan, determines specific goals and respective deadlines in several spheres (industry, homes, transportation, power generation, natural resources).

199. One of the key tools of implementation of the climate strategies is the UK ETS operating on a cap-and-trade basis.

200. Climate change-related issues are litigated in the UK. The recent case law examples mostly concern (1) challenges to planning, regulatory, and policy decisions that allegedly contradict the goal of reduction of GHG emissions, (2) the use of climate change in criminal litigation (including as a defense), and (3) alleged misleading advertising by fossil fuel companies.

1. Climate Policy in the United Kingdom

1.1. National Climate Legislation and Policies

a. National Legislation and Policy Documents

201. The current climate change policy in the UK is formed by the Climate Change Act,[396] the Carbon Plan,[397] the Clean Growth Strategy of 2017,[398] and the Ten Point Plan of 2020.[399] The goals on adapting to climate change are reflected in the NAP.[400] These documents are guided by international climate obligations, in particular, those arising under the UNFCCC and the Paris Agreement.

202. The Climate Change Act is a piece of primary legislation which was passed by the UK Parliament and entered into force on November 26, 2008.[401] It is a framework law which sets emissions reduction targets and associated duties on the relevant UK Secretary of State to ensure those reductions of GHG emissions are achieved.[402] Originally the Climate Change Act contained provisions on cutting GHG emissions by at least 80% below the 1990 baseline level by 2050.[403] In June 2019 this GHG emissions reduction target was increased to 100% by 2050 following an amendment to the Climate Change Act.[404] This change was made at least partly in response to the UK's commitments under the Paris Agreement.[405]

203. The Climate Change Act introduced the process of setting five-year caps on GHG emissions termed 'carbon budgets'. Following the adoption of the Climate Change Act, the government of the UK published the 2009 UK Low Carbon Transition Plan which covered the first three carbon budget periods (from 2008 to

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[396] Climate Change Act 2008 (2008 c. 27). URL https://www.legislation.gov.uk/ukpga/2008/27 (the date of access: March 22, 2021).

[397] UK Government. The Carbon Plan, 2011. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47613/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf (the date of access: March 22, 2021).

[398] UK Government. The Clean Growth Strategy, 2017. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf (the date of access: March 22, 2021).

[399] UK Government. The Ten Point Plan for a Green Industrial Revolution, 2020. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf (the date of access: March 22, 2021).

[400] Department for Environment, Food & Rural Affairs, UK Government. The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, 2018. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf (the date of access: March 22, 2021).

[401] The Climate Change Act was the result of a successful public campaign from various civil society organisations (e.g. Friends of the Earth) and political parties to create a legally binding framework with meaningful long-term climate targets for the UK.

[402] The Secretaries of State are senior government ministers in the UK government.

[403] UK Government. The United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution. Para. 4(a(i)). URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943618/uk-2030-ndc.pdf (the date of access: March 22, 2021).

[404] Climate Change Act, Article 2.

[405] *Skidmore C.* Law for Net Zero Emissions Begins Passage Through Parliament. URL: https://www.gov.uk/government/speeches/law-for-net-zero-emissions-begins-passage-through-parliament (the date of access: March 22, 2021).

2022).[406] In 2011, that plan was amended and superseded by the Carbon Plan covering the first four carbon budgets (until 2027).[407] Then the Clean Growth Strategy, the current long-term climate change strategy, was adopted in 2017. It sets out plans to fulfill the fourth and fifth carbon budgets (2023 to 2027 and 2028 to 2032 respectively).[408]

204. There are a number of interim targets which apply in the UK through the use of carbon budgets. Each carbon budget spans a five-year time period and sets a limit on GHG emissions over that period. The carbon budget framework and GHG emissions reduction targets are contained in the Climate Change Act, but the specific GHG emissions levels for each budget period are set via secondary legislation.

205. The forthcoming carbon budgets are as follows: the carbon budget for the 2018–2022 period is 2,544,000,000 tonnes of CO_2e ;[409] for the 2023–2027 period — 1,950,000,000 tonnes;[410] for the 2028–2032 period — 1,725,000,000 tonnes.[411]

206. On December 4, 2020, the Prime Minister of the UK announced a new ambitious target to cut the UK's emissions by at least 68% by 2030, as compared to 1990 levels, which is also viewed as a mean of spurring a green recovery from the coronavirus crisis.[412] This target is based on the Prime Minister's Ten Point Plan published earlier, in November 2020. The Ten Point Plan sets out new policies, specifies investment, and provides a roadmap of actions.[413]

207. As for adaptation to climate change, the UK's current adaptation strategy can be found in the 2018 NAP covering the period from 2018 to 2023. The NAP, as provided for by the Climate Change Act,[414] sets out the actions the UK government is and will be taking in response to risks posed by climate change.

208. The Carbon Plan, the Clean Growth Strategy, the Ten Point Plan, and the NAP do not have any special legal status. As they are policy documents, they are not legally binding on governmental bodies. They do not establish any mandatory deadlines.

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406 UK Government. The UK Low Carbon Transition Plan. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf (the date of access: March 22, 2021).

407 Environment Agency. 2010 to 2015 Government Policy: Greenhouse Gas Emissions (Policy Paper). URL: https://www.gov.uk/government/publications/2010-to-2015-government-policy-greenhouse-gas-emissions/2010-to-2015-government-policy-greenhouse-gas-emissions (the date of access: March 22, 2021).

408 CCC. An Independent Assessment of the UK's Clean Growth, January 2018. P. 5. URL: https://www.theccc.org.uk/wp-content/uploads/2018/01/CCC-Independent-Assessment-of-UKs-Clean-Growth-Strategy-2018.pdf (the date of access: March 22, 2021).

409 Carbon Budgets Order 2009 (SI 2009/1259), Article 2(c). URL: https://www.legislation.gov.uk/uksi/2009/1259/contents/made (the date of access: March 22, 2021).

410 Carbon Budget Order 2011 (SI 2011/1603), Article 2. URL: https://www.legislation.gov.uk/uksi/2011/1603/made (the date of access: March 22, 2021).

411 Carbon Budget Order 2016 (SI 2016/785), Article 2 URL: https://www.legislation.gov.uk/ukdsi/2016/9780111147825/introduction (the date of access: March 22, 2021).

412 UK Government. UK Sets Ambitious New Climate Target Ahead of UN Summit. URL: https://www.gov.uk/government/news/uk-sets-ambitious-new-climate-target-ahead-of-un-summit (the date of access: March 22, 2021).

413 Ibid.

414 Climate Change Act, Section 56.

b. Institutional Framework

209. The Climate Change Act creates the independent advisory body, the CCC.[415] The CCC is required to advise the Secretary of State in relation to the 2050 target,[416] the carbon budgets,[417] impact of climate change,[418] to report to Parliament on progress towards the targets,[419] and to provide other advice or assistance on request.[420]

210. Schedule 1 of the Climate Change Act contains detailed provisions on CCC membership, staffing, funding, and organization. Thomas Muinzer has described the CCC as follows: "the Climate Change Act designs the CCC to function as an expert advisory body that can advise, examine and report on the emissions reduction regime rolled out under the framework. It is a statutory non-departmental public body, and so it retains some meaningful degree of independence from UK Government."[421]

211. The Climate Change Act imposes a number of duties on the UK Secretary of State in relation to the implementation of the climate change policy (**para. 229 of the Analytical Report**).

c. Scope of the Climate Change Strategy

212. The Carbon Plan focuses on six of the main sources of emissions in the UK: buildings; transport; industry; electricity; agriculture, forestry, and land management; waste and resource efficiency.

213. The 2017 Clean Growth Strategy identifies areas where the UK needs to make the greatest progress:

- accelerating clean growth (particularly through Green Finance capabilities);
- improving business and industry efficiency (particularly, through support measures, energy efficiency schemes and standards, innovation);
- improving the energy efficiency of homes;
- shifting to low carbon transport;
- delivering clean, smart, flexible power (particularly, through phasing out the use of unabated coal to produce electricity and reducing power costs for households and businesses);
- enhancing the benefits and value of natural resources (covers agriculture, forestry, waste management);

[415] Climate Change Act, Sections 32-43, and Schedule 1.

[416] Climate Change Act, Section 33.

[417] Climate Change Act, Section 34.

[418] Climate Change Act, Section 57.

[419] Climate Change Act, Section 36.

[420] Climate Change Act, Section 38.

[421] *Muinzer T.* Climate and Energy Governance for the UK Low Carbon Transition: The Climate Change Act 2008. Cham: Palgrave MacMillan, 2019. P. 63.

- leading in the public sector (particularly, through introducing tighter targets for the public sector).[422]

214. The Ten Point Plan sets ten objectives focused on energy, transportation, building, carbon management methodologies, green financing, and innovations:

- advancing offshore wind;
- driving the growth of low carbon hydrogen;
- delivering new and advanced nuclear power;
- accelerating the shift to zero emission vehicles;
- green public transport, cycling and walking;
- jet zero and green ships;
- greener buildings;
- investing in carbon capture, usage and storage;
- protecting natural environment;
- green finance and innovation.[423]

215. The NAP is wide-ranging and includes numerous goals, such as:

- the development and implementation of a Nature Recovery Network, with the purpose of linking habitat restoration and creation to improved access, flood protection, and water quality;[424]
- updating the National Coastal Erosion Risk Map and making this freely available as open data;[425]
- ensuring water companies reduce water leakage in the public water supply by at least an average of 15% by 2025.[426]

d. Sectoral Climate Strategies

216. Specific sectoral strategies are not developed under the national climate strategy. The Climate Change Act does not explicitly require sectoral targets.

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[422] Department of Business, Energy & Industrial Strategy, UK Government. Clean Growth Strategy: Executive summary. URL: https://www.gov.uk/government/publications/clean-growth-strategy/clean-growth-strategy-executive-summary (the date of access: March 22, 2021).

[423] Ten Point Plan. P. 7.

[424] NAP. P. 11-14.

[425] NAP. P. 118.

[426] NAP. P. 101.

217. Instead of targets to be achieved in specific sectors, the Carbon Plan contains a number of aspirations and projections:

- emissions from buildings in 2050 will be 'almost zero';[427]
- reduction of transport emissions to around 116 tonnes of CO_2e by 2030;[428]
- reduction in overall industry emissions of up to 70% by 2050;[429]
- almost complete decarbonization of electricity supply.[430]

218. The Clean Growth Strategy contains a list of actions and a corresponding timeline for 2017–2032 for the following sectors: business and industry; homes; transport; power; natural resources; public sector.[431]

219. The latest strategical document, the Ten Point Plan, determines specific sectoral goals and sets deadlines for their achievement:

- industry: to improve the energy productivity of businesses by at least 20% by 2030;
- homes: to upgrade around 1 million homes by 2028;
- transportation: to end the sale of new conventional petrol and diesel cars and vans by 2040;
- power generation: to phase out the use of unabated coal to produce electricity by 2025;
- natural resources: to achieve zero avoidable waste by 2050.[432]

220. Noteworthy, the Climate Change Act has indirectly influenced the content of numerous other laws and policies in the UK in many different sectors, because it sets a long-term goal for the decarbonization of the UK economy — around which other legal and policy developments have to be designed. The Climate Change Act is designed to ensure that the UK's approach to climate change is stable and predictable and to avoid the influence of short-term political considerations. Part of the way in which it achieves this is by taking a 'whole economy' approach that applies economy-wide targets to the UK.

221. An example of a law which the Climate Change Act has indirectly influenced is the Energy Act 2013. The Energy Act includes a number of mechanisms to decarbonize the UK's energy system, such as the power given to the UK Secretary of State to set a decarbonization target range for the level of carbon intensity of the UK electricity generation sector.[433]

222. In addition, climate-related standards can be found in different areas. Examples of such standards include the use of building standards which prescribe minimum energy efficiency standards for new-build

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[427] Carbon Plan. Para. 2.21.

[428] Carbon Plan. Para 2.76.

[429] Carbon Plan. Para 2.119.

[430] Carbon Plan. Para 2.145.

[431] Clean Growth Strategy. Annex A. P. 125-130.

[432] Ten Point Plan. P. 12-16.

[433] Energy Act 2013 (2013 c. 32). URL: https://www.legislation.gov.uk/ukpga/2013/32/contents/enacted (the date of access: March 22, 2021).

homes;[434] minimum energy efficiency standards for privately rented housing;[435] emissions performance standards for vehicles;[436] an emission performance standard for electricity generation.[437]

e. Climate Strategy Updating

223. The legal duties set out in Sections 12 to 14 of the Climate Change Act (which require the UK Secretary of State to provide indicative annual ranges for the net UK carbon account, to prepare proposals and policies for meeting carbon budgets, and to report on proposals and policies for meeting carbon budgets) do not explicitly require that the UK climate strategy is regularly updated.

224. The Carbon Plan was produced in 2011 and has not been adjusted in relation to changes in international law made since its publication. The Clean Growth Strategy specifically refers to the Paris Agreement and indicates that the Agreement mirrors the UK's approach of setting five-year caps on GHG emissions.[438] The Ten Point Plan not only indicates the UK's commitment to secure the Paris Agreement through, *inter alia*, setting an action plan for net-zero, but also declares the UK's determination to urge ambitious actions from other countries, businesses, cities, and investors, including through its Presidency of the twenty-sixth UNFCCC Conference of Parties in 2021.[439]

225. The NAP is to be superseded by a successive program on adaptation to climate change since respective programs must be laid before the Parliament 'as soon as reasonably practicable' following the issuance of a report on impact of and adaptation to climate change.[440] Such report, in turn, is to be produced no later than five years after laying of a previous report.[441]

1.2. Nationally Determined Contribution

226. In its Nationally Determined Contribution submitted under the Paris Agreement on December 12, 2020, the UK commits to reduce economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels.[442]

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[434] See e.g. Scottish Government. Building standards technical handbook 2019: domestic (Scotland). URL: https://www.gov.scot/publications/building-standards-technical-handbook-2019-domestic/6-energy/6-1-carbon-dioxide-emissions/ (the date of access: March 22, 2021); and HM Government. The Building Regulations 2010 (England). URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540326/BR_PDF_AD_L1A_2013_with_2016_amendments.pdf (the date of access: March 22, 2021).

[435] See e.g. Department for Business, Energy & Industrial Strategy, UK Government. Domestic Private Rented Property: Minimum Energy Efficiency Standard – Landlord Guidance. URL: https://www.gov.uk/guidance/domestic-private-rented-property-minimum-energy-efficiency-standard-landlord-guidance#find-out-if-your-property-is-covered-by-the-regulations (the date of access: March 22, 2021). These standards require that privately rented accommodation must have a minimum Energy Performance Certificate rating of E.

[436] The Road Vehicle Emission Performance Standards (Cars and Vans) (Amendment) (EU Exit) Regulations 2019 (SI 2019/550). URL: https://www.legislation.gov.uk/uksi/2019/550/made (the date of access: March 22, 2021).

[437] Energy Act 2013. Section 57. This sets a maximum emissions performance standard of 450 g/kWh.

[438] Clean Growth Strategy. P. 5.

[439] Ten Point Plan. P. 6.

[440] Climate Change Act. Section 58.

[441] Climate Change Act. Section 56.

[442] UK Government. United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution.

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Strategy and Reporting

227. The Climate Change Act, unlike other documents forming the UK's climate change strategy, does not contain an action plan for achievement of its GHG emission goals. Annex C of the Carbon Plan contains an action plan, however, it covers only the actions taken in 2011–2019.[443] The Clean Growth Strategy contains a list of actions and a corresponding timeline for several sectors (**para. 218 of the Analytical Report**). The Ten Point Plan contains target milestones, i.e. by when certain actions by the Government should be taken and certain results should be achieved — per each point identified in the Plan (**para. 219 of the Analytical Report**).

228. Monitoring of the implementation of the strategy is carried out via the relevant provisions under the Climate Change Act. These include the duties of the UK Secretary of State to lay before the UK Parliament an annual statement of emissions, and for the CCC to lay before Parliament a report on its views as to the UK's progress towards meeting the carbon budgets. Monitoring is also carried out by Parliament: the Government is required to report to Parliament, and Parliament can then hold the Government to account for any failures in implementation.

229. In particular, the Climate Change Act imposes a number of duties on the UK Secretary of State, including the following:

- to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline (net-zero target);[444]
- to create carbon budgets covering five-year periods and ensure that the net UK carbon account for a budgetary period does not exceed those carbon budgets;[445]
- to lay before Parliament reports setting out proposals and policies for meeting carbon budgets;[446]
- to provide annual reports on emissions to Parliament;[447]
- to lay before Parliament a response to the points raised by each report of the CCC on progress towards the targets;[448]
- to lay reports before Parliament containing an assessment of the risks for the UK of the current and predicted impact of climate change, at intervals of no more than every five years,[449] and, subsequently, to produce programs setting out proposals, policies, and time-scales for reaching the objectives of the UK Government in relation to adaptation to climate change.[450]

[443] Carbon Plan. P. 208-218.

[444] Climate Change Act. Section 1.

[445] Climate Change Act. Section 4(1).

[446] Climate Change Act. Section 14.

[447] Climate Change Act. Section 16.

[448] Climate Change Act. Section 37.

[449] Climate Change Act. Section 56.

[450] Climate Change Act. Section 58.

230. Also, public authorities in the UK are subject to various freedom of information regimes whereby they are required to disclose information on request from a member of the public (subject to various exceptions).[451]

b. Private Parties Reporting and Disclosure Obligations

231. The Climate Change Act does not create any relevant legal requirements on certain industries or private entities, although it does open up a discretion that permits the Secretary of State to compel company directors to disclose internal information pertaining to GHG emissions arising from activities for which their company is responsible.[452] The Secretary of State can issue regulations compelling the information to be included in formal directors' reports, which are governed by the Companies Act 2006.

232. A freedom of information regime (**para. 230 of the Analytical Report**) applies only to public authorities and does not apply to private actors.

233. There are requirements to carry out environmental impact assessments for public or private development projects which are likely to have significant effects on the environment: The Country Planning (Environmental Impact Assessment) Regulations 2017 can serve as an example.[453]

c. Incentives and Emission Trading

234. Since the Climate Change Act is focused mainly on the duties of the UK Secretary of State, it does not provide for any financial incentives for private parties. Part 3 of the Climate Change Act opens a capacity to create trading schemes, which can be used in principle to create carbon markets, but these are not subsidies (etc.) in the normal sense. In this case, they exist within the legislation only as something that the Secretary of State and certain other national authorities have the power to create, i.e., they are not mandatory mechanisms that have been automatically created and applied by the legislation.

235. The current emissions trading scheme in operation in the UK is introduced by the GHG Emissions Trading Scheme Order 2020.[454] In view of Brexit, the current UK ETS replaced the one set out in the GHG Emissions Trading Scheme Regulations 2012.[455] The previous UK ETS was created in response to the EU Emissions Trading Directive 2003/87/EC, which required the UK to establish the scheme as part of a wider EU scheme.

236. The current UK ETS operates on a cap-and-trade basis. The 'cap' means the overall volume of all GHG emissions of all participants affected by the scheme.[456] One allowance permits the holder to emit 1

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[451] Freedom of Information Act 2000 (2000 c. 36). URL: https://www.legislation.gov.uk/ukpga/2000/36/contents (the date of access: March 22, 2021); The Environmental Information Regulations 2004 (SI 2004/3391). URL: https://www.legislation.gov.uk/uksi/2004/3391/contents/made (the date of access: March 22, 2021).

[452] Climate Change Act. Section 85.

[453] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571). URL: https://www.legislation.gov.uk/uksi/2017/571/introduction/made (the date of access: March 22, 2021).

[454] The GHG Emissions Trading Scheme Order 2020. (SI 2020/1265). URL: https://www.legislation.gov.uk/uksi/2020/1265/contents/made (the date of access: March 22, 2021).

[455] The GHG Emissions Trading Scheme Regulations 2012. (SI 2012/3038). URL: https://www.legislation.gov.uk/uksi/2012/3038/contents/made (the date of access: March 22, 2021).

[456] GHG Emissions Trading Scheme Order 2020. Chapter 2.

tonne of CO_2 equivalent.[457] Tradable emission allowances are allocated to participants in the scheme. This is done via a mixture of free allocation and auctions.

237. The UK ETS applies to energy-intensive industries, the power generation sector, and aviation.[458] Participants in the UK ETS who are likely to emit more than their allocation have a choice between taking measures to reduce their emissions or buying additional allowances. Additional allowances can be bought either from companies with allowances which are not needed or from auctions.[459]

2.2. Enforcement and Accountability

238. The UK ETS is administered and enforced by a combination of the UK Secretary of State, the Scottish Ministers, the Welsh Ministers, and the Northern Ireland Department of the Environment.[460] The Secretary of State, the Environment Agency, the Scottish Environmental Protection Agency, and the Chief Inspection in Northern Ireland[461] have powers to issue 'enforcement notices';[462] failure to comply with those notices on time can lead to a fine of GBP 20,000 plus additional daily fines of GBP 1,000 up to a maximum of GBP 45,000.[463]

239. The Climate Change Act creates a framework to ensure that UK Government Ministers are held accountable by the UK Parliament for the implementation of their various duties under the Climate Change Act. It does this using the following mechanisms:

- the Secretary of State must lay before Parliament reports setting out proposals and policies for meeting carbon budgets;[464]
- the Secretary of State must provide annual reports on GHG emissions to Parliament;[465]
- the CCC must lay annual reports to Parliament on progress being made towards the emissions reduction targets;[466]
- the Secretary of State must lay before Parliament a response to the points raised by each report of the CCC on progress towards the targets.[467]

[457] GHG Emissions Trading Scheme Order 2020. Article 18(2).

[458] Department for Business, Energy & Industrial Strategy, UK Government. Participating in the UK ETS (Guidance). URL: https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets (the date of access: March 22, 2021).

[459] GHG Emissions Trading Scheme Order 2020. Article 23; Department for Business, Energy & Industrial Strategy, UK Government. Participating in the UK ETS (Guidance).

[460] Referred to as the 'UK ETS authority'. See Article 14 of the GHG Emissions Trading Scheme Order 2020 referring to Section 95(1) of the Climate Change Act.

[461] Termed 'regulators'. GHG Emissions Trading Scheme Order 2020. Article 9.

[462] GHG Emissions Trading Scheme Order 2020. Article 44.

[463] GHG Emissions Trading Scheme Order 2020. Article 65.

[464] Climate Change Act. Section 14.

[465] Climate Change Act. Section 16.

[466] Climate Change Act. Section 36.

[467] Climate Change Act. Section 37.

240. The Climate Change Act creates a system of parliamentary accountability rather than legal accountability. As such, there is no agency or body set up in the UK to administer and enforce climate laws.

241. The Climate Change Act also does not include sanctions for non-compliance that can be directly enforced in the courts, relying instead on the outlined softer accountability-oriented regime. The Climate Change Act is not explicit about what the sanctions should be (and whether there should be any sanctions at all) in the event that there is a failure by the UK Secretary of State to correctly implement the requirements of the Climate Change Act. If any of the procedural or substantive duties are blatantly ignored by the relevant minister, then it would be possible for a person or civil society organization to challenge such a breach of duty in the courts through the use of judicial review. However, it is unclear what type of remedies the UK courts would provide if such a judicial review were successful.[468]

3. Climate Litigation

242. There have been a number of climate-related cases in the UK.[469] The most common matters being litigated in the last two years include challenges to planning, regulatory, and policy decisions taken by public bodies which are seen by civil society organizations as being contrary to the need to reduce GHG emissions (**para. 245 of the Analytical Report**). Other matters include the use of climate change in criminal litigation (including as a defense to acts which would otherwise be criminal)[470] and challenges linked to the OECD Guidelines for Multinational Enterprises concerning alleged misleading advertising by fossil fuel companies.

243. The parties to such disputes tend to be individuals or non-governmental organizations (e.g. ClientEarth, the Good Law Project, Plan B) who pursue litigation against the UK public bodies and Government Ministers.

244. The Paris Agreement is regularly invoked as a way of challenging planning, regulatory, and policy decisions taken by public bodies which may contravene the targets set out in that agreement.[471] The Climate Change Act is also being invoked regularly, with limited success to date; for example, it was invoked in the *Plan B Earth* case described below (**para. 245 of the Analytical Report**). The Supreme Court found in favor of the Government stating, *inter alia*, that the Paris Agreement itself did not constitute government policy and that the Secretary of State remedied his failure to consider the Paris Agreement by taking into account domestic obligations under the Climate Change Act.[472]

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[468] See discussion in *Muinzer T.* Climate and Energy Governance for the UK Low Carbon Transition: The Climate Change Act 2008. Cham: Palgrave MacMillan, 2019. P. 20-22.

[469] Climate Change Litigation Databases (URL: http://climatecasechart.com/search-non-us/?fwp_non_us_jurisdiction=united-kingdom (the date of access: March 22, 2021)) record 63 UK climate cases, whereas the Grantham Research Institute's 'climate change laws of the world' (URL: https://climate-laws.org/geographies/united-kingdom (the date of access: March 22, 2021)) records 68 UK cases.

[470] See e.g. the 2018 trial of Angela Ditchfield, who was able to successfully plead not guilty to a charge of causing criminal damage to a council building on the basis that there was an immediate threat to her property from climate disaster: *Brock A.* Extinction Rebellion protester had 'lawful excuse' to cause criminal damage. November 2, 2019. URL: https://www.bristolpost.co.uk/news/bristol-news/extinction-rebellion-protester-lawful-excuse-3494617 (the date of access: March 22, 2021).

[471] The Paris Agreement is referred to by both Plan B and the Good Law Project. For a short description of the case see para. 205 of the Analytical Report.

[472] For more extensive comment on the Supreme Court decision in the *Plan B* case see *Clarke M., Wackwitz G.* Supreme Court overturns block on Heathrow's expansion. January 21, 2021. URL: https://www.whitecase.com/publications/alert/supreme-court-overturns-block-heathrows-expansion (the date of access: March 22, 2021).

245. Among the recent cases in the sphere of climate change, the following can be noted:

1) *Plan B Earth and Others v. Secretary of State for Transport* — judicial review of an approval to expand Heathrow International Airport due to alleged inadequate consideration of climate change commitments under the Paris Agreement and advice to change national climate targets. The Supreme Court reversed the Court of Appeal's decision and found that the UK government duly considered and complied with its climate change commitments;[473]

2) *ClientEarth v Secretary of State for Business, Energy and Industrial Strategy* — judicial review of the UK Government's decision to approve a natural gas plant;[474]

3) *Claire Stephenson v. Secretary of State for Housing and Communities and Local Government* — judicial review of a paragraph of the National Planning Policy Framework which promoted hydraulic fracturing ('fracking');[475]

4) *Dale Vince, George Monbiot and the Good Law Project v Secretary of State for Business and Industrial Strategy* — ongoing judicial review proceedings regarding national policy statements on energy infrastructure. The claimants have alleged that the national policy statements require updating due to their containing a presumption in favor of fossil fuel developments and failing to take into account a number of the UK Government commitments made since their creation in 2011, including the Paris Agreement and the UK commitment to reach net-zero emissions by 2050. The UK Government has conceded that the policy statements should be reviewed but has refused to suspend them pending the outcome of that review.[476]

[473] UK Supreme Court. *Plan B Earth and Others v. Secretary of State for Transport.* Decision of December 16, 2020. [2020] EWCA Civ 214.

[474] UK Court of Appeal. *ClientEarth v Secretary of State for Business, Energy and Industrial Strategy.* Judgment of January 21, 2021. [2021] EWCA Civ 43.

[475] UK High Court of Justice. *Claire Stephenson v. Secretary of State for Housing and Communities and Local Government.* Judgment of March, 6, 2019. [2019] EWHC 519 (Admin).

[476] See Good Law Project. "The Government conceded". URL: https://goodlawproject.org/update/government-conceded/ (the date of access: March 22, 2021); Osborne Clarke. "UK government to review Energy National Policy Statements". URL: https://www.osborneclarke.com/insights/uk-government-review-energy-national-policy-statements/#:~:text=The%20government%20has%20announced%20that,delivering%20a%20low%20carbon%20future (the date of access: March 22, 2021).

IV. GERMANY

Executive Summary

246. The German national climate strategy is largely envisaged in two main documents. The first is the framework Climate Action Law (*Bundes-Klimaschutzgesetz*) of 2019 which describes general climate policy, sets climate targets, and ensures that these targets are achieved. The second is the 2050 Plan which aims to ensure the achievement of national and international climate protection targets in all sectors of the economy: energy, building, transport, industry, agriculture, and forestry.

247. The Climate Action Law sets out an obligation to reduce GHG emissions by 55% by 2030 compared to 1990 levels and respective annual emission budgets for all sectors of the economy. This target corresponds to the European Union international commitment confirmed in its NDC submitted under the Paris Agreement. The 2050 Plan refers to the 2030 reduction target as an interim goal and sets the ultimate target to achieve net-zero GHG emissions by 2050.

248. One of the main tools of implementation of the climate policy in Germany is the polluting pricing system realized through the European ETS and the ETS that started its operation in January 2021.

249. Climate matters are generally litigated between NGOs, observers, or activists, on the one hand, and federal or territorial (Länder) authorities, on the other. The most typical cases concern challenging certain provisions of law or their allegedly erroneous application by state authorities. Notably, several cases concerning the alleged breach of fundamental human rights due to Germany's alleged failure to meet GHG emission reduction targets are currently pending in German courts.

1. Climate Policy in Germany

1.1. National Climate Legislation and Policies

a. National legislation and policy documents

250. The climate policy of Germany is mainly based on the Climate Action Law (*Bundes-Klimaschutzgesetz*)[477] and the 2050 Plan.[478]

251. The Climate Action Law is a framework[479] piece of legislation that was passed in December 2019 and came into force on January 1, 2020. It provides for general climate policy, sets climate targets, and ensures that these targets are achieved.

252. The Climate Action Law provides for[480] direct application of the 2050 Plan — a national climate strategy of Germany, adopted on November 14, 2016. The 2050 Plan confirms and details climate targets, introduces a system of guiding principles for specific measures that need to be taken in all sectors of the economy in order to meet these targets. In October 2019, the German Government decided to implement the 2050 Plan through the Climate Protection Program 2030,[481] a supplement to the existing strategy, which specifies and ensures the achievement of climate goals by 2030.

253. The Climate Action Law rests upon[482] the Paris Agreement temperature target[483] and Germany's international commitment to pursue the long-term target of GHG neutrality by 2050.[484]

254. The 2050 Plan is substantially based on the Paris Agreement, which is repeatedly emphasized within the text of the 2050 Plan.[485] For example, climate targets of the 2050 Plan are set out in line with the

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[477] Bundes-Klimaschutzgesetz. URL: https://www.gesetze-im-internet.de/ksg/BJNR251310019.html (the date of access: March 22, 2021).

[478] Klimaschutzplan 2050: Klimaschutzpolitische Grundsa¨tze und Ziele der Bundesregierung. URL: https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_bf.pdf (the date of access: March 22, 2021); Climate Action Plan 2050 Principles and goals of the German governmentэs climate policy (English version). URL: https://unfccc.int/files/focus/application/pdf/161114_climate_action_plan_2050.pdf (the date of access: March 22, 2021).

[479] Germany's Climate Action Law. Factsheet. URL: https://www.cleanenergywire.org/factsheets/germanys-climate-action-law-begins-take-shape (the date of access: March 22, 2021).

[480] Bundes-Klimaschutzgesetz, § 9.

[481] Klimaschutzprogramm 2030 der Bundesregierung zur Umsetzung des Klimaschutzplans 2050. URL: https://www.bundesregierung.de/resource/blob/975226/1679914/e01d6bd855f09bf05cf7498e06d0a3ff/2019-10-09-klima-massnahmen-data.pdf (the date of access: March 22, 2021).

[482] Bundes-Klimaschutzgesetz, § 1.

[483] Paris Agreement, Article 2(1)(a).

[484] Germany undertook respective commitment during the Climate Action Summit in 2019. See Report of main proceedings for 23 September 2019. URL: https://enb.iisd.org/events/un-summits-week-2019/report-main-proceedings-23-september-2019 (the date of access: March 22, 2021).

[485] Klimaschutzplan 2050. P. 21–23.

Paris Agreement.[486] The overall content of the 2050 Plan is also seen by the German government as a way of providing guidance to comply with the national obligations under the Paris Climate Agreement.[487]

255. Apart from the Paris Agreement, Germany also participates in a range of the European Union climate policies, in particular:

- under the Effort Sharing Decision Germany is obliged to reduce its GHG emissions in covered sectors by 38% by 2030 compared to the 2005 level;[488]

- Germany is bound by the EU Regulation 2019/631 that obliges manufacturers to meet the new targets set for the fleet-wide average emissions of new cars and vans registered in a given calendar year;[489]

- within the framework of the EU ETS Germany introduced the German ETS in 2021 (**para. 279–280 of the Analytical Report**).[490]

b. Institutional Framework

256. The Climate Action Law establishes[491] a supervisory body — CECC. CECC consists of five experts in the fields of climatology, economics, environmental science, and social matters. The experts are appointed by the Federal Government for a term of five years, with a possibility of a one-time reappointment.[492]

257. CECC is entrusted with examination and evaluation of GHG emissions data,[493] assessment of proposed actions in view of the GHG emission reduction target; CECC may also give an opinion on updating emissions budgets and climate strategy.[494]

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[486] Ibid. P. 28–29.

[487] Ibid. P. 13.

[488] Regulation (EU) 2018/842 of the European Parliament and of the Council of 30May 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. URL: http://data.europa.eu/eli/reg/2018/842/oj (the date of access: March 22, 2021).

[489] Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011. URL: http://data.europa.eu/eli/reg/2019/631/oj (the date of access: March 22, 2021).

[490] Deutsche Emissionshandelsstelle (DEHSt). Der Europäische Emissionshandel und seine Umsetzung in Deutschland. URL: https://www.dehst.de/DE/Europaeischer-Emissionshandel/EU-Emissionshandel-verstehen/Umsetzung-Ausgestaltung/umsetzung-ausgestaltung_node.html (the date of access: March 22, 2021).

[491] Bundes-Klimaschutzgesetz, §§ 11–12.

[492] Ibid., § 11(1).

[493] CECC presents its assessment to the Federal Government (*die Bundesregierung*) and the Parliament (*Bundestag).*

[494] Bundes-Klimaschutzgesetz, § 12.

c. Scope of the Strategy

258. The Climate Action Law sets out the obligatory GHG emission reduction target (reduction by 55% by 2030 compared to 1990 levels)[495] and annual emission budgets for all sectors of the economy in order to achieve the national climate targets.[496]

259. The 2050 Plan confirms the 2030 reduction target as an interim goal[497] and sets the ultimate target to achieve net-zero GHG emissions by 2050.[498] Accordingly, the Plan contains milestones and targets for all sectors of the economy up to 2030.[499] Finally, strategic measures for all sectors[500] are also contained in the 2050 Plan.

260. The Climate Protection Program 2030 short-term targets are the following:

- introduction of a national CO_2 pricing mechanism;
- the ETS reform;
- reduction of the financial burden for consumers and climate-friendly households and businesses;
- specific sectoral measures.

d. Sectoral Climate Strategies

261. The 2050 Plan introduces Germany's specific target corridors and strategies for each sector of the economy: energy, building, transport, industry, agriculture, land use, and forestry.

Energy[501]

262. The energy sector will have to limit its GHG emissions to 175–183 million tonnes of CO_2 equivalents by 2030. Further reductions are also needed after 2030 to meet the climate target for 2050. By 2050, it is necessary to completely phase out fossil fuels and decarbonize the energy sector. Renewable energy shall be used directly in all sectors, and gross electricity consumption should fall below today's level by 2030.

Building sector[502]

263. The building sector has to reduce its emissions to 70–72 million tonnes of CO_2 equivalent by 2030. The energy performance standard for residential and non-residential buildings must be gradually but significantly improved from today's level. Non-residential buildings have to meet continuous developing energy requirements in order to achieve the 2050 target.

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[495] Ibid., § 3(1).

[496] Ibid., § 4.

[497] Klimaschutzplan 2050. P. 7, 28.

[498] Ibid. P. 6, 26–29.

[499] Ibid. P. 32–33.

[500] For example, for energy sector, see Klimaschutzplan 2050. P. 34–41; for building sector, see Klimaschutzplan 2050. P. 42–49.

[501] Klimaschutzplan 2050. P. 36–38.

[502] Ibid. P. 45–46.

Transport[503]

264. GHG emissions from transport have to be cut to 95–98 million tonnes of CO_2 equivalent by 2030. The government stresses the need for additional measures to support public transport, rail transport, as well as cycling to achieve almost GHG-neutral transport by 2050.

Industry[504]

265. Emissions from the industrial sector will have to be cut in half by 2030, compared to 1990: the sector must still reduce its emissions to 140–143 million tonnes CO_2 equivalent. Emissions from the industry that cannot be avoided (i.e. from steel production or chemical processes) shall be reduced as much as possible, either by developing new technologies and processes to replace the old ones, or through utilization.

Agriculture[505]

266. GHG emissions from agriculture must be reduced to 58–61 million tonnes of CO_2 equivalent by 2030. The nitrogen surplus in the gross nutrient balance is to be reduced to 70 kilograms of nitrogen per hectare between 2028 and 2032, with a further clear reduction by 2050. By 2030, 20% of all agricultural land should be used for organic farming.

Land use and forestry[506]

267. Permanent grasslands and marshes are to be preserved and sustainable forest management promoted. Progress in counteracting the heavy emissions by organic soils on drained peatlands must be made by 2030. Land take is to be reduced to less than 30 hectares per day by 2030.

e. Climate Strategy Updating

268. In light of Germany's commitments on the international and European levels, the 2050 Plan is presented as a work in progress and will be constantly updated, in particular, in line with the five-year reviewing cycle of Nationally Determined Contributions under the Paris Agreement.[507] Goals, paths, and measures will be checked and — if necessary — changed in accordance with altered technological, political, or social conditions.[508]

1.2. Nationally Determined Contribution

269. Germany does not submit a separate Nationally Determined Contribution under the Paris Agreement. The Nationally Determined Contribution is submitted by the European Union.[509] The EU States committed to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels.

[503] Ibid. P. 51–53.

[504] Ibid. P. 58–59.

[505] Ibid. P. 63–64.

[506] Ibid. P. 68.

[507] Ibid. P. 78.

[508] Ibid. P. 78.

[509] NDC Registry. Germany home page. URL https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=DEU.

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State obligations regarding the implementation of climate strategy and reporting

270. Under the United Nations Framework Convention on Climate Change, Germany prepares and submits to the Secretariat a National Inventory Report[510] on GHG emissions on an annual basis, a Biennial Report[511] on Germany's efforts to combat climate change, progress in achieving GHG emission reductions targets and contributions to climate finance, and quadrennial National Communications.[512]

271. Monitoring of the German Climate Plan 2050 implementation is regulated by the German Climate Action Law.[513] As for the Climate Plan 2050 itself, it provides for annual governmental reporting without any extra requirements for such reports, but rather refers to "the existing format" of the climate action reports.[514]

272. According to Paragraph 10(1) of the Climate Action Law, the Federal Government (*die Bundesregierung*) shall issue an annual climate action report containing, *inter alia,* information on the progress in implementing the climate action programs based on the Climate Action Plan 2050.[515] The report for the preceding year shall be forwarded to the Bundestag by June 30.

273. The Climate Action Law is silent on climate-related data disclosure to the public.

274. Under the Act on the Assessment of Environmental Impacts, a potential impact of a certain project on a range of factors, including climate, is analyzed; a respective report is produced afterwards. This report is subjected to further comments from those potentially affected by the impact and hence to a review by a responsible authority.[516]

275. Climate Action Plan 2050 stands for informational transparency of climate policies. In this regard, the German Government emphasizes the role of harmonized appropriate data records and their public

[510] Germany. 2020 National Inventory Report. URL: https://unfccc.int/documents/226313 (the date of access: March 22, 2021).

[511] Germany's fourth Biennial Report under the UNFCCC. URL: https://unfccc.int/sites/default/files/resource/191220_%204%20Biennial%20Report_englisch_final%20_sauber.pdf (the date of access: March 22, 2021).

[512] Sweden's Seventh National Communication on Climate Change. URL: https://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/26795831_germany-nc7-1-171220_7_natcom_to_unfccc.pdf (the date of access: March 22, 2021).

[513] Bundes-Klimaschutzgesetz, § 10.

[514] Klimaschutzplan 2050. P. 79.

[515] According to § 9(1) of the Climate Action Law of 2019, "at least after each update of the Climate Action Plan, the Federal Government shall adopt a climate action programme."

[516] Gesetz über die Umweltverträglichkeitsprüfung. URL: http://www.gesetze-im-internet.de/uvpg/index.html (the date of access: March 22, 2021).

availability.[517] This may be achieved on the basis of the Environmental Information Act that provides for open access to all environment-related data within the governmental sources of information.[518]

b. Private Parties Reporting and Disclosure Obligations

276. Neither the 2050 Plan nor the Climate Action Law requires private entities to disclose climate-related information.

277. These documents do not suggest new provisions on auditing or assessment, but rather rely upon already existing measures.[519] For example, the Energy Savings Act provides for an energy audit of the possibilities for economic energy savings.[520]

c. Emission Trading

278. Germany participates in the EU ETS, which sets an overall limit on GHG emissions from power stations, energy-intensive industries (e.g. oil refineries, steelworks, and producers of iron, aluminum, cement, paper, glass), and inner-European commercial aviation.

279. The EU ETS already covers a large portion of emissions from the industry and power generation sectors in Germany, however, the 2050 Plan sets out a more ambitious goal to launch a national emissions trading system in Germany outside the scope of the EU ETS.[521] In light of this goal, the Fuel Emissions Trading Act was adopted in 2019.[522] Based on this act, the German ETS (*nationales Emissionshandelssystem*) started to operate as of January 1, 2021. The German ETS is designed as a supplement to the EU ETS and introduces the CO_2 pricing of emissions, particularly in the fields of heating and transport.[523]

280. The operation of the EU ETS in Germany and the German ETS is administered by DEHSt.[524] DEHSt is responsible for the implementation of the EU ETS in Germany since 2005.

d. Other Financial Mechanisms and Incentives

281. The 2050 Plan provides for a general strategic measure to gradually develop Germany's tax system with a view to achieving the climate targets for 2050. In particular, the Government is suggested to strengthen economic incentives which encourage private entities to reduce their environmental pollution

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[517] Klimaschutzplan 2050. P. 74. URL: https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_bf.pdf (the date of access: March 22, 2021).

[518] Umweltinformationsgesetz. URL: https://www.gesetze-im-internet.de/uig_2005/ (the date of access: March 22, 2021).

[519] Klimaschutzplan 2050. P. 59.

[520] Bundesministerium der Justiz und für Verbraucherschutz. Gesetz über Energiedienstleistungen und andere Energieeffizienzmaßnahmen. URL: https://www.gesetze-im-internet.de/edl-g/ (the date of access: March 22, 2021).

[521] Klimaschutzplan 2050. P 41.

[522] Bundesministerium der Justiz und für Verbraucherschutz. Brennstoffemissionshandelsgesetz. URL: https://www.gesetze-im-internet.de/behg/BJNR272800019.html (the date of access: March 22, 2021).

[523] DEHSt. National Emissions Trading System. URL: https://www.dehst.de/SharedDocs/downloads/EN/nehs/nehs-backgroundpaper.pdf?__blob=publicationFile&v=4 (the date of access: March 22, 2021).

[524] DEHSt. URL: https://www.dehst.de/EN/service-and-publications/getting-to-know-dehst/getting-to-know-dehst-node.html (the date of access: March 22, 2021).

and move towards more sustainable production and consumption patterns. In the same spirit, climate-damaging incentives of various taxes are proposed for a further review.[525]

282. Until such review is conducted, the 2050 Plan relies on the existing ecological tax reform, being implemented in Germany since 1990.[526] Within the framework of this reform, new tax legislation provides for the gradual growth of taxes on fuel and fossil fuels; the reform also laid the foundation for the energy tax.[527]

283. As for investments in climate projects, the Climate Action Law ("Consideration requirement") contains a general requirement within "planning, selecting and making investments and procurements." The requirement is to "examine how each of these operations can contribute to the achievement of the climate targets." "[I]n case of two or more options for investments and procurements, preference shall be given, after balancing against other relevant criteria pertaining to the purpose of the investment, to the option or options with which the aim of reducing GHG emissions over the whole lifetime of the capital good or procured item can be achieved at the lowest cost." [528]

2.2. Enforcement and Accountability

284. The Climate Action Law provides for an administrative fine of up to EUR 50,000 in case a regulatory offense is committed.[529]

285. Enforcement of the Climate Action Law is distributed within federal and territorial (*Länder*) executive bodies:

- the Federal Government shall be authorized to alter the allocation of emission sources to the economic sectors;[530]
- the federal ministries, chosen by their primary competence for the sector in question, are responsible for ensuring compliance with annual emission budgets; the ministries also have the task of initiating the national measures required for such compliance and in particular of presenting and implementing these measures;[531]
- the Federal Environment Agency (*das Umweltbundesamt*) is responsible for annual compiling the data on GHG emissions and transmitting the data to CECC;[532]
- the Federal Government shall cooperate with *Länder* governments in order to achieve the objectives of the Climate Action Law.[533]

[525] Klimaschutzplan 2050. P. 9.

[526] Ibid. P. 72.

[527] Bundesanzeiger Verlag. Law on Ecological Tax Reform: Gesetz zum Einstieg in die ökologische Steuerreform, Art. 2. URL: https://www.bgbl.de/xaver/bgbl/start.xav (the date of access: March 22, 2021).

[528] Bundes-Klimaschutzgesetz, § 13.

[529] Ibid., § 6.

[530] Ibid., § 4(2), 4(5)-(6).

[531] Ibid., § 4(4).

[532] Ibid., § 5.

[533] Ibid., § 14.

286. The Climate Action Law also provides for an immediate action program in the event of annual emission budgets being exceeded. In this case, the responsible federal ministry, within three months following the presentation of the assessment of the emissions data by CECC, presents an immediate action program for the relevant sector.[534] The Federal Government deliberates on the measures to be taken as quickly as possible and informs the Bundestag of the adopted measures[535].

3. Climate Litigation

287. Neither the 2050 Plan nor the Climate Action Law provides for any specific procedural provisions on climate litigation.[536] Nevertheless, German courts have already considered a number of climate-related cases.

288. Most of the existing climate-related cases[537] concern allegations of erroneous application of a law by state authorities (e.g., ineffective gas emission quotas)[538] or allegations regarding the unconstitutional character of a legal provision. NGOs, observers, or activists are the most common claimants,[539] while federal or *Länder* authority tends to be the most common respondents.[540]

289. Climate claims are mostly dismissed on the merits due to lack of evidence[541] or failure to establish a causal link.[542]

290. Noteworthy, *Neubauer, et al. v. Germany*[543] is the first successful German case on challenging national climate measures. On April 29, 2021, the Federal Constitutional Court agreed to the claims of a group of young climate activists and ruled the that Climate Action Law is partially unconstitutional. In particular, the Court ruled that the provisions of the Climate Action Law and national emission targets for 2030 are incompatible with fundamental human rights, in particular the right to a healthy environment. In

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[534] Ibid., § 8(1).

[535] Ibid., § 8(2).

[536] German private environmental liability law is based mostly on the German Civil Code (*Bürgerliches Gesetzbuch, BGB*). Public environmental liability law derives from various statutes and ordinances that aim at environmental protection, i.e. Environmental Damage Prevention and Remediation Act (*Gesetz über die Vermeidung und Sanierung von Umweltschäden—Umweltschadensgesetz*).

[537] List of the cases within jurisdiction of Germany according to the Grantham Research Institute on Climate Change and the Environment. URL: https://climate-laws.org/litigation_cases?from_geography_page=Germany&geography%5B%5D=66 (the date of access: March 22, 2021).

[538] *Neubauer, et al. v. Germany*. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200206_11817_complaint-1.pdf (the date of access: March 22, 2021).

[539] For example, Deutschen Umwelthilfe (DUH), Neubauer, Friends of the Earth Germany, etc.

[540] For example, Stralsund Mining Authority.

[541] *Family Farmers and Greenpeace Germany v. Germany.* URL: http://climatecasechart.com/non-us-case/family-farmers-and-greenpeace-germany-v-german-government/ (the date of access: March 22, 2021).

[542] *Luciano Lliuya v. RWE.* URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20180207_Case-No.-2-O-28515-Essen-Regional-Court_order.pdf (the date of access: March 22, 2021).

[543] *Neubauer, et al. v. Germany*. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200206_11817_complaint-1.pdf (the date of access: March 22, 2021).

addition, the court agreed that the environmental burden is actually shifted to the future generations, which means that the national policy on reducing emissions from 2031 is insufficient. In this regard, the court ordered the German legislature to amend the Climate Action Law by December 31, 2022, both in terms of the already established emission targets until 2030, and in terms of future actions.

291. The *Friends of the Earth Germany, Association of Solar Supporters, and Others v. Germany*[544] case is currently pending before the Federal Constitutional Court. In this case, claimants also seek to recognize that the German Government violated their fundamental rights by failing to meet the GHG emission reduction targets.

292. The *Deutschen Umwelthilfe v. Stralsund Mining Authority* case may also be of particular interest. In its claim, the German environmental organization challenges the authority's decision to issue a permit for the Nord Stream 2 gas pipeline, arguing that a significant upward revision of estimated methane emissions from gas production was conducted after the permit was granted.[545] The claim is still pending before the Supreme administrative court of the State of Mecklenburg-Western Pomerania.

[544] *Friends of the Earth Germany, Association of Solar Supporters, and Others v. Germany*. URL: http://climatecasechart.com/non-us-case/friends-of-the-earth-germany-association-of-solar-supporters-and-others-v-germany/ (the date of access: March 22, 2021).

[545] Text of the claim. URL: http://climatecasechart.com/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200727_11858_complaint.pdf (the date of access: March 22, 2021).

V. SWEDEN

Executive Summary

293. The current climate change policy in Sweden is based on (1) the climate policy framework that consists of national climate goals, the Climate Act, and the Climate Policy Council, and (2) climate policy action plans and strategies, namely, Climate strategy for Sweden, and the Action plan. The Climate Act, the Action Plan, and the Climate Strategy set climate objectives and targets and contain national general and sectoral strategies in relation to mitigation of and adaptation to climate change. Sweden's climate change policy is driven by its commitments on the European and international levels.

294. Sweden sets gradual greenhouse gas emission reduction targets. The ultimate goal is to achieve net-zero GHG emissions by 2045. In the Nationally Determined Contribution submitted by the European Union, EU States, including Sweden, committed to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels.

295. In order to achieve Sweden's climate goals, the Climate Strategy and the Action Plan, along with other documents, provide for a comprehensive list of measures taken or ought to be taken in the main sectors of economy: transport; industry; electricity and district heating city; households and services; work machines (non-road mobile machinery); waste; agriculture; and forest and land use.

296. One of the main tools of implementation of climate policy is the polluting pricing system realized through the European Union Emissions Trading System and national carbon taxation.

297. Although environment-related issues can be litigated in Sweden, case law on climate is currently at the early stages of its development.

1. Climate Policy in Sweden

1.1. National Climate Legislation and Policies

a. National Legislation and Policy Documents

298. There are two key climate-related pieces of Swedish legislation: all environmental issues (including those related to climate and climate change) fall within the scope of the Environmental Code (*Miljöbalken*)[546] adopted in 1998; the Climate Act (*Klimatlag*)[547] adopted in 2017 is a framework law that obliges the government to pursue climate policy aimed at the achievement of national climate goals.

299. Swedish climate change policy is largely based on the climate policy framework and climate policy action plans.[548]

300. Current climate policy framework (*Ett klimatpolitiskt ramverk för Sverige*) was adopted in 2017.[549] The pillars of the framework[550] are (1) national climate goals, (2) the Climate Act, and (3) the Climate Policy Council (*Klimatpolitiska Rådet*)[551]. GHG emissions targets and temperature targets are the main aspects of Sweden's national climate goals (**paras. 306–307 of the Analytical Report**)[552].

301. The documents that develop provisions of the Climate Act and contain climate objectives and specific measures of mitigation of and adaptation to climate change are the Climate Strategy, adopted in 2018,[553] and the Action Plan of 2019[554] — the first action plan prepared in line with the Climate Act and introduced to the Parliament by the Government.

302. Swedish climate policy is based on Sweden's international commitments, in particular, under the Paris Agreement and the Kyoto Protocol to the UNFCCC,[555] UN General Assembly Resolution A/RES/70/1

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546 Miljöbalken. 1998:808. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/miljobalk-1998808_sfs-1998-808 (the date of access: March 22, 2021).

547 Klimatlag. 2017:720. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/klimatlag-2017720_sfs-2017-720 (the date of access: March 22, 2021).

548 Ministry of Environment. Sweden's long-term strategy for reducing greenhouse gas emissions. P. 3. URL: https://unfccc.int/sites/default/files/resource/LTS1_Sweden.pdf (the date of access: March 22, 2021).

549 Regeringen. Sveriges klimatstrategi. Prop. 2001/02:55. URL: https://data.riksdagen.se/fil/CD40115D-AA74-40E4-AFF2-41A31114BBF6 (the date of access: March 22, 2021); Ministry of Environment. Sweden's Climate Act and Climate Policy Framework. URL: http://www.swedishepa.se/Environmental-objectives-and-cooperation/Swedish-environmental-work/Work-areas/Climate/Climate-Act-and-Climate-policy-framework-/#:~:text=In%202017%20Sweden%20adopted%20a%20new%20climate%20policy%20framework.&text=Sweden's%20long%2Dterm%20target%20is,the%20market%20and%20other%20actors (the date of access: March 22, 2021).

550 Ministry of Environment and Energy. The Swedish climate policy framework. URL: https://www.government.se/495f60/contentassets/883ae8e123bc4e42aa8d59296ebe0478/the-swedish-climate-policy-framework.pdf (the date of access: March 22, 2021).

551 Swedish Climate Policy Council - Klimatpolitiska Rådet. URL: https://www.klimatpolitiskaradet.se/en/ (the date of access: March 22, 2021).

552 Sweden's long-term strategy for reducing greenhouse gas emissions, Section 2.1. P. 9-12.

553 Regeringen. En klimatstrategi för Sverige. Skr. 2017/18:238. URL: https://data.riksdagen.se/fil/D174A484-BB67-403F-AF5B-488D56B7289D (the date of access: March 22, 2021).

554 Regeringen. En samlad politik för klimatet – klimatpolitisk handlingsplan. 2019/20:65. URL: https://www.regeringen.se/4a9c81/contentassets/61f93d2abb184289a0c81c75395207b6/en-samlad-politik-for-klimatet--klimatpolitisk-handlingsplan-prop.-20192065 (the date of access: March 22, 2021).

555 Climate Strategy. P. 17–18.

"Transforming our world: the 2030 Agenda for Sustainable Development",[556] as well as EU directives and regulations related to the climate policy.[557] National climate-related goals are heavily driven by the UNFCCC and EU climate strategies and targets.[558]

b. Institutional Framework

303. SEPA[559] is a responsible authority for all environmental issues including climate change.

304. One of the climate framework's key elements is the Climate Policy Council, an independent scientific body whose task is to assess the compatibility of governmental policy with the climate goals and to identify areas where additional measures are required.[560] The Climate Policy Council produces yearly reports.[561]

c. Scope of the Climate Change Strategy

305. Sweden adopted a comprehensive system of environmental goals (*Miljömålssystemet*),[562] one of which concerns limitation of climate change impact (*begränsad klimatpåverkan*)[563] and corresponds to the Paris Agreement temperature target.[564]

306. Furthermore, Sweden sets the following GHG emission reduction targets:[565]

- to reduce GHG emissions by 40% compared to 1990 levels by 2020 (the target has been reached);[566]
- to reduce GHG emissions by 63% compared to 1990 by 2030;

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[556] Regeringen. Ett klimatpolitiskt ramverk för Sverige. Prop. 2016/17:146. P. 20. URL: https://www.regeringen.se/49fe25/contentassets/480ed767687b4b7ba6c960f9c1d4857f/ett-klimatpolitiskt-ramverk-for-sverige-prop.-201617146 (the date of access: March 22, 2021).

[557] Climate Strategy. P. 18–19.

[558] Naturvårdsverket. Sveriges del av EU:s klimatmål. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Klimat/Sveriges-klimatataganden/ (the date of access: March 22, 2021).

[559] Swedish Environmental Protection Agency. URL: http://www.swedishepa.se/ (the date of access: March 22, 2021).

[560] Swedish Climate Policy Council. URL: https://www.klimatpolitiskaradet.se/en/summary-in-english/ (the date of access: March 22, 2021).

[561] See the latest report — Swedish Climate Policy Council. 2019 Report of the Swedish Climate Policy Council. URL: https://www.klimatpolitiskaradet.se/wp-content/uploads/2019/09/climatepolicycouncilreport2.pdf (the date of access: March 22, 2021).

[562] See Naturvårdsverket. Miljömålssystemet; Om det svenska miljömålssystemet – hur det följs upp, utvärderas och vem som gör vad i Miljömålssverige. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljomalssystemet/ (the date of access: March 22, 2021).

[563] Naturvårdsverket. Begränsad klimatpåverkan. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljokvalitetsmalen/Begransad-klimatpaverkan/ (the date of access: March 22, 2021). Sveriges. Miljömål. Begränsad klimatpåverkan. URL: http://sverigesmiljomal.se/miljomalen/begransad-klimatpaverkan/ (the date of access: March 22, 2021).

[564] Paris Agreement, Article 2(1)(a).

[565] Action Plan. P. 29–30.

[566] Sveriges Miljömål. Utsläpp av växthusgaser till år 2020. URL: http://sverigesmiljomal.se/etappmalen/utslapp-av-vaxthusgaser-till-ar-2020/ (the date of access: March 22, 2021).

- to reduce GHG emissions from domestic transport by at least 70% compared to 2010 level by 2030;

- to reduce GHG emissions by 75% compared to 1990 levels by 2040;

- to reduce GHG emissions by 85% compared to 1990 levels by 2045 and to consequently reach net-zero GHG emission level.

307. The ultimate goal of the climate change framework is to achieve net-zero GHG emissions by 2045.[567]

308. To achieve climate goals Sweden uses national and EU-wide policy instruments that can be divided into four categories:

- economic, e.g. energy and carbon taxes, emissions trading and grants such as the Climate leap and subsidies to low emission vehicles;

- administrative (normative), e.g. the reduction obligation, the Planning and Building Act, and requirements on carbon dioxide emissions from new vehicles;

- informative, e.g. energy and climate advice;

- research and market launches, e.g. support for research programs and the Industry Leap's industrial green investment grants program.[568]

309. In addition, a wide range of climate change adaptation goals has been adopted.[569] They concern the following spheres: knowledge building, coordination and development of general instruments in environmental work, cooperation on international and EU level, climate and air, sustainable society, effective authorities, and natural environment and wildlife.[570] For example, one of the goals concerns the financing of research projects with a focus on climate adaptation within, for example, ecosystem service management and cumulative effects.[571]

d. Sectoral Climate Strategies

310. Sectoral strategies are not contained in sector-specific documents, but are rather united under the climate policy framework. The climate policy framework identifies the climate impact of each sector, indicates sector-specific proposals and ongoing or future actions, that are or ought to be implemented to achieve climate-related goals.

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[567] The Swedish climate policy framework.

[568] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 35.

[569] Naturvårdsverket. Klimatanpassning. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Klimat/Klimatanpassning/ (the date of access: March 22, 2021).

[570] Naturvårdsverket. Handlingsplan för Naturvårdsverketsarbete med klimatanpassning. Redovisning av regeringsuppdrag i regleringsbrev för 2018. NV-08863-17. 2019. P. 41-45. URL: https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/regeringsuppdrag/2019/handlingsplan-for-naturvardsverkets-arbete-med-klimatanpassning-20190124.pdf (the date of access: March 22, 2021).

[571] Handlingsplan för Naturvårdsverketsarbete med klimatanpassning. P. 41.

Transportation

311. Domestic transportation (mainly, private cars and heavy goods vehicles) accounts for a third of GHG emissions.[572] Reduction of GHG emissions requires actions in three main spheres:

- a transport-efficient society;
- sustainable renewable fuels and infrastructure for alternative fuels including electrification; and
- energy-efficient and climate-smart vehicles and ships.[573]

Industry

312. A third of GHG emissions were accounted to the industry[574] sector (namely, from so-called "basic materials sectors") in 2018.[575] Four major pathways to reduce GHG emissions are:

- to transition from fossil raw materials and energy to renewable raw materials and energy carriers;
- to improve the efficiency of the process and increase material efficiency;
- to transition the basic process entirely, e.g. through electrification;
- to introduce technologies for carbon capture and storage, capable of reducing both fuel-related and process-related emissions.[576]

Electricity and district heating

313. In view of the overall goal to attain net-zero GHG emissions by 2045, the main challenges in the electricity and district heating city[577] sector are handling peak loads and reduction of emissions from incineration of waste of fossil origin.[578]

[572] Climate Strategy, Section 5; Action Plan, Section 13; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.

[573] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 43.

[574] Climate Strategy, Section 4.3; Action Plan, Section 11.2; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.4.

[575] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 51.

[576] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 52.

[577] Climate Strategy, Section 4.4; Action Plan, Section 11.3; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.5.

[578] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 57.

Household and services

314. Households and services[579] sector is primarily regulated by Planning and Building Act of 2010[580] and the associated Planning and Building Ordinance of 2011[581] that reflect environmental and climate concerns. Within the climate change framework, the following aims are set:

- building houses quicker while prioritizing climate change concerns;
- resource efficiency via lower energy consumption; and
- reduction of GHG emissions in the housing production phase[582].

Work machines

315. Sweden aims to increase the use of electrified work machines[583] as well as to reduce petrol and diesel use by increasing the share of blend of bio-based fuels.[584]

Waste

316. The following instruments are identified in order to reduce GHG emissions from the waste[585] sector:

- reduction of methane emissions from landfill;
- increasing material recovery;
- reduction of the overall amount of waste.[586]

Agriculture

317. Agriculture[587] accounts for 13% of GHG emissions. It is proposed to reduce emissions by improving manure management and increasing resource efficiency and productivity.[588]

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[579] Climate Strategy, Section 4.5; Action Plan, Section 11.3; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.6.

[580] Regeringen. Plan- och bygglag (2010:900). URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/plan—och-bygglag-2010900_sfs-2010-900 (the date of access: March 22, 2021).

[581] Regeringen. Plan- och byggförordning (2011:338). URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/plan%E2%80%94och-byggforordning-2011338_sfs-2011-338 (the date of access: March 22, 2021).

[582] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 61-62.

[583] Action Plan, Section 11.6; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.7.

[584] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 66-67.

[585] Climate Strategy, Section 4.8; Action Plan, Section 11.3; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.8.

[586] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 68.

[587] Climate Strategy, Section 4.6; Action Plan, Section 11.5; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.9.

[588] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 71-72.

Forestry and land use

318. The activity in the forest and land use[589] sector must be measured against the objectives of production and protection of the environment.[590]

e. Updating Climate Policies

319. In line with its reporting obligation (**paras. 322–323 of the Analytical Report**), the Government proposes future steps to be taken in order to achieve climate goals. Upon consideration of the Government's proposals, the Parliament modifies the content of the climate strategy thus modifying and updating the climate change framework.

1.2. Nationally Determined Contribution

320. Sweden does not submit a separate Nationally Determined Contribution under the Paris Agreement: it is submitted by the European Union.[591] The EU States committed to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels.

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Policies and Reporting

321. Under the UNFCCC, Sweden prepares and submits to the Secretariat a National Inventory Report on GHG emissions on an annual basis,592 a Biennial Report on Sweden's efforts to combat climate change,593 progress in achieving GHG emission reductions targets and contributions to climate finance, and quadrennial National Communications.[594]

322. At the national level, the Climate Act prescribes such enforcement mechanisms as reporting and preparation of action plans.[595] In particular, the Government reports before the Parliament and shall:

- present a climate report in its Budget Bill each year;
- draw up a climate policy action plan every fourth year to describe how the climate targets

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589 Climate Strategy, Section 4.7; Action Plan, Section 11.4; Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.10.

590 Sweden's long-term strategy for reducing greenhouse gas emissions. P. 76.

591 NDC Registry. Sweden home page. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=SWE (the date of access: March 22, 2021).

592 Sweden. 2020 National Inventory Report. URL: https://unfccc.int/documents/224123 (the date of access: March 22, 2021).

593 Sweden's fourth Biennial Report under the UNFCCC. URL: https://unfccc.int/sites/default/files/resource/Fourth%20Biennial%20report_%20Sweden.pdf (the date of access: March 22, 2021).

594 Sweden's Seventh National Communication on Climate Change. URL: https://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/6950713_sweden-nc7-1-swe_nc7_20171222.pdf (the date of access: March 22, 2021).

595 Sweden's long-term strategy for reducing greenhouse gas emissions. P. 12-13.

are to be achieved;

- make sure that climate policy goals and budget policy goals work together.[596]

323. SEPA annually submits progress reports on measures in the climate sphere and proposes the course for further action.[597] The Government assesses these reports and then presents its suggestions for further actions to the Parliament during budget deliberations.

324. In addition, SEPA is responsible for keeping and publishing statistics on GHG emissions (**para. 331 of the Analytical Report**).

325. As regards the Government's obligation to regularly produce action plans, the Action Plan drawn up in 2019 became the first one presented. The Action Plan describes measures in various economy sectors and contains provisions on the pricing of GHG emissions, financial markets, public procurement, research and innovations, etc. (**paras. 310–318 of the Analytical Report**).[598]

326. Finally, public authorities in Sweden are subject to freedom of information regimes (both on European[599] and domestic[600] levels) whereby they are required to disclose information on request from a member of the public (subject to exceptions).

b. Private Parties Reporting and Disclosure Obligations

327. Businesses are under an obligation to report GHG emissions levels[601] (**para. 331 of the Analytical Report**).

328. Furthermore, Swedish legislation contains provisions on environmental impact assessment for entities whose activity may cause harm to the environment or human health.[602] Environmental impact statement is published on a website of relevant authorities.[603]

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[596] Sweden's Climate Act and Climate Policy Framework.

[597] See Naturvårdsverket. Årlig uppföljning av miljömålen 2020. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljomalssystemet/Arlig-uppfoljning-2020/ (the date of access: March 22, 2021).

[598] Miljödepartamentet. Klimatpolitiska handlingsplanen – Fakta-PM. 2019.P. 3-13. URL: https://www.regeringen.se/4af76e/contentassets/fe520eab3a954eb39084aced9490b14c/klimatpolitiska-handlingsplanen-fakta-pm.pdf (the date of access: March 22, 2021).

[599] Council of Europe Convention on Access to Official Documents (CETS No. 205). URL: https://www.coe.int/en/web/conventions/full-list/-/conventions/rms/0900001680084826 (the date of access: March 22, 2021).

[600] Offentlighets- och sekretesslag (2009:400). URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/offentlighets--och-sekretesslag-2009400_sfs-2009-400 (the date of access: March 22, 2021).

[601] Miljöbalken, Kap. 26 § 20b.

[602] Miljöbalken, Kap. 26 §§ 19–20b.

[603] Miljöbalken, Kap. 6 § 39; Miljöbedömningsförordning. 2017:966. § 20. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/_sfs-2017-966 (the date of access: March 22, 2021).

c. Emission Trading

329. Sweden enacted legislation regarding emission trading[604] which implements EU Emission Trading Directive.[605]

330. Participants in the EU ETS include power stations, oil refineries, offshore platforms, and industries that produce iron and steel, cement and lime, paper, glass, ceramics, and chemicals.[606]

331. The EU ETS operates on a cap-and-trade basis; SEPA[607] sets an overall 'cap', or limit on the total GHG emissions allowed by all participants affected by the scheme and issues a respective permit.[608] Tradable emission allowances are allocated to participants in the scheme. This is done via a mixture of free allocation and auctions.

332. One allowance allows the holder to emit 1 tonne of CO2 equivalent.[609] Participants covered by the EU ETS must monitor and report to SEPA their emissions each year and surrender enough emission allowances to cover their annual emissions.[610] SEPA publishes statistics on GHG emissions.[611]

333. Participants who are likely to emit more than their allocation have a choice between taking measures to reduce their emissions or buying additional allowances. Additional allowances can be bought either from other companies or from auctions.[612]

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[604] Lag om handel med utsläppsrätter. 2004:1199. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20041199-om-handel-med-utslappsratter_sfs-2004-1199 (the date of access: March 22, 2021); Förordning om handel med utsläppsrätter. 2004:1205. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-20041205-om-handel-med_sfs-2004-1205 (the date of access: March 22, 2021).

[605] Directive of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. 2003/87/EC. 2003. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0087 (the date of access: March 22, 2021); Naturvårdsverket. Utsläppshandel. URL: https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Utslappshandel/ (the date of access: March 22, 2021).

[606] Regulation 9 requires that "no person may carry out a regulated activity at an installation except to the extent authorised by a permit held by the operator of the installation". Regulated activities are defined with reference to those activities set out in Annex 1 of Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC(3), as adapted by Annex 20 to the EEA agreement.

[607] Förordning om handel med utsläppsrätter. 2004:1205. Section 2. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-20041205-om-handel-med_sfs-2004-1205 (the date of access: March 22, 2021).

[608] Lag om handel med utsläppsrätter, Kap. 2.

[609] Lag om handel med utsläppsrätter, Kap. 3 § 5.

[610] Lag om handel med utsläppsrätter, Kap. 5 § 2.

[611] Lag om handel med utsläppsrätter, Kap. 5.

[612] Lag om handel med utsläppsrätter, Kap. 3 § 5.

d. Incentives and Other Financial Mechanisms

334. Sweden adopted the Law on Energy Tax (*Lag om skatt på energi*) which imposes a duty to pay carbon tax on fossil fuel,[613] including imported one.[614] The purpose of this tax is to incite the producers to use biofuels and other types of ecologically friendly fuels instead of fossil fuels.[615] Participants in the EU ETS are exempt from paying the carbon tax.[616]

335. At the same time, Sweden strongly supports the introduction of border tax adjustments and carbon tariffs into the EU legislation.[617]

336. Furthermore, Swedish Government introduces other incentives to reduce environmental and climate footprint. For instance, in the transportation sector pricing and subsidies apply;[618] in the industry sector financial support to projects, researches, or investments aimed at lowering GHG emissions is provided by the governmental program Industry Leap (*Industriklivet*);[619] in the building sector training programs on low-energy buildings are available.[620]

2.2. Enforcement and Accountability

337. The Environmental Code establishes a system of administrative[621] and criminal[622] penalties for failure to comply with its requirements.[623] For example, emission or failure to prevent leakage of fluorinated GHGs may lead to fine or imprisonment for up to 2 years.[624] The Law on Energy Tax provides for administrative and criminal sanctions.[625]

338. The Climate Act obliges the Government to produce reports and action plans but contains no provision on failure to meet these obligations, sanctions for non-compliance, or procedure to enforce climate policy framework in courts. Therefore, it can be assumed that the Climate Act creates a system of parliamentary rather than legal accountability.

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[613] Lag om skatt på energi. 1994:1776. Kap. 1 §§ 1, 2. URL: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-19941776-om-skatt-pa-energi_sfs-1994-1776 (the date of access: March 22, 2021).

[614] Lag om skatt på energi, Kap. 4 § 1b.

[615] *Johansson B.* Economic Instruments in Practice 1: Carbon Tax in Sweden. P. 3–5. URL: http://www.oecd.org/science/inno/2108273.pdf (the date of access: March 22, 2021); OECD. Taxing Energy Use 2019: Country Note – Sweden. P. 1–2. URL: https://www.oecd.org/tax/tax-policy/taxing-energy-use-sweden.pdf (the date of access: March 22, 2021).

[616] Lag om skatt på energi, Kap. 6a § 1 punkter 9a; Kap. 9 § 5.

[617] Action Plan. P. 183–184.

[618] Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.3.2. For instance, in order to encourage buyers to choose vehicles with low GHG emissions Sweden applies annual vehicle tax calculated based on the vehicles CO_2 emissions per kilometer.

[619] Sweden's long-term strategy for reducing greenhouse gas emissions. P. 54

[620] Sweden's long-term strategy for reducing greenhouse gas emissions, Section 4.3.2.

[621] See, for example, Miljöbalken, Kap. 30 § 1.

[622] Miljöbalken, Kap. 29 § 1.

[623] Miljöbalken, Kap. 30 § 1.

[624] Miljöbalken, Kap. 29 § 3.

[625] Lag om skatt på energi. Kap. 10.

3. Climate Litigation

339. Environment-related issues are litigated in Sweden. The majority of disputes arise between businesses and governmental authorities[626] and concern licensing of certain activities that may have an environmental impact.[627] Most commonly, the crux of these cases is the proper conduct of environmental impact assessments.[628]

340. In the field of climate change, the case *PUSH Sverige et al. mot Regeringen* of 2017 can be noted.[629] It is the first Swedish case (and the only, for the time being) concerning the right to non-harmful climate. Non-profit organizations and eco-activists filed a collective action against the decision of a government-owned corporation to sell four coal power plants and mining assets.[630] The plaintiffs argued that the Government breached its duty to protect the right of citizens to a non-harmful climate.[631] The Stockholm District Court ruled against the plaintiffs finding that they had not suffered any injury.[632]

341. Since climate-related issues become more acute worldwide, clarification of the essence of the right to non-harmful climate might become more relevant. However, in the absence of other national cases on the issue, any conclusions on climate-related litigation trends appear to be premature.

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[626] See, for example, Mark- och Miljööverdomstolen. Mål: M 6507-13. 2014. URL: https://www.domstol.se/mark--och-miljooverdomstolen/mark--och-miljooverdomstolens-avgoranden/2014/73489/ (the date of access: March 22, 2021); Mark- och Miljööverdomstolen. Mål: M 5798-18. 2019. URL: https://www.domstol.se/mark--och-miljooverdomstolen/mark--och-miljooverdomstolens-avgoranden/2019/65117/ (the date of access: March 22, 2021).

[627] Ibid.

[628] Ibid.

[629] *PUSH Sweden, Nature and Youth Sweden and Others v. Government of Sweden*. URL: http://climatecasechart.com/non-us-case/push-sweden-nature-youth-sweden-et-al-v-government-of-sweden/ (the date of access: March 22, 2021).

[630] Ansökan om stämning. § 52. URL: https://drive.google.com/file/d/0BwNst9QrJa18dTVsSjFlQ0JzZ2s/view (the date of access: March 22, 2021).

[631] Ansökan om stämning. §§ 91-110.

[632] Fältbiologerna. Stockholms tingsrätt nekar unga prövning i Magnoliamålet. URL: https://www.faltbiologerna.se/pressmeddelanden-stockholms-tingsratt-nekar-unga-provning-i-magnoliamalet/ (the date of access: March 22, 2021).

VI. CANADA

Executive Summary

342. The current climate change policy in Canada is formed primarily by PCF the 2020 Plan. These documents set climate objectives and targets and contain national general and sectoral strategies in relation to mitigation of and adaptation to climate change. Canada's climate change strategy is largely driven by its international commitments, arising, in particular, from the Paris Agreement.

343. In its NDC submitted under the Paris Agreement, Canada commits to reduce its greenhouse gas emissions by 30% below 2005 levels by 2030 and aims to achieve net-zero emissions by 2050. An updated NDC is expected in 2021.

344. In order to achieve Canada's climate goals, PCF, 2020 Plan, and several other documents provide for a comprehensive list of measures to be taken in the main sectors of the economy: electricity; built environment; transportation; industry; forestry, agriculture, and waste; government leadership.

345. One of the main tools of implementation of climate policy is the GGPPA that provides for a federal carbon polluting pricing system.

346. Climate change-related issues are litigated in Canada. The cases fall under two main categories: (1) public law actions raising human rights, constitutional, criminal, and administrative law issues, and (2) private law actions raising tort, planning, and company law issues. The current trends of climate change litigation in Canada are the introduction of class actions by a large number of plaintiffs and the use of human rights instruments for stimulation of more ambitious governmental climate policy.

1. Climate Policy in Canada

1.1. National Climate Legislation and Policies

a. National Legislation and Policy Documents

347. In line with the conclusion of the Paris Agreement, Canada's First Minister adopted PCF on December 9, 2016.[633]

348. PCF is a framework document aiming to create a flexible mechanism that allows provinces and territories to develop their own strategies based on it, taking into account the characteristics of each region.

349. PCF has four main pillars: pricing carbon pollution; further reduction of GHG emissions; adaptation to the impacts of climate change; actions to accelerate innovation, support clean technology, and create jobs.[634]

350. The PCF's objective is to reduce total GHG emissions from projected[635] 742 megatonnes of CO_2 equivalent to 523 megatonnes of CO_2 equivalent by 2030.[636]

351. Furthering the objectives of PCF, the 2020 Plan was adopted on December 11, 2020.[637] The 2020 Plan's five pillars are: cutting energy waste, clean transportation, pollution pricing, clean industry, embracing the power of nature.[638]

352. In addition, the 2020 Plan confirmed Canada's goal to achieve net-zero economy by 2050.[639] The 2020 Plan contains annexes covering action taken to date in specific sectors (**paras. 355–374 of the Analytical Report**).

353. Noteworthy, to date climate change strategy is not embodied in a specific piece of legislation, although a bill on climate accountability is currently undergoing parliamentary process (**para. 403 of the Analytical Report**). Nevertheless, there are several laws and regulations touching upon issues of climate change.[640]

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[633] Government of Canada. Pan-Canadian Framework on Clean Growth and Climate Change (PCF). URL: https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/climate-change-plan.html (the date of access: March 22, 2021).

[634] PCF, Chapter 1.2.

[635] Environment and Climate Change Canada. Canada's 2016 greenhouse gas emissions reference case. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/publications/2016-greenhouse-gas-emissions-case.html (the date of access: March 22, 2021).

[636] PCF, Chapter 1.4. The forecast was prepared in 2016 in connection with the work on the PCF.

[637] Environment and Climate Change Canada. A Healthy Environment and a Healthy Economy. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf (the date of access: March 22, 2021).

[638] Environment and Climate Change Canada. A Healthy Environment and a Healthy Economy: brief summary. URL: https://www.canada.ca/en/environment-climate-change/news/2020/12/a-healthy-environment-and-a-healthy-economy.html (the date of access: March 22, 2021).

[639] The 2020 Plan. P. 8.

[640] See, for instance, Environment and Climate Change Canada. Acts administered by Environment and Climate Change Canada. URL: https://www.canada.ca/en/environment-climate-change/corporate/transparency/acts-regulations/acts-administered.html (the date of access: March 22, 2021).

b. Institutional Framework

354. On the federal level, several bodies have functions in relation to climate change strategy and relevant legislation. In particular:

- ECCC[641] is responsible for general coordination and implementation of environmental policies and programs;

- Canadian Council of Ministers of the Environment[642] consists of the 14 federal, provincial, and territorial ministers and serves as a forum for discussion of environmental issues and collective action thereupon;

- Advisory Council on Climate Action[643] helps the Government identify further opportunities to reduce carbon pollution in the transportation and building sectors;

- Net-Zero Advisory Body[644] is an independent group of experts that will provide advice to the ECCC on ways to achieve net-zero emissions by 2050;

- Minister of CRA[645] and Minister of ECCC[646] are responsible for the administration and enforcement of the GHG pollution pricing system (**para. 393 of the Analytical Report**).

c. Sectoral Climate Strategies

355. In order to meet the reduction of GHG emissions target and to build a cleaner and more resilient economy, PCF and the 2020 Plan, along with other documents, formulate sectoral strategies.

Electricity

356. The generation of electricity accounts for 9% of GHG emissions.[647] Transformations to electricity systems will be supported by governments of all levels to accelerate the abandonment of traditional coal

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[641] Government of Canada. Environment and Climate Change Canada. URL: https://www.canada.ca/en/environment-climate-change.html (the date of access: March 22, 2021).

[642] Canadian Council of Ministers of the Environment. About. URL: https://ccme.ca/en/about (the date of access: March 22, 2021).

[643] Government of Canada. Advisory Council on Climate Action. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/advisory-council-climate-action.html (the date of access: March 22, 2021).https://www.canada.ca/en/environment-climate-change/services/climate-change/advisory-council-climate-action.html

[644] The creation of the Net-Zero Advisory Body was announced in February 2021 by the Minister of ECCC. Government of Canada. Net-Zero Advisory Body. URL: https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050/advisory-body.html (the date of access: March 22, 2021).

[645] Greenhouse Gas Pollution Pricing Act - GGPPA (S.C. 2018, c. 12, s. 186). Sections 93, 94, 96. URL: https://laws.justice.gc.ca/eng/acts/G-11.55/FullText.html (the date of access: March 22, 2021).

[646] GGPPA, Section 201.

[647] The 2020 Plan. Annex "Clean Electricity". P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_clean_electricity.pdf (the date of access: March 22, 2021).

power generation in Canada by 2030.[648] By 2050, the goal is to build a carbon-neutral electricity grid in the country.[649] The PCF's approach to the electricity sector includes:

- increasing the amount of electricity generated from renewable and low-emitting sources;
- connecting clean power with places that need it;
- modernizing electricity systems;
- reducing reliance on diesel working with Indigenous Peoples and northern and remote communities.[650]

357. The CES,[651] adopted in July 2015, focuses on sustainability and conservation, technology and innovation, delivering energy to people, and contains a range of objectives to develop and stimulate climate-friendly energy activities.[652]

358. The objectives of PCF and the CES are further developed in two sets of rules. The first includes measures aimed at decommissioning traditional coal-fired power units[653] and the second covers regulation of new power units fueled by natural gas and coal-fired units that have been converted to operate on natural gas.[654] The Government of Canada notes that the natural gas regulations should work together with the coal regulations, to ensure replacement of coal-fired electricity with natural gas-fired electricity generation and efficient use of new respective systems.[655]

Built environment

359. Energy used for heating and cooling buildings accounts for around 18% of GHG emissions[656]. Taking this into account, PCF provides the following approach to the built environment:

- making new buildings more energy efficient;
- retrofitting existing buildings, as well as fuel switching;
- improving energy efficiency for appliances and equipment;

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[648] PCF, Annex I. P. 51.

[649] The 2020 Plan. Annex "Clean Electricity". P. 1.

[650] PCF, Chapter 3.1.

[651] Council of the Federation. Canadian Energy Strategy. URL: https://canadaspremiers.ca/wp-content/uploads/2013/03/canadian_energy_strategy_eng_fnl.pdf (the date of access: March 22, 2021).

[652] CES. P. 9.

[653] Amendments to the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations (2012) that will accelerate the phase-out of conventional coal-fired electricity units to December 31, 2029. URL: https://laws-lois.justice.gc.ca/eng/regulations/sor-2012-167/index.html (the date of access: March 22, 2021).

[654] Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity (SOR/2018-261). URL: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-261/index.html (the date of access: March 22, 2021).

[655] Government of Canada. Technical backgrounder: Federal regulations for electricity sector. URL: https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/technical-backgrounder-regulations-2018.html (the date of access: March 22, 2021).

[656] The 2020 Plan. Annex "Homes and Buildings" P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_homes_buildings.pdf (the date of access: March 22, 2021).

- supporting building codes and energy-efficient housing in Indigenous communities.[657]

360. Build smart – Canada's buildings strategy[658] was adopted in August 2017, in the execution of PCF. In accordance with this strategy, governments of all levels will work:

- to develop and adopt increasingly stringent model building codes, starting in 2020, with the goal that provinces and territories adopt a 'net-zero energy ready' model building code by 2030;[659]

- to develop a model code for existing buildings by 2022, with the goal that provinces and territories adopt the code;[660]

- with the aim of requiring labelling of building energy use by as early as 2019.[661]

361. The Government of Canada plans to invest in the modernization of Canadian households (CAD 2.6 billion), public and municipal buildings, such as sports centers, etc. (CAD 1.5 billion), large commercial buildings (CAD 2 billion). The National Housing Co-Investment Fund also supports the construction of modern low-carbon housing with affordable loans. Given the increased demand for materials, the Government of Canada will also support the domestic Canadian construction equipment and the materials sector.[662]

362. To improve energy efficiency of appliances and equipment, Energy Efficiency Regulations were amended in 2018-2019. These amendments modernized minimum energy efficiency standards for 35 product categories (household appliances, water heaters, refrigeration equipment, etc.).[663]

Transportation

363. About 25% of Canada's GHG emissions are accounted for the transportation sector (mainly passenger vehicles and freight trucks).[664] To achieve national targets for reducing GHG emissions, PCF has developed the following approaches:

- setting and updating vehicle emissions standards and improving the efficiency of vehicles and transportation systems;

- expanding the number of zero-emission vehicles on Canadian roads;

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[657] PCF, Chapter 3.2.

[658] Natural Resources Canada. Build smart – Canada's Buildings. A Key Driver of the Pan-Canadian Framework on Clean Growth and Climate Change URL: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Building_Smart_en.pdf (the date of access: March 22, 2021).

[659] Ibid. P. 8-9.

[660] Ibid. P. 10-11.

[661] Ibid. P.12-13. The work on the labelling continues through cooperation of governments of all levels in order to further expand labelling measures. See NDC Registry. Canada's Biennial report (BR). BR 4. P. 20. URL: https://unfccc.int/documents/209928 (the date of access: March 22, 2021).

[662] The 2020 Plan. P. 11-14.

[663] Natural Resources Canada. Energy efficiency regulations. URL: https://www.nrcan.gc.ca/energy-efficiency-regulations/6845 (the date of access: March 22, 2021).

[664] The 2020 Plan. Annex "Clean Transportation". P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_clean_transportation.pdf (the date of access: March 22, 2021).

- supporting the shift from higher to lower-emitting types of transportation, including through investing in infrastructure; and;

- using cleaner fuels[665].

364. There is no consolidated document containing the transport strategy. Along with the Clean Transportation annex to the 2020 Plan that outlines key measures in the sphere, there exists A Strategic Plan for the Future of Transportation in Canada – Transportation 2030,[666] one of the themes of which is Green and Innovative Transportation.[667] The goal of this theme is to reduce environmental impacts and to embrace new technologies.

365. There are several governmental programs in relation to zero-emission vehicles.[668] Canada aims to increase sales of zero-emission vehicles by 10% by 2025, by 30% by 2030, and by 100% by 2040.[669] Together with the Canada Infrastructure Bank, the Canadian Government will invest in the acquisition of zero-emission public transport (CAD 1.5 billion).[670]

366. The Government of Canada is also considering the transition of heavy-duty, rail, marine, and aviation vehicles to zero emissions.[671] Regulations Amending the Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations and Other Regulations made under the Canadian Environmental Protection Act 1999,[672] set up more stringent GHG emission standards for on-road heavy-duty vehicles and engines.

367. In order to reduce GHG emissions and accelerate the use of clean technologies and fuels, the federal government is developing the Clean Fuel Standard.[673] In December 2020, proposed Clean Fuel

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[665] PCF, Chapter 3.3.

[666] The main goal of this plan is "to improve Canadians' lives by reducing environmental impacts, including air pollution, and embracing new technologies." Transport Canada. A Strategic Plan for the Future of Transportation in Canada – Transportation 2030. URL: https://tc.canada.ca/en/initiatives/transportation-2030-strategic-plan-future-transportation-canada (the date of access: March 22, 2021).

[667] Transport Canada. Transportation 2030: Green and Innovative Transportation. URL: https://tc.canada.ca/en/corporate-services/transportation-2030-green-innovative-transportation (the date of access: March 22, 2021).

[668] Natural Resources Canada. Zero-Emission Vehicle Awareness Initiative. URL: https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-transportation/electric-alternative-fuel-infras/zero-emission-vehicle-awareness-initiative/22209 (the date of access: March 22, 2021); Zero-emission vehicles. URL: https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles (the date of access: March 22, 2021); Zero Emission Vehicle Infrastructure Program. URL: https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-transportation/zero-emission-vehicle-infrastructure-program/21876 (the date of access: March 22, 2021).

[669] Environment and Climate Change Canada. Pan-Canadian Framework on Clean Growth And Climate Change: Third Annual Synthesis Report on the Status of Implementation: Third Annual Synthesis Report on the Status of Implementation, 2019. P. 13. URL: http://publications.gc.ca/collections/collection_2020/eccc/En1-77-2019-eng.pdf (the date of access: March 22, 2021).

[670] The 2020 Plan. P. 17.

[671] The 2020 Plan. P. 18-20.

[672] Regulations Amending the Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations and Other Regulations Made Under the Canadian Environmental Protection Act, 1999 (Canada Gazette, Vol. 151. 4 March 2017. No. 9). URL: http://www.gazette.gc.ca/rp-pr/p1/2017/2017-03-04/html/reg1-eng.html (the date of access: March 22, 2021).

[673] Government of Canada. Clean Fuel Standard. URL: https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard.html (the date of access: March 22, 2021).

Regulations[674] were published. These Regulations are to become final in late 2021 and on December 1, 2022, the Clean Fuel Standard reduction requirements enter into force.[675] These regulations set requirements for liquid fossil fuels.[676] Regulations on gaseous and solid fuel classes are yet to come.[677]

Industry

368. Canada's industries (mostly oil and gas sectors) accounted for about 37% of GHG emissions in 2018.[678] The Government of Canada plans to reduce methane emissions from the oil and gas sector, including offshore activities, by 40-45% by 2025,[679] including through equivalency agreements.[680]

369. In accordance with PCF, the approach to the industrial sector will include:

- regulations to reduce methane and hydrofluorocarbon emissions;
- improving industrial energy efficiency;
- investing in new technologies to reduce emissions.[681]

370. In April 2018, ECCC published federal methane regulations,[682] which are aimed at methane emissions control in the oil and gas sector and also at the reduction of the amount of volatile organic compounds released into the air.

[674] Clean Fuel Regulations (Canada Gazette, Vol. 154. 19 December 2020. No. 51). URL: https://gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html#reg (the date of access: March 22, 2021).

[675] Government of Canada. Compliance options to meet the Clean Fuel Standard. URL: https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard/compliance-options.html (the date of access: March 22, 2021).

[676] Fuels are referred to as classes.

[677] Government of Canada. Clean Fuel Standard: proposed regulatory approach. Annex II: Regulatory design for the gaseous and solid fuel classes. URL: https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard/regulatory-approach.html (the date of access: March 22, 2021).

[678] The 2020 Plan, Annex "Clean Industry". P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_clean_industry.pdf (the date of access: March 22, 2021).

[679] Ibid.

[680] In this context, equivalence agreements are agreements between the federal government and the provincial and territorial governments in which the latter may propose to enact their own methane regulations that are more relevant to the particulars of the province or territory, provided they can clearly demonstrate emission reductions. equivalent to federal measures. The list of equivalence agreements, including the ones relating to GHG emissions, can be found here: Canadian Environmental Protection Act: equivalency agreements. URL: https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/agreements/equivalency.html (the date of access: March 22, 2021).

[681] PCF, Chapter 3.4.

[682] Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector) (SOR/2018-66). URL: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-66/FullText.html (the date of access: March 22, 2021).

Forestry, agriculture, and waste

371. Emissions from agriculture and extraction of forestry resources account for about 10% of Canada's GHG emissions,[683] the waste sector accounts for about 3%.[684]

372. In accordance with PCF, the approach to these sectors will include:

- enhancing carbon storage in forests and agricultural lands;
- supporting the increased use of wood for construction;
- generating fuel from bioenergy and bioproducts;
- advancing innovation.[685]

373. Canada plans to reduce waste by 30% by 2030 and by 50% by 2040 and reduce plastic waste by 2030.[686] Therefore, the Government invests in innovative ways to prevent food waste and recycle food waste and plastics.[687]

Government leadership

374. Governments are directly responsible for a relatively small share of Canada's GHG emissions (about 0.6%).[688] Nevertheless, the federal government aims to scale up clean procurement and to reduce its GHG emissions, particularly from government buildings and fleets, by 40% below 2005 levels by 2030 or earlier.[689]

d. Climate Change Adaptation

375. Federal Adaptation Policy Framework for climate change[690] of 2016 sets perspective of adaptation to climate change in Canada, outlines objectives, role of the federal government, and criteria for setting priorities for action as regards climate change. PCF contains commitments of governments of all levels in relation to adaptation to climate change and specifies actions that ought to be taken to build resilience to climate change in five areas listed below[691] (**paras. 376–380 of the Analytical Report**).

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683 The 2020 Plan. Annex "Climate-smart agriculture". P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_climate-smart_agriculture.pdf (the date of access: March 22, 2021).

684 The 2020 Plan. Annex "Reducing waste". P. 1. URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_reducing_waste.pdf (the date of access: March 22, 2021).

685 PCF, Chapter 3.5.

686 The 2020 Plan, Annex "Reducing waste". P. 1.

687 Ibid. P. 1-2.

688 Despite the insignificant share of emissions, governments aim to reduce these emissions in order to set an example for other sectors.

689 PCF, Chapter 3.6.

690 Government of Canada. Federal Adaptation Policy Framework for climate change. URL: https://www.canada.ca/content/dam/eccc/migration/cc/content/2/b/2/2b2a953e-756b-4e8c-a2ba-3fbdc3324dba/4214_federal-20adaptation-20policy-20framework_en.pdf (the date of access: March 22, 2021).

691 PCF, Chapter 4.

376. ***Translating scientific information and Traditional Knowledge into action***.[692] The Canadian center for climate services[693] provides access to climate information[694] while Canada's Climate Change Adaptation Platform serves as a national forum for representatives from governments, industries, communities, and other actors to discuss climate-related issues.[695]

377. ***Building climate resilience through infrastructure***.[696] Governments of all levels commit to invest in infrastructure to reduce the impact of climate change and to develop legislation and standards on climate change adaptation.

378. ***Protecting and improving human health and well-being***[697] by common action to prevent and cure diseases associated with climate change. Federal adaptation investments[698] will support actions including surveillance and monitoring, risk assessments, modeling, laboratory diagnostics, as well as education of health professionals and public-awareness activities.

379. ***Supporting particularly vulnerable regions***[699] affected by the impacts of climate change. The approach to supporting vulnerable regions will include (1) investing in resilient infrastructure to protect vulnerable regions; (2) building climate resilience in the North; (3) supporting community-based monitoring in Indigenous communities; and (4) supporting adaptation in coastal areas.[700] Territorial governments of affected regions also take measures to adapt to climate change. For example, in April 2011, governments of Nunavut, the Northwest Territories, and Yukon came up with The Pan-Territorial Adaptation Strategy: Moving Forward on Climate Change Adaptation in Canada's North[701] containing strategies for collaborative actions and ways to meet territory-specific challenges.

380. ***Reducing climate-related hazards and disaster risks***[702] by way of (1) investing in infrastructure; (2) fostering protection against floods; (3) facilitating adaptation of Indigenous Peoples. Additionally, the Canadian Council of Forest Ministers is working on the establishment of the Canadian Wildland Fire Strategy, with climate change highlighted as a key challenge.[703]

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[692] PCF, Chapter 4.1.

[693] Government of Canada. Canadian Centre for Climate Services. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/canadian-centre-climate-services.html (the date of access: March 22, 2021).https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_reducing_waste.pdf

[694] PCF, Chapter 4.1.

[695] Natural Resources Canada. Canada's Climate Change Adaptation Platform. URL: https://www.nrcan.gc.ca/climate-change/impacts-adaptations/adapting-our-changing-climate/10027 (the date of access: March 22, 2021).

[696] PCF, Chapter 4.2.

[697] PCF, Chapter 4.3.

[698] Including to support indigenous and Inuit communities in the implementation of projects on climate change and projects that protect the health of these populations.

[699] PCF, Chapter 4.4.

[700] Ibid.

[701] Pan-Territorial Adaptation Partnership. Pan-Territorial Adaptation Strategy: Moving Forward on Climate Change Adaptation in Canada's North. URL: https://www.northernadaptation.ca/sites/default/files/Pan-Territorial_Adaptation_Strategy.pdf (the date of access: March 22, 2021).

[702] PCF, Chapter 4.5.

[703] Ibid.

1.2. Nationally Determined Contribution and International Leadership

381. Under its current NDC,[704] Canada commits to reduce its GHG emissions by 30% below 2005 levels by 2030 and aims to achieve net-zero emissions by 2050. It is expected that Canada will present its updated NDC in 2021.[705]

382. PCF specifically notes international leadership as one of the pathways to reduce Canada's GHG emissions.[706] In line with this aim, the Government of Canada is investing CAD 2.65 billion in climate finance to help developing countries transition to low-carbon economies and build climate resilience.[707] In addition, Canada will continue to acquire internationally transferred mitigation outcomes and engage in trade and climate policy.[708]

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Strategy and Reporting

383. Under the United Nations Framework Convention of Climate Change, Canada prepares and submits to the Secretariat a National Inventory Report[709] on GHG emissions on an annual basis; a Biennial Report[710] on Canada's progress in achieving emission reductions and provisions of financial, technology, and capacity building support to developing countries; and a quadrennial National Communications.[711]

384. At the national level, the Government of Canada publishes a report on the status of implementation of PCF on the official website every year.[712] Public reporting is required in a way that is transparent to Canadians.[713] The reports contain information on GHG emissions measurements and reporting,

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[704] NDC Registry. Canada's 2017 Nationally Determined Contribution Submission to the United Nations Framework Convention on Climate Change. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Canada%20First/Canada%20First%20NDC-Revised%20submission%202017-05-11.pdf (the date of access: March 22, 2021).

[705] The 2020 Plan. P. 77.

[706] PCF, Chapter 3.7.

[707] The government plans to finance this amount by 2020-2021. See: Government of Canada. Canada's international climate finance. https://www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/climate-finance.html (the date of access: March 22, 2021).

[708] Ibid; PCF, Chapter 3.7.

[709] NDC Registry. Canada's 2020 National Inventory Report. URL: https://unfccc.int/documents/224829 (the date of access: March 22, 2021).

[710] NDC Registry. Canada's Biennial report (BR). BR 4.

[711] NDC Registry. Canada's 7th National Communication and 3rd Biennial Report. URL: https://unfccc.int/files/national_reports/national_communications_and_biennial_reports/application/pdf/82051493_canada-nc7-br3-1-5108_eccc_can7thncomm3rdbi-report_en_04_web.pdf (the date of access: March 22, 2021).

[712] Three currently available annual reports can be found here: Government of Canada. Pan-Canadian Framework on Clean Growth and Climate Change. URL: https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html.

[713] Pan-Canadian Framework on Clean Growth And Climate Change: Third Annual Synthesis Report on the Status of Implementation. P. 46.

implementation of PCF in different sectors, analysis and advice (identification of best practices in cooperation with experts), and review of future measures to be taken.[714]

385. GGPPA,[715] adopted on June 21, 2018, establishes the federal carbon polluting pricing system (**paras. 393–401 of the Analytical Report**) and requires ECCC to prepare reports on the administration of GGPPA.[716]

386. GGPPA contains relevant provisions regarding disclosure of information by governmental bodies. With regard to the fuel charge (**paras. 395–397 of the Analytical Report**), the CRA Minister can only disclose relevant information to certain government authorities. The CRA Minister may make available to the public only the business number[717] and the name of its holder.[718]

387. In relation to the obligation associated with the OBPS (**paras. 398–401 of the Analytical Report**), the Minister of ECCC must keep, in a registry accessible to the public, information about all convictions of organizations for offenses. Information in the registry is to be kept for a minimum of five years[719].

b. Private Parties Reporting and Disclosure Obligations

388. Facilities that emit 10 kilotonnes or more of GHGs, in CO_2 equivalent units per year must annually[720] report their emissions in accordance with the Greenhouse Gas Reporting Program[721] administered by ECCC.[722]

389. The person responsible for facilities covered by OPBS must also submit to ECCC a report containing GHG emissions limit information and any other information specified in OBPS Regulations,[723] and a verification report.[724]

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[714] Ibid. P. 46-47.

[715] Greenhouse Gas Pollution Pricing Act – GGPPA (S.C. 2018, c. 12, s. 186). URL: https://laws-lois.justice.gc.ca/eng/acts/G-11.55/FullText.html (the date of access: March 22, 2021).

[716] GGPPA, Section 274.

[717] Business number means the number (other than a Social Insurance Number) used by the Minister CRA to identify a registered person for the purposes of GGPPA.

[718] GGPPA, Section 107.

[719] GGPPA, Section 252.

[720] Department of the Environment. *Notice with respect to reporting of greenhouse gases (GHGs) for 2020. URL:* https://canadagazette.gc.ca/rp-pr/p1/2021/2021-02-13/html/sup1-eng.html (the date of access: March 22, 2021).

[721] Government of Canada. Greenhouse Gas Reporting Program (GHGRP) – Facility Greenhouse Gas (GHG) Data. URL: https://open.canada.ca/data/en/dataset/a8ba14b7-7f23-462a-bdbb-83b0ef629823 (the date of access: March 22, 2021).

[722] Government of Canada. About the GHG Reporting Program. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/facility-reporting/about.html (the date of access: March 22, 2021).

[723] OBPS Regulations (SOR/2019-266). URL: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2019-266/index.html (the date of access: March 22, 2021).

[724] GGPPA, Section 173; OBPS Regulations contain requirements relating to an annual report, Schedule 2, Sections 11 and 12; OBPS Regulations contain requirements relating to a verification report, Schedule 5, Sections 49 and 52. See also OBPS. Quantification, Reporting and Verification. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system.html (the date of access: March 22, 2021).

390. Canadian law requires disclosure from public companies. This encompasses material on environmental matters, including climate change.[725] In December 2015, the Financial Stability Board established the Task Force on Climate-related Financial Disclosure which elaborated recommendations on climate-related financial disclosures.[726]

391. In response to the COVID-19 pandemic, the Government of Canada announced the Large Employer Emergency Financing Facility, a program providing loans to large employers affected by the pandemic. If a company accepts assistance in form of a loan, it is required to publish "an annual climate-related financial disclosure report that highlights how corporate governance, strategies, policies and practices can help manage climate-related risks and opportunities; and contribute to Canada's fulfillment of its Paris Agreement commitments and the 2050 Zero Target."[727]

392. Finally, there are requirements to carry out environmental impact assessments[728] for public or private development projects which are likely to have significant effects on the environment. The impact assessment is currently governed by the Impact Assessment Act, 2019[729] and the repealed Canadian Environmental Assessment Act, 2012[730] (for assessments commenced prior to entry into force of the Impact Assessment Act, 2019).

c. Financial Mechanisms, Emission Trading

393. GGPPA provides for the federal carbon polluting pricing system. The pricing standards are divided into two parts: a regulatory charge on fuel (administered by CRA) and OBPS for large industries (administered by ECCC).[731] OBPS is further regulated by OBPS Regulations of July 10, 2019, adopted under Part 2 of GGPPA.

394. The federal system under GGPPA applies in provinces or territories that do not have their own pricing systems meeting stringency criteria or in case a province or territory requests application of the federal GGPPA system[732]. Provincial systems apply in British Columbia, Québec, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador.[733]

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[725] Canadian Securities Administrators. CSA Staff Notice 51-333: Environmental Reporting Guidance. URL: https://www.osc.gov.on.ca/documents/en/Securities-Category5/csa_20101027_51-333_environmental-reporting.pdf (the date of access: March 22, 2021).

[726] Task Force on Climate-Related Financial Disclosures. TCFD Recommendations. URL: https://www.fsb-tcfd.org/recommendations/ (the date of access: March 22, 2021).

[727] Canada Development Investment Corporation. Large Employer Emergency Financing Facility Factsheet. URL: https://www.cdev.gc.ca/leeff-factsheet/ (the date of access: March 22, 2021).

[728] Government of Canada. Projects and impact assessments. URL: https://www.canada.ca/en/services/environment/conservation/assessments.html (the date of access: March 22, 2021); Impact Assessment Agency of Canada. Basics of Environmental Assessment under CEAA 2012. URL: https://www.canada.ca/en/impact-assessment-agency/services/environmental-assessments/basics-environmental-assessment.html (the date of access: March 22, 2021).

[729] Impact Assessment Act (S.C. 2019, c. 28, s. 1). URL: https://laws.justice.gc.ca/eng/acts/I-2.75/index.html (the date of access: March 22, 2021).

[730] Canadian Environmental Assessment Act (S.C. 2012, c. 19, s. 52). URL: https://laws-lois.justice.gc.ca/eng/acts/C-15.21/ (the date of access: March 22, 2021).

[731] Government of Canada. How we're putting a price on carbon pollution. URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/putting-price-on-carbon-pollution.html (the date of access: March 22, 2021).

[732] Ibid.

[733] Ibid.

Fuel Charge

395. Federal fuel charge applies in Saskatchewan, Ontario, Manitoba, New Brunswick, Yukon, Nunavut, and Alberta.[734] Businesses[735] having activities in any of the listed provinces are either required or permitted[736] to register with CRA. There are 12 types of registrations (depending on the activity performed) and 21 types of fuel charges.[737] The fuel rate in 2018 was equivalent to CAD 10 per tonne of CO_2 and is increasing by CAD 10 per tonne annually to CAD 50 per tonne in 2022.[738] An increase of CAD 15 per tonne of CO_2 per year is proposed for the period from 2022 to 2030.[739]

396. In most cases, charges are collected early in the supply chain and paid by a registered distributor. End-users generally have no fuel charge obligations, as it is already included in the price of the fuel they buy.[740]

397. Partial or full relief of the fuel charge is possible under GGPPA[741] in special circumstances for certain types of businesses.[742]

OBPS

398. OBPS, a federal system, applies in Ontario, Manitoba, New Brunswick, Prince Edward Island, and partially in Saskatchewan.[743] OBPS applies to industrial facilities with annual emissions equal to or greater than 50 kilotonnes CO_2 equivalent (covered facilities).[744] Covered facilities need to be registered with ECCC.[745]

399. Covered facilities are subject to annual GHG emissions limits.[746]

400. If a covered facility emits less GHG than it is allowed during a compliance period, surplus credits expressed in CO_2 equivalent tonnes must be issued to the facility. The number of surplus credit equals the

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[734] Ibid.

[735] Distributors, importers, emitters, users of fuel, user of combustible waste, carriers. See Canada Revenue Agency. FCN1 Registration Under the Greenhouse Gas Pollution Pricing Act. URL:https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/fcn1/general-information-registration-greenhouse-gas-pollution-pricing-act.html (the date of access: March 22, 2021).

[736] Ibid; GGPPA, Sections 55-66.

[737] Fuel charges and applicable rates are listed in Annex 2 to GGPPA.

[738] Canada Revenue Agency. Fuel Charge Rates. URL: https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/fcrates/fuel-charge-rates.html (the date of access: March 22, 2021).

[739] The 2020 Plan. Annex "Modelling and Analysis of a Healthy Environment and a Healthy Economy". URL: https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/annex_modelling_analysis_healthy_environment_healthy_economy.pdf (the date of access: March 22, 2021).

[740] Canada Revenue Agency. Carbon pollution pricing – what you need to know. URL: https://www.canada.ca/en/revenue-agency/campaigns/pollution-pricing.html (the date of access: March 22, 2021).

[741] GGPPA, Sections 36-37.

[742] Government of Canada. Fuel charge relief. URL: https://www.canada.ca/en/revenue-agency/services/tax/excise-taxes-duties-levies/fuel-charge/relief.html (the date of access: March 22, 2021).

[743] How we're putting a price on carbon pollution.

[744] GGPPA, Section 169; OBPS Regulations, Section 8.

[745] GGPPA, Section 171.

[746] OBPS Regulations, Sections 36-43.

difference between the GHG limit and the quantity of actually emitted GHG[747]. If subsequently, this covered facility exceeds the GHG limit, the covered facility will be able to use its surplus credit to pay off the compensation obligation.[748]

401. In case of excessive GHG emissions, a person responsible for a covered facility must provide compensation for each CO_2 equivalent tonne emitted above the GHG emissions limit.[749] The compensation can be provided by remittance of compliance units, namely, surplus credits, making excess emissions charge payment or the combination of both.[750] If the compensation is not provided in full by the regular-rate compensation deadline, the rate for each non-compensated CO_2 equivalent tonne multiplies by four.[751]

2.2. Enforcement and Accountability

a. Measures to Ensure Implementation

402. GGPPA has a fairly developed regulation in the field of liability. In case of violation of obligations relating to the fuel charge, a person may be subject to administrative or criminal liability,[752] in case of failure to fulfill obligations in relation to OBPS, a violator may also be subject to criminal liability.[753] In particular, the following sanctions can be imposed:

- payment of interest on late payment of the relevant fuel charge;[754]
- penalties for untimely registration or failure to submit declaration;[755]
- criminal penalty (up to a term of imprisonment) in case of, for instance, provision of false information, evasion of payment of fuel charge, failure to file and make fuel charge return (i.e. a formalized reporting requirement).[756] In relation to obligations deriving from OBSP, criminal sanctions follow illegal obtainment of surplus credit, forgery, destruction or concealment of records, deliberate provision of false or misleading information or samples.[757]

b. Accountability

403. On November 19, 2020, Bill C-12 — an Act respecting transparency and accountability in Canada's efforts to achieve net-zero greenhouse gas emissions by the year 2050 (or Canadian Net-Zero Emissions Accountability Act) was presented for the first reading.[758] The main objective of Bill C-12 is to hold the

[747] GGPPA, Section 175.

[748] GGPPA, Sections 174(1) and 178(1)(a); OBPS Regulations, Section 70.

[749] GGPPA, Section 174; OBPS Regulations, Sections 54-58, 70-71.

[750] GGPPA, Section 174(2).

[751] GGPPA, Section 174(4).

[752] GGPPA, Part 1. Division 6.

[753] GGPPA, Part 2. Division 3.

[754] GGPPA, Section 97.

[755] GGPPA, Sections 123, 126.

[756] GGPPA, Sections 132, 133.

[757] GGPPA, Section 232.

[758] Parliament of Canada. Bill C-12. An Act respecting transparency and accountability in Canada's efforts to achieve net-zero greenhouse gas emissions by the year 2050. URL: https://parl.ca/DocumentViewer/en/43-2/bill/C-12/first-reading (the date of access: March 22, 2021).

federal government accountable for achieving the net-zero target by 2050. Bill C-12 provides for plans and reports as accountability mechanisms.

3. Climate Litigation

404. There have been a number of climate-related cases in Canada.[759] There are two main categories of cases: (1) public law actions raising human rights, constitutional, criminal, and administrative law issues, and (2) private law actions raising tort, planning, and company law issues.

405. The following climate change cases can be noted:

- *ENvironnement JEUnesse v Attorney General of Canada* — ongoing proceedings regarding authorization to institute a class action against the federal government for alleged failure to set an adequate GHG emissions target and for the absence of a plan to reach GHG emissions target.[760] On July 11, 2019, the Superior Court of Québec dismissed the motion for authorization to institute a class action but found the issue of the impact of climate change on human rights justiciable. Environment JEUnesse appealed the decision on August 16, 2019;[761]

- *La Rose v. Her Majesty the Queen*[762] and *Mathur et al. v. Her Majesty the Queen in Right of Ontario*[763] — Canadian youth alleged violation of their rights due to the government's failure to take sufficient action on climate change. The lawsuits were dismissed for failing to state a reasonable cause of action;

- *Turp v. Minister of Justice and Attorney General of Canada*[764] — judicial review of Canada's withdrawal from the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

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[759] 22 cases identified from 1986 to May 2020 in *Setzer J., Byrnes R.* Global trends in climate change litigation: 2020 snapshot. URL: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2020/07/Global-trends-in-climate-change-litigation_2020-snapshot.pdf (the date of access: March 22, 2021). Climate Change Litigation Databases (URL: http://climatecasechart.com/search-non-us/?cn-reloaded=1&fwp_non_us_jurisdiction=canada and the Grantham Research Institute's 'Climate Change Laws of the World' (URL: https://climate-laws.org/geographies/canada) record 25 cases (the date of access: March 22, 2021).

[760] *Killoran M., Feasby C., Huys M.M.* Climate change litigation arrives in Canada. URL: https://www.osler.com/en/resources/regulations/2019/climate-change-litigation-arrives-in-canada (the date of access: March 22, 2021).

[761] *MacWilliam A.G., Osaka K., Konkin D.P.* Climate Change litigation in Canada: Recent developments. URL: https://www.dentons.com/en/insights/articles/2019/november/11/climate-change-litigation-in-canada-recent-developments (the date of access: March 22, 2021).

[762] Federal Court. *La Rose et al. v. Her Majesty the Queen*. Order of October 27, 2020. URL: https://climate-laws.org/geographies/canada/litigation_cases/la-rose-v-her-majesty-the-queen (the date of access: March 22, 2021).

[763] Superior Court Of Justice — Ontario. *Mathur et al. v. Her Majesty the Queen in Right of Ontario*. Decision of July 13, 2020. See also Mathur et al. v. Her Majesty the Queen in Right of Ontario. URL: https://climate-laws.org/geographies/canada/litigation_cases/mathur-et-al-v-her-majesty-the-queen-in-right-of-ontario (the date of access: March 22, 2021).

[764] Federal Court. *Turp v. Minister of Justice and Attorney General of Canada*. Judgment of July 17, 2012. 2012 FC 893. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2012/20120717_2012-FC-893_decision.pdf (the date of access: March 22, 2021).

406. It appears that introduction of class actions involving a large number of plaintiffs[765] and the use of human rights instruments in order to stimulate more ambitious governmental climate policy[766] are current trends in climate change litigation in Canada.

[765] *Lemmens M., Bennett T.* Climate change litigation and disclosure implications during COVID-19. URL: https://www.lexology.com/library/detail.aspx?g=63261ad1-9052-42bd-8d61-493d845e8829 (the date of access: March 22, 2021).

[766] *Setzer J., Byrnes R.* Global trends in climate change litigation: 2020 snapshot.

VII. THE USA: CALIFORNIA AND NEW YORK

Executive Summary

407. The following part is focused on climate policies elaborated in California and New York rather than the federal climate change strategy.

408. As a preliminary consideration, it should be noted that in the field of environmental and climate law, the federal and state governments relate in several ways. The federal government can either exercise its full and exclusive authority, or set minimum standards and allow states to enact more protective laws, or largely leave regulatory policy up to the states.

409. In California, the climate strategy is formed mainly by executive orders issued by California's governors and AB 32. AB 32 defines overall emission reduction targets and provides nearly comprehensive regulation of GHG emissions in California except for GHG emissions coming from sources regulated on the federal level. The executive orders set the following GHG emission reduction targets: reducing overall emissions by at least 40% below 1990 levels by 2030; reducing overall emissions by at least 80% below 1990 levels by 2050; achieving carbon neutrality by 2045, if not earlier. In order to achieve these goals, California takes a variety of steps to mitigate and adapt to climate change in different sectors of the economy (electricity; land use planning and urban development; transportation; industry; forestry, agriculture).

410. In New York, CLCPA sets, inter alia, GHG emissions reduction targets (reducing overall emissions by at least 40% below 1990 levels by 2030; reducing overall emissions by at least 85% below 1990 levels by 2050 with a goal of net-zero emissions) and specific goals for the electricity sector. CLCPA provides for the "Scoping Plan" due by January 1, 2023, which will set forth methods that will be used to achieve the GHG emissions reduction targets. Climate strategies in agriculture and forestry, energy efficiency and housing, energy-intensive and trade-exposed industries, land use and local government, power generation, and transportation are yet to be developed.

411. One of the key tools of the implementation of climate policies in both states is the use of emission trading systems. In California AB 32 provides for the state-wide cap-and-trade system. New York is part of the Regional GHG Initiative, a ten-state program covering carbon dioxide emissions from electric generating units.

412. In both states, as well as in the United States in general, climate-related issues are litigated in courts. Litigated issues, as well as parties to proceedings, vary. Lawsuits are often brought by environmental organizations and certain states that argue that climate change regulations are too weak; by industries and certain states that argue that environmental regulations are too strong; against major GHG-emitting companies allegedly liable for some of the damage caused by their emissions. In addition, lawsuits often concern analysis of climate-related impacts of proposed plans or projects. Both in New York and California several notable climate-related cases are currently pending before the courts.

1. The United States Climate Legislation and Policies

413. The United States system uses a federalist governance system, where authority is shared by the federal government and the states. Because of the Supremacy Clause of the United States Constitution, federal law can preempt state law, so long as the federal government is operating within an area in which the Constitution assigns its authority. Wherever state law is not preempted, state governments have the power to act.

414. In the field of environmental law, the federal and state governments relate in a variety of different ways. In some policy areas, the federal government has exercised its authority: for example, under the Clean Air Act, only the federal government can set fuel economy standards for automobiles. In some policy areas, the federal government sets minimum standards but allows states to enact more protective laws. For example, the federal government sets "national ambient air quality standards", but states can set more stringent standards if they choose. In some areas, the federal government creates binding national programs but gives the state the option to participate, often by planning implementation approaches and handling enforcement.[767] The Clean Power Plan developed by EPA during the Obama Administration, used this approach.[768] And in some areas, the federal government largely leaves regulatory policy up to the states. Land use planning (which affects GHG emissions by helping determine how much people drive) is an example of a policy area in which federal involvement is minimal, at least outside of the extensive lands the federal government owns (states cannot regulate lands in federal property and implement their climate policies on federal lands).

415. Noteworthy, state climate strategies are not *per se* driven by the U.S. international obligations. Although states may bear in mind the U.S. international commitments (for instance, the temperature goal set by the Paris Agreement or the U.S. NDC),[769] states can also deliberately choose goals that are more ambitious than the ones currently set by international treaty agreements.

416. Individual states do not have the authority to regulate commerce in foreign goods or beyond their borders. Still, a state can regulate products and services bought and sold within that state, so long as its regulatory schemes do not discriminate against out-of-state commerce. This means, for example, that a state can require foreign-made goods to comply with its energy efficiency standards.

417. These issues have often come up in the context of renewable portfolio standards (**para. 433 of the Analytical Report**) and with laws that require a life-cycle analysis of the GHG emissions of fuels or other energy sources. These types of laws fall more heavily on out-of-state suppliers, both because other states rely more heavily on fossil-fuel-generated electricity and because of the need to account for energy losses in transmission. Out-of-state suppliers have therefore argued that these laws unlawfully discriminate against them. The state has responded that these laws apply consistent standards to everyone and that the

[767] *Owen D.* Cooperative Subfederalism // U.C. Irvine Law Review Vol. 9:177. 2019. P. 177-227. URL: https://www.law.uci.edu/lawreview/vol9/no1/Online_Owen.pdf (the date of access: March 22, 2021).

[768] *Pacyniak G.* Making the Most of Cooperative Federalism: What the Clean Power Plan has Already Achieved // Georgetown Environmental Law Review. Vol. 29:301. 2017. P. 301-367. URL: https://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=1514&context=law_facultyscholarship (the date of access: March 22, 2021).

[769] The United States intends to achieve an economy-wide target of reducing its greenhouse gas emissions by 26-28 per cent below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%. See UNFCCC. United States of America. First NDC Submission. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=USA (the date of access: March 22, 2021).

heavier effect on out-of-state producers results from their larger climate impacts rather than because of unlawful discrimination. To date, state authorities have generally prevailed in these types of cases.[770]

418. Climate change litigation has generally been increasing in the United States. During the Trump Administration, most of it was brought by environmental organizations and certain states claiming that the administration's actions violated the law. According to Prof. Michael Gerrard, during the Joe Biden presidency, most of the climate litigation against his government will probably be brought by industries and certain states claiming that the administration is doing too much to combat climate change.

419. Columbia University's Sabin Center maintains a comprehensive database of climate cases.[771]

2. Climate Policy in California

2.1. Overview of the Climate Legislation and Strategy

a. Legislation and Policy Documents

420. California has adopted a general climate strategy that comes primarily from two sources of law: executive orders and legislation.

421. One source is executive orders issued by California's governors. In the United States, executive orders are a relatively weak source of law; they can easily be changed by later governors and they are not directly binding upon private parties. Nevertheless, California's governors have issued a series of executive orders addressing climate, and so far people have taken those orders seriously. The executive orders bind the executive branch of the state government and set deadlines, so long as they remain in force.

422. The California Legislature has enacted several laws that provide a framework for California's climate policy.[772] The most important of these laws is AB 32.[773] In addition, several other laws that specifically relate to climate were enacted, including several amendments to AB 32 (in particular, relating to the transfer of a part of AB 32's cap-and-trade program revenue to disadvantaged communities).[774] Also, environmental laws that predate public awareness of the climate crisis have also been repurposed to address aspects of climate change. The most important of these older laws are the California

[770] See, for example, *Rocky Mountain Farmers Union v. Corey*. 730 F.3d 1070 (9th Cir. 2013). URL: http://climatecasechart.com/case/rocky-mountain-farmers-union-v-corey/ (the date of access: March 22, 2021).

[771] As of March 25, 2021, the database records 246 Californian climate-related cases. URL: http://climatecasechArticle.com/ (the date of access: March 22, 2021).

[772] For a dashboard with links to key elements of California's climate policy, see Berkeley Law. California Climate Policy Dashboard. URL: https://www.law.berkeley.edu/research/clee/research/climate/climate-policy-dashboard/ (the date of access: March 22, 2021).

[773] AB-32 Air pollution: greenhouse gases: California Global Warming Solutions Act of 2006. URL: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32 (the date of access: March 22, 2021). For general information about AB 32, see California Air Resources Board. AB 32 Global Warming Solutions Act of 2006. URL: https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006 (the date of access: March 22, 2021); *Nichols M..D.* California's Climate Change Program: Lessons for the Nation // UCLA Journal of Environmental Law and Policy Vol. 27:185. 2009. P. 184-212. URL: https://escholarship.org/content/qt7tr3k4xp/qt7tr3k4xp.pdf?t=mv6dl2 (the date of access: March 22, 2021).

[774] California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund. URL: http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_0501-0550/sb_535_bill_20120930_chaptered.html (the date of access: March 22, 2021).

Environmental Quality Act, a statute first passed in 1970,[775] and the 2002 legislation requiring the creation of GHG emissions standards for automobiles.[776]

423. AB 32 defines overall emissions reduction targets and the CalEPA powers. AB 32 obliges CalEPA to develop, implement, and enforce a regulatory program that includes measures binding governmental and non-governmental entities. It also establishes mandatory deadlines.

424. AB 32 is designed to provide nearly comprehensive regulation of GHG emissions in California. It does so partly through programs that are unique to AB 32 and partly by building off other regulatory initiatives. The major exceptions to the law's broad scope generally come from emission sources that California is prohibited by federal law from regulating. For example, the state cannot regulate climate-related land use practices on federal lands, which make up nearly half of the state's geographic area.

425. California has what it describes as a climate action program, and multiple plans are part of that program: every state agency with climate-related responsibilities has climate-related plans and strategies, as do many local governments.

b. Scope of the Climate Strategy

426. The most important executive orders set the following goals:

- reducing overall emissions by at least 80% below 1990 levels by 2050;[777]
- achieving carbon neutrality by 2045, if not earlier;[778]
- reducing overall emissions by at least 40% below 1990 levels by 2030.[779]

427. Moreover, specific sectoral targets are set:

- eliminating emissions from cars and light-duty trucks by 2035;[780]
- eliminating emissions from all vehicles by 2045.[781]

[775] *Owen D.* Climate Change and Environmental Assessment Law // Columbia Journal of Environmental Law. Vol. 33, Issue 1 (2008), P. 57-120.

[776] California Air Resources Board. California's Greenhouse Gas Vehicle Emission Standards under Assembly Bill 1493 of 2002. URL: https://ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley (the date of access: March 22, 2021).

[777] Executive Order S-3-05. June 1, 2005. URL: https://www.marvista.org/docs/34486025-10553.pdf (the date of access: March 22, 2021).

[778] Executive Order B-30-15. April 29, 2015. URL: https://www.ca.gov/archive/gov39/2015/04/29/news18938/index.html (the date of access: March 22, 2021).

[779] Ibid.

[780] Executive Order N-79-20. September 23, 2020. URL: https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-text.pdf (the date of access: March 22, 2021).

[781] Ibid.

428. California does not have specific and state-wide climate adaptation goals. The state instead tries to play a supporting and coordinating role for adaptation planning by local governments, and individual state agencies also engage in adaptation planning.[782]

c. Institutional Framework

429. One of the key roles is played by CalEPA: AB 32 empowers CalEPA to develop programs to implement GHG emission targets and empowers the agency to use a wide variety of regulatory methods.[783]

430. California has not created new government agencies to address climate change. The California Air Resources Board, the California Energy Commission, and the California Public Utilities Commission all existed long before climate change became a central concern, as did many government agencies focused on managing natural resources and public lands. Instead, California has generally responded to climate change by adding programs and staff within existing administrative agencies. This has happened on a broad scale, and many California government employees now focus partially or even entirely on climate change.

d. Sectoral Strategies

431. All of the state's sectoral strategies are designed to be linked to the overall state strategy.

Electric power generation

432. California addresses the climate impacts of the electricity generation sector in several different ways.

433. California has tried to facilitate a transition toward heavier reliance on renewable energy and reduced reliance on fossil fuels. It has done this partly through establishing a renewables portfolio standard, which requires the state's electric utilities to generate an increasing percentage of their energy through renewable sources.[784] California also has provided net metering programs and tax incentives to encourage rooftop solar energy projects.[785] And the state also has adopted energy storage mandates for its regulated utilities.[786] These storage mandates are important for climate policy because California's emerging renewable sources — solar and wind — are available intermittently, and California needs storage (as well as demand management) to even out the dips and peaks in the supply curve.

434. For decades, California also has had robust energy efficiency programs which focus on a wide variety of energy-consuming activities and include, among other things, efficiency standards for household appliances and building design.[787] These programs predate the state's focus on climate policy, but they now

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[782] See, for example, California Adaptation Planning Guide 2020. URL: https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf (the date of access: March 22, 2021); Governor's Office of Planning and Research. Integrated Climate Adaptation and Resiliency Program. URL: https://www.opr.ca.gov/planning/icarp/ (the date of access: March 22, 2021).

[783] California Health and Safety Code § 38530.

[784] California Public Utilities Commission. Renewables Portfolio Standard (RPS) Program. URL: https://www.cpuc.ca.gov/rps/ (the date of access: March 22, 2021).

[785] California Public Utilities Commission. Net Energy Metering (NEM). URL: https://www.cpuc.ca.gov/NEM/ (the date of access: March 22, 2021).

[786] California Public Utilities Commission. Energy Storage. URL: https://www.cpuc.ca.gov/energystorage/ (the date of access: March 22, 2021).

[787] California Energy Commission. Energy Efficiency. URL: https://www.energy.ca.gov/programs-and-topics/topics/energy-efficiency (the date of access: March 22, 2021).

are part of the state's overall climate strategy. Over a span of decades, they have effectively stabilized California's *per capita* electricity consumption, even its economy has grown.[788]

435. IndustryCalifornia has tried to regulate industrial GHG emissions in three primary ways. Most importantly, California regulates most major GHG-emitting industries through its cap-and-trade program (**paras. 459–461 of the Analytical Report**). Another one is through industrial energy efficiency programs.[789] Also, California has imposed direct regulatory controls on some products and areas of industrial activity.[790]

Transportation

436. California addresses GHG emissions from transportation primarily through programs designed to reduce the emissions from vehicles and through programs designed to reduce vehicle miles traveled.

437. The story of emissions regulations is complicated by federal law. The Clean Air Act, a national statute, assigns the EPA responsibility for setting emissions standards for mobile sources of air pollution.[791] A separate statute assigns a different federal agency responsible for setting fuel economy standards.[792] Both statutes preempt state authority.[793] But the Clean Air Act includes an exception for California.[794] In response to "compelling and extraordinary conditions," California can obtain a waiver from the EPA and set its own mobile source emissions standards. Other states then may elect to follow California's standards.[795]

438. This system exists because at the time Congress passed the Clean Air Act, California already had particularly challenging air pollution problems largely caused by vehicle emissions, and also had more advanced expertise in air quality regulation than most states or the federal government.

439. In 2004, California enacted legislation that would use its special authority to establish GHG emissions standards for mobile sources. Those standards include general limits on emissions and programs to encourage more widespread use of electric and hybrid vehicles. After developing regulations to implement the legislation, California sought an EPA waiver to allow the implementation of those standards.[796] The EPA eventually granted the waiver so California incorporated and relied on those standards as part of its overall climate strategy. But in 2019, the Trump Administration issued a rule

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[788] *Martinez S.* California Restores Its Energy Efficiency Leadership // NRDC Expert Blog. March 8, 2010. URL: https://www.nrdc.org/experts/sierra-martinez/california-restores-its-energy-efficiency-leadership (the date of access: March 22, 2021).

[789] For programs and related information, see California Public Utilities Commission. Energy Efficiency. URL: https://www.cpuc.ca.gov/energyefficiency/ (the date of access: March 22, 2021).

[790] See, for example, California Air Resources Board. California Significant New Alternatives Policy (SNAP). URL: https://ww2.arb.ca.gov/our-work/programs/california-significant-new-alternatives-policy-snap/about (the date of access: March 22, 2021).

[791] 42 U.S.C. § 7521.

[792] 49 U.S.C. § 32902.

[793] 42 U.S.C. § 7542(a); 49 U.S.C. § 32919(a).

[794] 42 U.S.C. § 7542(b).

[795] Ibid.

[796] California Air Resources Board. Low-Emission Vehicle Greenhouse Gas Program. URL: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/lev-program/low-emission-vehicle-greenhouse-gas (the date of access: March 22, 2021).

revoking the waiver.[797] California is currently challenging that revocation,[798] but the court proceedings are currently stayed following the request by the federal defendant.[799] The Biden Administration will almost certainly revoke the Trump Administration rule and reinstate the waiver.[800]

440. In addition to its regulatory programs, California also offers financial incentives for purchasing electric vehicles. Those incentives include rebate programs.[801] Electric vehicle owners also can access carpool lanes on highways and bridges, which is actually a major incentive in crowded urban areas.[802]

441. In California, vehicle emissions account for the largest category of GHG emissions; those emissions are driven by the number of miles vehicles travel, and vehicle miles traveled are determined partly by land use patterns. Consequently, California has tried to reduce its carbon footprint through land use planning.

442. As part of their transportation planning (which in turn is linked with air quality planning),[803] the state Department of Transportation and local transportation planners often use carpool lanes and incentives for using public transit to limit vehicle miles traveled.

Land use planning and urban development

443. In 2008, to try to standardize obligations relating to the reduction of GHG emissions and adoption of more energy-efficient development patterns, California enacted a bill widely known as SB 375.[804] It requires local governments to develop regional transportation plans that should be consistent with GHG reduction targets established by the California Air Resources Board.[805]

444. Despite these efforts, California still faces major challenges at the intersection of land use planning and climate impacts. California's population is growing, and there is a huge demand for housing in its urban centers, where jobs are most abundant. However, much of the land in these urban centers is restrictively zoned — often only single-family or small multi-family housing is allowed — which makes it difficult to increase the density of housing. That pushes development to the fringes of urban areas, which compels

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[797] *Phillips A., Mitchell R.* Trump weakens fuel economy standards, rolling back key U.S. effort against climate change. URL: https://www.latimes.com/politics/story/2020-03-31/trump-rolls-back-fuel-economy-standards (the date of access: March 22, 2021).

[798] Petition for Review, *California et al. v. Wheeler*. D.C. Cir., filed May 27, 2020. URL: https://oag.ca.gov/system/files/attachments/press-docs/5.27.20%20Petition%20for%20Review.pdf (the date of access: March 22, 2021).

[799] U.S. District Court. California Northern District. Order of February 12, 2021. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/case-documents/2021/20210217_docket-320-cv-03005_order.pdf (the date of access: March 22, 2021).

[800] C*anon G.* California has environmental allies once again with Biden in the White House. URL: https://www.theguardian.com/us-news/2021/jan/21/california-biden-environmental-policies-trump (the date of access: March 22, 2021).

[801] Moving California. Clean Vehicle Rebate Program (CVRP). URL: https://ww3.arb.ca.gov/msprog/lct/cvrp.htm (the date of access: March 22, 2021).

[802] California Clean Vehicle Rebate Project. High-Occupancy Vehicle (HOV) Lane Access. URL: https://cleanvehiclerebate.org/eng/ev/incentives/hov-lane-access (the date of access: March 22, 2021).

[803] *City of South Pasadena v. Slater*. 56 F. Supp. 2d 1106 (C.D. Cal. 1998).

[804] Senate Bill No. 375. URL: http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf (the date of access: March 22, 2021).

[805] California Government Code § 65080.

people to drive much farther.[806] In recent years, the state legislature has considered several bills that would override local zoning and allow greater density in some areas, but cities and many residents have opposed these bills. While the state has enacted some modest changes, the most ambitious efforts have failed to pass.

Agriculture

445. California addresses agricultural GHG emissions (and sequestration) primarily through grant programs. For example, the state has a Healthy Soils Program, which is funded by cap-and-trade revenues and provides financial support for "cover cropping, no-till, reduced-till, mulching, compost application, and conservation plantings."[807] It also has an Alternative Manure Management Program, which provides grants to encourage the use of manure digesters that will reduce methane emissions.[808] Finally, California has a water efficiency program designed to serve similar goals.[809]

Forestry

446. Approximately one-third of California's land area is forested, and some of those forests (particularly the redwood forests of the state's north coast) are very effective at sequestering carbon. Much of the forested area is owned by the federal government and is outside of state regulatory control. Federal, state, and private forests all face massive challenges with wildfire, which has been increasing in recent years, partly because of climate change and partly because of land use and forest management practices.

447. California forest management law is less integrated with climate policy than most areas of California regulation. The state has a regulatory system governing timber harvests on private land, but that system predates widespread concern about climate change. The state also spends large amounts of money fighting forest fires. And it has developed many ideas for improving forest management in ways that would bring greater climate benefits.[810] But it does not have a robust system for rewarding climate-friendly forest practices and discouraging or preventing problematic policies. According to Professor Dave Owen, many Californians, including himself, view the intersection of forest policy and climate change as a huge unsolved problem.

2.2. Implementation of Climate Strategy

448. In general, California has turned its array of climate laws into specific standards with which regulated entities must comply. Some of the standards are qualitative; for example, the California Environmental Quality Act forbids government entities from taking actions that will cause "significant environmental impacts" unless avoidance of such impacts is not feasible.[811] Some are more specific and

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[806] *O'Neill M. et al.* Examining the Local Land Use Entitlement Process in California to Inform Policy and Process. URL: https://www.law.berkeley.edu/wp-content/uploads/2019/02/Examining-the-Local-Land-Use-Entitlement-Process-in-California.pdf (the date of access: March 22, 2021).

[807] California Department of Food and Agriculture. Healthy Soils Program. URL: https://www.cdfa.ca.gov/oefi/healthysoils/ (the date of access: March 22, 2021).

[808] California Department of Food and Agriculture. Alternative Manure Management Program (AMMP). URL: https://www.cdfa.ca.gov/oefi/AMMP/ (the date of access: March 22, 2021).

[809] California Department of Food and Agriculture. State Water Efficiency & Enhancement Program. URL: https://www.cdfa.ca.gov/oefi/sweep/ (the date of access: March 22, 2021).

[810] California Fire, California Natural Resources Agency & Cal. EPA. California Forest Carbon Plan: Managing Our Forest Landscapes in a Changing Climate. May 2018. URL: https://ww2.arb.ca.gov/sites/default/files/2019-01/California-Forest-Carbon-Plan-Final-Draft-for-Public-Release-May-2018.pdf (the date of access: March 22, 2021).

[811] California Public Resources Code § 21002.

quantitative, like the limits imposed by California's cap-and-trade program. In general, California's climate laws include measurable and enforceable standards to ensure compliance.

449. AB 32 empowers CalEPA to develop programs to implement GHG emission targets and empowers the agency to use a wide variety of regulatory methods.[812] It authorizes the use of "market-based" regulatory systems, and on that basis, CalEPA has developed a cap-and-trade program, but the statute also authorizes, and CalEPA has used, a variety of other regulatory methods, including technology-based standards.[813]

a. California's Agencies' Obligations Regarding the Implementation of Climate Strategy and Reporting

450. California generally relies on an annual climate inventory to assess the implementation of its strategy and sufficiency of measures to reach the state's overall climate goals.[814] That inventory is designed to assess GHG emissions from all sectors of activity within the state.[815]

451. The executive branch provides several types of reports to the legislature and the public.[816] Annual emissions inventory, enforcement data, other reports on the implementation of AB 32, and other statutes are publicly available and accessible on the agency websites.[817]

452. California has several legal mechanisms designed to provide for public input into, and partial control over, implementation of its climate policies. The California Administrative Procedure Act requires state agencies to help interested members of the public comment on proposed regulations, including but not limited to regulations that relate to climate policy. Public agencies also must explain the reasons for their decisions and respond to public comments.[818] Many other laws have similar provisions for public participation and reporting information to the public. The California Environmental Quality Act, for example, requires government entities to compile and share information about the consequences of their proposed actions — a mandate that includes climate impacts — and requires agencies to allow public comment on those actions.[819] California also has a Public Records Act, which allows members of the public to request and obtain most documents produced by government entities.[820] California law also empowers members of the public to sue if government entities violate these laws (or other laws).

453. In addition to these formal legal mandates for public oversight and participation, many California government entities use voluntary practices to facilitate public involvement. These practices include forming advisory groups, holding informational meetings, and voluntarily disseminating reports and

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[812] California Health and Safety Code § 38530.

[813] Environmental Defense Fund. AB 32 Cap-and-Trade Fact Sheet. URL: http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_0501-0550/sb_535_bill_20120930_chaptered.html (the date of access: March 22, 2021).

[814] California Air Resources Board. California Greenhouse Gas Emissions Inventory Program. URL: https://ww2.arb.ca.gov/our-work/programs/ghg-inventory-program/about (the date of access: March 22, 2021).

[815] Ibid.

[816] California Public Resources Code § 71340 (directing multiple agencies to prepare a comprehensive climate assessment every five years).

[817] California Air Resources Board. California's Cap-and-Trade Program: Publicly Available Information. URL: https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/public_info.pdf (the date of access: March 22, 2021).

[818] California Government Code §§ 11340-11361.

[819] California Public Resources Code §§ 21000-177.

[820] California Government Code §§ 6250-6276.48.

guidance documents. And all of these public oversight mechanisms are backstopped by elections of local, state, and national government officials.

454. California's climate policies assign a robust role to scientific expertise and forecasting. Perhaps the best indicator of this importance is the state's periodically updated climate assessment report, which is somewhat like a state-specific International Panel on Climate Change report.[821] In preparing these reports, the state draws on expertise across several state agencies and from academia and the private sector (university scientists tend to be heavily involved). The state then uses these reports as foundations for updates to climate strategies and policies.

b. Private Parties Reporting and Disclosure Obligations

455. In general, emitters are required to report climate-related information to the state, which compiles and reports data to the public.[822]

456. California uses several systems to monitor GHG emissions. AB 32's implementing regulations require electricity generators, electricity importers, fuel suppliers, and industrial facilities to report their emissions.[823] All GHG emissions data reports are submitted via the online California Electronic GHG Reporting Tool reporting system.[824] Violations of the obligation to report can result in fines. The state also operates a network of monitoring sites, and each site monitors concentrations of several different GHGs.[825]

457. Beyond the emissions reporting requirements of AB 32, California does not require industries to perform climate audits or climate impact assessments. An exception does arise if a private company needs a public agency's approval to undertake some project. Then, the public agency must comply with the California Environmental Quality Act which requires an impact assessment.[826] But the focus is on the specific project, not the company's activities more generally.

458. California generally does not require private companies to develop their own climate strategies. Instead, the state develops regulatory programs, and in some circumstances requires local governments to develop programs, and private companies are expected to comply with those standards.

459. With that said, many major California companies have chosen to develop climate strategies. For example, many of California's technology giants have renewable energy purchasing programs which they implement both within and outside of California.[827]

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[821] California's Fourth Climate Change Assessment. 2018. URL: https://www.climateassessment.ca.gov (the date of access: March 22, 2021).

[822] California Air Resources Board. Mandatory GHG Emissions Reporting – Reported Emissions. URL: https://ww2.arb.ca.gov/mrr-data (the date of access: March 22, 2021).

[823] California Air Resources Board. Mandatory Greenhouse Gas Emissions Reporting. URL: https://ww2.arb.ca.gov/our-work/programs/mandatory-greenhouse-gas-emissions-reporting/about (the date of access: March 22, 2021). For current and former versions of the regulations, see California Air Resources Board. Mandatory Greenhouse Gas Reporting Regulation. URL: https://ww2.arb.ca.gov/mrr-regulation (the date of access: March 22, 2021).

[824] California Air Resources Board. Mandatory GHG Reporting - Online Reporting Tool. URL: https://ww2.arb.ca.gov/mrr-tool (the date of access: March 22, 2021).

[825] California Air Resources Board. Statewide Greenhouse Gas Monitoring Network. URL: https://ww2.arb.ca.gov/our-work/programs/ghg-network (the date of access: March 22, 2021).

[826] *Friends of Mammoth v. Bd. of Supervisors of Mono County*. 500 P.2d 1360 (Cal. 1972), holding that CEQA applies when government agencies issue discretionary permits to private projects.

[827] *Shumkov I.* Facebook crowned as 2019's top US buyer of renewable energy. URL: https://renewablesnow.com/news/facebook-crowned-as-2019s-top-us-buyer-of-renewable-energy-686270/ (the date of access: March 22, 2021).

c. Emission Trading and Other Incentives

460. One key component of AB 32 is a cap-and-trade system. The system is designed to eventually address 85% of California's GHG emissions.[828] To the moment the system is only responsible for approximately 20% of overall emissions.[829]

461. The system relies on a declining overall cap and tradable shares. Some of the shares are grandfathered[830] and some are allocated through an auction.[831] The state has used the auction revenues for a variety of purposes, including directing environmental improvements to low-income communities and providing grants for other GHG-reducing activities.[832] The system also allows the use of emissions offsets, including — controversially — offsets in areas outside the state's boundaries.[833]

462. The California Air Resources Board administers the cap-and-trade system.

463. The program has been controversial in many ways. Some environmental activists criticized California for adopting a cap-and-trade program at all; they thought the best practice would be to adopt a carbon tax instead or to rely even more heavily on non-market-based regulatory controls.[834]

464. Since the cap-and-trade system is part of, and overlaps with, a suite of other regulatory strategies, it is difficult to judge how effective it has been.[835] California's GHG emissions are declining, but figuring out which policies and which market trends are driving that change is difficult.

465. California has integrated its cap-and-trade program with programs in Quebec and Ontario.[836] These linkages allow California entities to purchase emissions-reduction credits from Quebec and Ontario, and *vice versa*.

466. California has created some tax incentives for activities that produce climate benefits, like exceptions from sales taxes for some products associated with renewable energy use. Still, there are many

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[828] California Air Resources Board. Overview of ARB Emissions Trading Program. URL: https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/guidance/cap_trade_overview.pdf (the date of access: March 22, 2021).

[829] Environmental Defense Fund. AB 32 Cap-and-Trade Rule Fact Sheet. URL: https://www.edf.org/sites/default/files/EDF-CA-CT-Fact-Sheet-August-2011.pdf (the date of access: March 22, 2021).

[830] I.e. entities receive GHG emission allowances based on their historical emissions in a defined period.

[831] *Owen D.* Auctions, Taxes, and Air // 65 UCLA Law Review Discourse 64 (2017). URL: https://repository.uchastings.edu/cgi/viewcontent.cgi?article=2561&context=faculty_scholarship (the date of access: March 22, 2021).

[832] California Climate Investments. 2019 Annual Report. Cap-and-Trade Auction Proceeds. URL: https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf (the date of access: March 22, 2021).

[833] See, for example, *Golden Door Properties, LLC v. County of San Diego*. 264 Cal. Rptr. 3d 309 (Cal. Ct. App. 2020) (challenging a specific use of out-of-state offsets).

[834] For summary of this controversy, see *Farber D.* Emissions Trading and Social Justice // Berkeley Law. August 2011. URL: https://www.law.berkeley.edu/center-article/emissions-trading-and-social-justice/ (the date of access: March 22, 2021).

[835] *Song L.* Cap and Trade Is Supposed to Solve Climate Change, but Oil and Gas Company Emissions Are Up. URL: https://www.propublica.org/article/cap-and-trade-is-supposed-to-solve-climate-change-but-oil-and-gas-company-emissions-are-up (the date of access: March 22, 2021).

[836] California Air Resources Board. Program Linkage. URL: https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-linkage (the date of access: March 22, 2021); *United States v. California*. 444 F. Supp. 3d 1181, P. 1187-88 (E.D. Cal. 2020).

areas, including tax policies with implications for land use, where intersections between tax law and climate-related incentives remain largely unexplored.[837]

467. California operates pension funds (for state employees and teachers), and these funds have tried to direct their assets (which are substantial) toward investments that minimize climate risk and push companies toward more climate-friendly management practices.[838] State law also requires both funds to report on the climate-related risks created by their investments.[839] But under the United States' legal system, regulation of investment practices is primarily a federal responsibility, which means California has a modest regulatory role.

2.3. Enforcement of Climate Strategy

468. Climate-related laws generally do not have criminal penalties (unless a party uses fraud to hide its non-compliance with those laws). California's agencies enforce most climate laws through a traditional administrative governance approach. They require reporting from regulated industries and can bring civil enforcement actions against entities that fail to comply or to report required information.[840] In addition, the California Attorney General's office brings targeted litigation against entities — both private and public — that it alleges are not complying with environmental laws. The Attorney General's office has used that authority extensively when trying to convince local governments to factor climate change into their land use planning.

469. The California Air Resources Board does have a general enforcement policy document, which includes but is not limited to climate-related enforcement activities.[841] The document is lengthy and describes a wide variety of factors and procedures, but in general, it explains that the agency prioritizes enforcement actions on the basis of several factors, the most important of which is the risk (or extent) of public harm. The agency also considers several factors related to the conduct of the defendant, including its pattern of past practices and the extent to which it voluntarily attempted to disclose and correct the violation.

470. In an enforcement action, the California Air Resources Board will typically seek an order mandating compliance and a penalty for non-compliance. In addition, the agency can include "supplemental environmental projects" in its settlements. Supplemental environmental projects are projects that provide an environmental benefit that would not otherwise be required and offset part of the penalty payment.[842]

471. Defendants typically face orders to come into compliance and maintain compliance as well as financial penalties.

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[837] *Chapple K.* Integrating California's Climate Change and Fiscal Goals: The known, the Unknown, and the Possible // The California Journal of Politics & Policy. URL: https://escholarship.org/uc/item/2jg8t1v4 (the date of access: March 22, 2021).

[838] CalPERS. Climate Change. URL: https://www.calpers.ca.gov/page/investments/sustainable-investments-program/climate-change (the date of access: March 22, 2021).

[839] California Government Code 7510.5.

[840] See, for example, Penalties for Violations of California's Mandatory Greenhouse Gas Emissions Reporting Regulation (2014). URL: http://climatecasechart.com/case/penalties-for-violations-of-californias-mandatory-greenhouse-gas-emissions-reporting-regulation/ (the date of access: March 22, 2021).

[841] California Air Resources Board. Enforcement Policy. URL: https://ww2.arb.ca.gov/resources/documents/enforcement-policy (the date of access: March 22, 2021).

[842] Ibid.

472. The California Air Resources Board maintains a publicly available database with settlements from all enforcement actions, including but not limited to climate-related enforcement actions.[843] It also publishes annual reports summarizing enforcement activity.[844]

2.4. Climate Litigation

473. Climate matters are heavily litigated in California, and climate litigation involving California extends well beyond the state's borders.

474. California-related climate litigation can be divided into several categories that, however, do not form an exhaustive list.

475. With so much climate litigation occurring in California, and with that litigation involving so many different theories, it's hard to distill and summarize major trends. Nevertheless, Prof. Dave Owen underlines a few particularly salient points. Most importantly, the combination of strong laws and an abundance of willing plaintiffs (including the state) means that local governments in California have to take climate-related planning seriously. Many would choose to do so anyway, but the possibility of litigation provides a powerful additional incentive. More generally, in California, litigation is not peripheral to climate policy, and it is not limited to a few major cases or creative theories. Instead, it is now a routine feature of climate law.

a. Climate Litigation Brought by the State of California

476. Particularly during the George W. Bush and Trump Administrations, California has repeatedly been involved in lawsuits trying to spur federal government action on climate change and trying to stop the federal government from undermining California's efforts. One of the most important and famous of these cases is *Massachusetts v. EPA*, 549 U.S. 497 (2007), in which California and several other states sued the EPA to try — ultimately successfully — to compel it to use the Clean Air Act to regulate GHG emissions. California also is currently bringing a case against the federal government to (a) set aside weakened federal standards for fuel economy and for vehicle emissions, and (b) reinstate California's ability to adopt its own GHG emission standards for mobile sources.[845] This current case continues a legal fight that dates back to the George W. Bush Administration.[846]

477. California also is defending climate-related lawsuits brought by the federal government against the state. For example, the federal government challenged California's agreement to link the state's cap-and-trade system with the system created by the Canadian province of Quebec.[847]

478. In addition to suing the federal government, the state also has sued private companies, arguing that their contributions to climate change caused a nuisance (currently, several local governments in

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[843] California Air Resources Board. Enforcement Case Settlements. URL: https://ww2.arb.ca.gov/our-work/programs/enforcement-policy-reports/enforcement-case-settlements (the date of access: March 22, 2021).

[844] California Air Resources Board. Enforcement Reports. URL: https://ww2.arb.ca.gov/resources/documents/enforcement-reports (the date of access: March 22, 2021).

[845] *Union of Concerned Scientists v. National Highway Traffic Safety Administration*. URL: http://climatecasechart.com/case/union-of-concerned-scientists-v-national-highway-traffic-safety-administration/#:~:text=National%20Highway%20Traffic%20Safety%20Administration,-Filing%20Date%3A%202019&text=Description%3A%20Proceedings%20challenging%20the%20National,EPA's%20withdrawal%20of%20California's%20waiver (the date of access: March 22, 2021).

[846] *Freeman J.* The Obama Administration's National Auto Policy: Lessons from the "Car Deal" // Harvard Environmental Law Review Vol. 35. 2011. P. 343-374.

[847] *United States v. California*. 444 F. Supp. 3d 1181 (E.D. Cal. 2020). URL: http://climatecasechart.com/case/united-states-v-california/ (the date of access: March 22, 2021).

California are pursuing similar litigation).[848] The state also has sued or threatened to sue local governments within the state when it thought their land use and transportation planning was not doing enough to address climate change.[849]

b. Climate Litigation Brought by Entities Other Than the State of California

479. The most abundant category of California climate litigation includes cases initiated by environmental groups arguing that local governments or state entities have not adequately analyzed the climate-related impacts of proposed plans or projects. Occasionally a government entity will bring similar claims against another government entity. For example, the South Coast Air Quality Management District, which regulates air quality in southern California, is currently suing the City of Los Angeles over the management of the city's port.[850] The plaintiffs generally use the California Environmental Quality Act, which California practitioners generally view as the most important California environmental law, to bring these claims.[851]

480. Many other California cases have been initiated by private entities opposing specific climate-related regulatory programs. For example, state and local governments in California are beginning efforts to phase out natural gas, which is the primary fossil fuel used by non-mobile sources in the state (there is no coal mining or coal combustion in California). The natural gas industry is fighting back through litigation.[852]

481. Some litigation also addresses the construction of renewable energy infrastructure. There is widespread agreement that this infrastructure is needed if the state is going to shift to renewable power (though there is disagreement about the appropriate balance of utility-scale developments and more distributed use of rooftop solar systems). Projects at issue and associated transmission lines can have significant impacts on existing infrastructure, that leads to complex negotiations and sometimes to litigation.[853]

c. Climate Litigation Brought by Local Governments or Private Entities Against Major GHG Emitters

482. Another important category of cases involves claims brought by local governments or private entities seeking to hold major GHG-emitting companies liable for some of the damage caused by their emissions. For example, several cities in the San Francisco Bay Area have sued oil companies, seeking

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[848] See, for example, *American Electric Power Co. v. Connecticut*. 564 U.S. 410 (2011). URL: http://climatecasechart.com/case/american-electric-power-co-v-connecticut/ (the date of access: March 22, 2021).

[849] State of California Department of Justice. CEQA Litigation and Settlements. URL: https://oag.ca.gov/environment/ceqa/litigation-settlements (the date of access: March 22, 2021).; *Owen D.* Consultants, the Environment, and the Law // Arizona Law Review. Vol. 61:823. P. 823-884. 2019. URL: https://arizonalawreview.org/pdf/61-4/61arizlrev823.pdf (the date of access: March 22, 2021).

[850] *South Coast Air Quality Mgmt. Dist. v. City of Los Angeles*. No. 20STCP02985, Los Angeles Sup. Ct. (filed September 16, 2020). URL http://climatecasechart.com/case/south-coast-air-quality-management-district-v-city-of-los-angeles/ (the date of access: March 22, 2021).

[851] *Owen D.* Climate Change and Environmental Assessment Law.

[852] See, for example, *California Natural Gas Vehicle Coalition v. California Air Resources Board*. Cal. Sup. Ct, filed July 30, 2020. URL: http://climatecasechart.com/case/california-natural-gas-vehicle-coalition-v-california-air-resources-board/ (the date of access: March 22, 2021).

[853] See, for example, *Newberry Community Services District v. County of San Bernardino*. CIV DS 2000745, San Bernardino Superior Ct., filed January 9, 2020. URL: http://climatecasechart.com/case/newberry-community-services-district-v-county-of-san-bernardino/ (the date of access: March 22, 2021).

damages for the costs created by sea level rise.[854] Likewise, the Pacific Federation of Fishermen's Associations, a fishing industry group, is suing oil companies for damages caused by the alleged impacts of climate change upon the state's Dungeness crab fishery.[855]

3. Climate Policy in New York State

3.1. Overview of the Climate Legislation and Strategy

a. Legislation and Policy Documents

483. In 2019 the New York State Legislature passed and Governor Andrew Cuomo signed into law CLCPA[856] that amended the Environment Conservation Law.[857] CLCPA requires the preparation of a "Scoping Plan" that will set forth in detail the methods that will be used to achieve the GHG emission targets of the law.

484. CLCPA sets the following deadlines:

- June 30, 2021 — New York Public Service Commission must issue rules to achieve goals for the electricity sector;[858]
- January 1, 2022 — Draft scoping plan is due;[859]
- January 1, 2023 — Final scoping plan is due;[860]
- January 1, 2024 — New York State DEC must issue binding regulations to implement the scoping plan.[861]

b. Scope of the Strategy

485. CLCPA sets the following state-wide GHG emission reduction targets:[862]

- reducing overall emissions by at least 85% below 1990 levels by 2050 with a goal of net-zero emissions;

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[854] See, for example, *City of Oakland v. BP p.l.c.* 960 F.3d 570 (9th Cir. 2020). URL: http://climatecasechart.com/case/people-state-california-v-bp-plc-oakland/ (the date of access: March 22, 2021).

[855] *Pacific Coast Federation of Fishermen's Associations v. Chevron Corp.* No. 3:18-cv-07477, N.D. Cal., filed November 14, 2018. URL: http://climatecasechart.com/case/pacific-coast-federation-of-fishermens-associations-inc-v-chevron-corp/ (the date of access: March 22, 2021).

[856] 2019 N.Y. Laws ch. 106. URL: https://www.nyassembly.gov/leg/?default_fld=&leg_video=&bn=S06599&term=2019&Summary=Y&Actions=Y&Text=Y (the date of access: March 22, 2021).

[857] The New York State Senate. Environmental Conservation. URL: https://www.nysenate.gov/legislation/laws/ENV (the date of access: March 22, 2021).

[858] Ibid. Chapter 106 §4; New York Public Service Law §66. P.2.

[859] New York Environmental Conservation Law §75-0103.11.

[860] Ibid.§75-0103.12(c).

[861] Ibid. §75-0109.1.

[862] Ibid. §75-0107.1.

- reducing overall emissions by at least 40% below 1990 levels by 2030.

486. Moreover, CLCPA has specific goals for the electricity sector:[863]

- 70% of electric power demand in New York State to be met by renewables by 2030;
- 100% of electric power demand in New York State to be met by "zero emissions" sources, which may include nuclear ones, by 2040;

487. CLCPA has these other minimum requirements:[864]

- as regards energy efficiency — 185 trillion British thermal units reduction in electricity demand below 2025 forecast by 2025;
- 6 GW of distributed solar capacity by 2025;
- 3 GW energy storage capacity by 2030;
- 9 GW offshore wind capacity by 2035.

488. Finally, CLCPA has "a goal for disadvantaged communities to receive 40% of the overall benefits of spending [pursuant to CLCPA] on clean energy and energy efficiency measures, projects or investments in the areas of housing, workforce development, pollution reduction, low income energy assistance, energy, transportation and economic development, provided, however, that disadvantaged communities shall receive no less than 35% of the overall benefits of spending on clean energy and energy efficiency programs, projects or investments."[865] The statutory phrase "benefits of spending" has not been defined.

a. Institutional Framework

489. CLCPA establishes the Climate Action Council, to prepare the scoping plan that will have the details of how the targets are to be achieved.[866]

b. Sectoral Strategies

490. The sectoral strategies will be designed to help meet the state-wide GHG reduction goals. Other details are not specified.

491. The Climate Action Council has established advisory panels to elaborate strategies and set goals for the following sectors: agriculture and forestry; energy efficiency and housing; energy-intensive and trade-exposed industries; land use and local government; power generation; transportation.[867]

[863] New York Public Service Law §66-p.2.

[864] New York Environmental Conservation Law §75-0103.13(e).

[865] Ibid. §75-0117.

[866] Ibid. §75-0103.

[867] CLCPA § 75-0103. For members of the Climate Action Council and relevant panels, see Sabin Center for Climate Change Law. Relevant Officials. URL: https://climate.law.columbia.edu/content/relevant-officials (the date of access: March 22, 2021).

492. The only sector for which there is a regulatory framework is electricity. For the sector, the goal is to generate 70% of electricity from renewable sources by 2030 and 100% of electricity from zero-carbon sources by 2040.[868]

493. The Public Service Commission has imposed very detailed regulations on electric utilities (the companies that distribute electricity to customers), including rates, permissible capital expenditures, service standards, allocated territories, and other factors.[869] Generators of electricity are separately owned and not subject to the regulation of the Public Service Commission.

494. Generators of electricity are subject to the Regional GHG Initiative cap-and-trade system (**para. 503 of the Analytical Report**).

495. Electric generating plants must comply with emission standards set by DEC.

3.2. Implementation of Climate Strategy

a. New York State Agencies' Obligations Regarding the Implementation of Climate Strategy and Reporting

496. Two years after the effective date of the law, and each year thereafter, DEC is required to issue a report on state-wide GHG emissions.[870] CLCPA sets for considerable detail that must be provided in this report.[871] The reports from DEC "shall utilize best available scientific, technological, and economic information on GHG emissions."[872]

497. At least every four years DEC is required to publish a report that includes recommendations regarding the implementation of the GHG reduction targets, and recommendations for future regulatory and policy action.[873]

498. Columbia Law School's Sabin Center for Climate Change Law has established a website, *inter alia*, to monitor compliance with the deadlines of CLCPA and other laws.[874]

499. Significant actions (such as large construction projects) by state and local governments may require environmental impact assessments that, among many other things, disclose expected GHG emissions.[875]

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[868] New York Public Service Law §66. P.2.

[869] Department of Public Service. Rules and Regulations of the PSC - 16 NYCRR. URL: https://www3.dps.ny.gov/W/PSCWeb.nsf/All/49775FD17CDEE7F285257C910059DEED (the date of access: March 22, 2021).

[870] New York Environmental Conservation Law §75-0105.1.

[871] Ibid. §75-0107.2.

[872] Ibid. §75-0107.3.

[873] Ibid. §75-0119.1.

[874] Sabin Center for Climate Change Law. New York State Climate Law Tracker. URL: https://climate.law.columbia.edu/content/new-york-state-climate-law-tracker (the date of access: March 22, 2021).

[875] New York Codes, Rules and Regulations. Department of Environmental Conservation. Part 617 State Environmental Quality Review. URL: https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=Ifb3e6cb0b5a011dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=%28sc.Default%29 (the date of access: March 22, 2021).

500. Under the New York Freedom of Information Law, state and local agencies are required to disclose most records to the public (with certain exceptions).[876]

b. Private Parties Reporting and Disclosure Obligations

501. DEC standards will probably require reporting, but they have not been established yet. On the federal level, the EPA has regulations that require major sources of air pollution, including power plants and industries, to report their GHG emissions annually.[877] Additionally, the U.S. Securities and Exchange Commission requires public companies to disclose significant environmental obligations and exposures.[878]

502. Companies within a covered sector are not obligated to develop their own climate strategies, but some do so voluntarily. According to Prof. Michael Gerrard, these strategies are usually not quantitative, and they speak only in general terms of consistency with the state goals.

c. Emission Trading and Other Incentives

503. New York State provides subsidies for the installation of solar panels[879] and electric vehicle charging stations.[880]

504. The Regional GHG Initiative is a ten-state program covering carbon dioxide emissions from electric generating units.[881] Electric generating plants in these states must purchase allowances for every tonne of CO_2 that they emit at periodic auctions. A central office administers the program.

3.3. Enforcement of Climate Strategy

505. For the moment, climate regulations are in the process of elaboration and enforcement patterns are yet to be determined.

506. At this point, it can be said that DEC has the power to impose monetary fines against those who violate their permits.[882] In extreme situations, permits may be revoked.[883]

3.4. Climate Litigation

507. There is extensive climate change litigation in the United States, including New York.

508. Lawsuits are frequently brought by environmental organizations and certain states that argue that environmental regulation (including those on climate change) is too weak; and by industries and certain states that argue that environmental regulation is too strong. The most common bases for this litigation

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[876] New York Public Officers Law § 87. Article 6.

[877] EPA. Greenhouse Gas Reporting Program (GHGRP). URL: https://www.epa.gov/ghgreporting (the date of access: March 22, 2021).

[878] Commission Guidance Regarding Disclosure Related to Climate Change. Release No. 33-9106 [75 FR 6290 (February 8, 2010)]. URL: https://www.sec.gov/rules/interp/2010/33-9106.pdf (the date of access: March 22, 2021).

[879] NY-Sun. Residential Solar Incentives & Financing. URL: https://www.nyserda.ny.gov/all-programs/programs/ny-sun/solar-for-your-home/paying-for-solar/incentives-and-financing (the date of access: March 22, 2021).

[880] Charge NY. Charging Station Programs. URL: https://www.nyserda.ny.gov/all-programs/programs/chargeny/charge-electric/charging-station-programs (the date of access: March 22, 2021).

[881] RGGI. The Regional Greenhouse Gas Initiative. URL: https://www.rggi.org (the date of access: March 22, 2021).

[882] New York Environmental Conservation Law. Article 71.

[883] Ibid.

are that there has been insufficient environmental review in violation of the National Environmental Policy Act or the New York State Environmental Quality Review Act; or that the government is acting in excess of its authority under the Clean Air Act or other statutes.

509. Among recent and ongoing New York cases, the following can be noted:

- *People of the State of New York v. Exxon Mobil Corporation*, that concerns an allegation of the company's fraudulent action in relation to the management of climate change risks;[884]

- *City of New York v. BP p.l.c.*, concerning injuries claim for climate-related injuries.[885]

[884] *People of the State of New York v. Exxon Mobil Corporation.* URL: http://climatecasechArticlecom/case/people-v-exxon-mobil-corporation/ (the date of access: March 22, 2021).

[885] *City of New York v. BP p.l.c.*

VIII. AUSTRALIA

Executive Summary

510. At the moment there is no basic climate law in Australia. Climate policies are rather formed by several elements: the NGER system, RET, the Direct Action Plan that sets Australia's greenhouse gas emission reduction targets and establishes ERF and the Safeguard Mechanism, and Adaptation Strategy.

511. By 2030, Australia commits to reduce its GHG emissions by 26–28% below 2005 levels. This target, however, has been criticized for lack of ambition.

512. Attempts to reduce GHG emissions are taken in the main sectors of economy (electricity, mining, manufacturing, commercial transport, waste agriculture, and forest and land use). Noteworthy, private entities' climate-related initiatives and strategies are not that uncommon in Australia.

513. Although Australia abolished its analogue of an emission trading system in 2014, the ERF scheme aimed at reducing GHG emissions was introduced. However, this system, together with the Direct Action Plan that introduced it, have been criticized for low efficiency. Another incentive to reduce GHG emissions and to use clean renewable energy is the RET system which, to the contrary, has shown good results.

514. Climate-related issues are litigated in Australia. The main focus is on administrative law challenges to approvals for projects associated with significant emissions and adaptation measures as well as on attempts to hold corporations responsible for the climate change impact of their activities.

1. Climate Policy in Australia

1.1. National Climate Legislation and Policies

a. Overview of the National Climate Policies

515. Although Australia has a history of climate change-related initiatives and policies, for the time being, there is no specific climate change act. Labor and Liberal, Australian leading political parties, discussed the introduction of GHG emissions reduction policy in early 2000.

516. Australian climate change strategy depends significantly on what party is in power. Generally, both Australian leading parties are committed to reduce GHG emissions but currently, the Liberal Party's attitudes towards climate change are quite different from the ones of the Labor Party. Since 2013, the Liberal Party has been in power and the Liberal Government "reinstates industry influence over policy." Therefore, Australia has not established an emission trading system or other policy that would set the price on GHG emissions. As a result, Australian climate change policy has been widely criticized.[886] Nevertheless, in 2014 the Government introduced the Direct Action Plan in order to "efficiently and effectively source low-cost emissions reductions that will contribute towards [Australia's] 2020 target."[887]

517. Recently, the Government has promised a long-term GHG emissions reduction strategy that would include commitments to reach net zero by 2050. However, it is not the Government's policy at the moment. Instead, the current target is to reduce GHG emissions by 26–28% below 2005 levels by 2030.[888] The Australian Government declares that the current GHG emission reduction target for 2030 is in line with Australian commitments under the Paris Agreement. However, this target has been criticized for being too low. The United Nations reported that Australia's reduction target is not enough to comply with the Paris Agreement.[889] In particular, the UN report found that "there has been no improvement in Australia's climate policy since 2017 and emission levels for 2030 are projected to be well above the target."[890]

518. Still, Australia introduced several important pieces of legislation and policy documents in the sphere of climate change.

519. In September 2007, the NGER Act was introduced as the first step towards emissions trading[891] (**paras. 538–541 of the Analytical Report**). The NGER scheme is a national framework for reporting GHG emissions, energy production, and consumption.[892] NGER covers around 75% of total emissions in Australia[893] and all six GHGs identified by the Kyoto Protocol. The scheme's reporting requirements cover major Australian emitters and provide a uniform, nation-wide reporting framework that removed

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[886] *Priest M.* Coalition Eyes $20bn Carbon Cuts // The Australian Financial Review. March 9-10, 2013.

[887] Parliament of Australia. Senate Standing Committees on Environment and Communications. The Government's Direct Action Plan, Chapter 5. URL: https://www.aph.gov.au/parliamentary_business/committees/senate/environment_and_communications/direct_action_plan/report/c05 (the date of access: March 22, 2021).

[888] Australian Government. Department of Industry, Science, Energy and Recourses. Meeting our international commitments. URL: https://www.energy.gov.au/government-priorities/a-fair-deal-on-energy/a-fair-deal-3 (the date of access: March 22, 2021).

[889] UN Environmental Programme. Emissions Gap Report 2018.

[890] Ibid.

[891] National Greenhouse and Energy Reporting Act 2007

[892] Ibid.

[893] National Greenhouse and Energy Reporting. URL: http://www.cleanenergyregulator.gov.au/NGER (the date of access: March 22, 2021).

duplicative arrangements developed by state and territory governments.[894] An important part of NGER is the Safeguard Mechanism[895] that requires the largest emitters to keep net GHG emissions below the specified emissions limit.[896] More recently, Technology Investment Roadmap also became one of the key components of Australia's strategy. The Roadmap aims to fast-track development and commercialization of new and emerging green technologies.[897]

520. A significant element of Australian climate change policy is RET introduced in by the Renewable Energy (Electricity) Amendment Act 2009[898] (**para. 558 of the Analytical Report**). RET was designed to deliver on the Government's commitment to ensure that 20% of Australia's electricity supply (33,000 gigawatt-hours) will come from renewable sources by 2020.[899] This target has been met,[900] while the scheme's operation on the same conditions is extended until 2030.[901]

521. Additional element of the legal framework is CFI under the Carbon Credits (CFI) Act 2011.[902] CFI was designed to cover all sectors of the economy. Importantly, CFI has been expanded to cover ERF in 2014.

522. In 2015, the Australian Government released an Adaptation strategy[903] which formulates how Australia is managing the risks related to changing climate. It provides a set of principles to guide adaptation and outlines the Government's vision for a climate-resilient future. The Adaptation strategy supports research in climate change adaptation, climate resilience, and climate risk management. The Australian Government also supports international adaptation efforts through international climate change assistance and aid investments. The Government invests AU$ 1 billion in climate finance over the period from 2015 to 2020, to reduce GHG emissions and build resilience in developing countries.[904]

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[894] Ibid.

[895] Australian Government. Department of Industry, Science, Energy and Resources. National Greenhouse and Energy Reporting Scheme. Safeguard Mechanism. URL: https://www.industry.gov.au/regulations-and-standards/national-greenhouse-and-energy-reporting-scheme/safeguard-mechanism (the date of access: March 22, 2021).

[896] See the National Greenhouse and Energy Reporting (Safeguard Mechanism). Rule 2015, Part 3 and 4.

[897] Australian Government. Department of Industry, Science, Energy and Resources. Australia's climate change strategies. URL: https://www.industry.gov.au/policies-and-initiatives/australias-climate-change-strategies (the date of access: March 22, 2021).

[898] Renewable Energy (Electricity) Amendment Act 2009.

[899] Parliament of Australia. Renewable energy policy: retreat, renewal and revitalisation? URL: https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BriefingBook45p/RenewableEnergy (the date of access: March 22, 2021).

[900] *Toscano N., Gray D.* Australia to hit 2020 large-scale renewables target 'ahead of schedule'. URL: https://www.smh.com.au/business/the-economy/australia-to-hit-2020-large-scale-renewable-target-ahead-of-schedule-20190903-p52nj3.html (the date of access: March 22, 2021).

[901] Clean Energy Council. Australia's Renewable Energy Target. URL: https://www.cleanenergycouncil.org.au/advocacy-initiatives/renewable-energy-target (the date of access: March 22, 2021).

[902] Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth).

[903] Australian Government. Department of Agriculture, Water and the Environment. National Climate Resilience and Adaptation Strategy. URL: https://www.environment.gov.au/climate-change/adaptation/strategy (the date of access: March 22, 2021).

[904] Ibid.

b. Institutional Framework

523. The Department of Industry, Science, Energy and Resources delivers policies and programs related to climate change.[905] The Department develops, coordinates, and administers the Australian Government's actions to mitigate GHG emissions and meet Australia's obligations under the Paris Agreement. It is also leading the development of long-term GHG emissions reduction strategy for Australia.

524. The Department of Agriculture, Water and the Environment delivers climate change adaptation and climate science policies and programs.[906]

525. Furthermore, there is a range of agencies and organizations whose mandate covers climate change issues. The Australian Renewable Energy Agency aims to promote renewable energy solutions and increase the supply of renewable energy in Australia through a range of programs.[907] The Commonwealth Scientific Industrial Research Organisation develops climate simulations to make climate projections.[908] The Clean Energy Finance Corporation provides financial support to green power developments, including large and small-scale solar, wind, bioenergy, and other projects.[909] The Clean Energy Regulator administers major schemes to mitigate GHG emissions including the NGER scheme, ERF, and RET.[910] The Climate Change Authority provides advice to the Australian Government on Australia's climate change approaches and future emission reduction targets.[911] The Australian Government Disaster and Climate Resilience Reference Group considers the risks related to climate change and natural disasters in view of adaptation to climate change.[912]

c. Sectoral Climate Strategies

Electricity

526. Electricity generation is the largest source of Australia's GHG emissions, accounting for 36% of emissions in 2017.[913] The largest electricity generating companies in Australia support net-zero emissions by 2050 target for Australia.[914] Also, the largest electricity companies are altering their electricity generation away from emission-intensive fossil fuels and are making greater use of renewable energy. The restriction of finance from major creditors for coal-fired power plants has also influenced the general shift

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[905] Australian Government. Department of Industry, Science, Energy and Resources. Australia's climate change strategies.

[906] Australian Government. Department of Agriculture, Water and the Environment. Climate change. URL: https://www.environment.gov.au/climate-change (the date of access: March 22, 2021).

[907] Australian Renewable Energy Agency. URL: https://arena.gov.au/ (the date of access: March 22, 2021).

[908] Commonwealth Scientific and Industrial Research Organisation. The CSIRO Climate Science Centre. URL: https://www.csiro.au/en/Research/OandA/Areas/Assessing-our-climate/Climate-Science-Centre (the date of access: March 22, 2021).

[909] Clean Energy Finance Corporation. URL: https://www.cefc.com.au/ (the date of access: March 22, 2021).

[910] Australian Government. Clean Energy Regulator. URL: http://www.cleanenergyregulator.gov.au/ (the date of access: March 22, 2021).

[911] Australian Government. Climate Change Authority. URL: https://www.climatechangeauthority.gov.au/ (the date of access: March 22, 2021).

[912] Australian Government. Department of Agriculture, Water and the Environment. Adapting to climate change. URL: https://www.environment.gov.au/climate-change/adaptation (the date of access: March 22, 2021).

[913] Australian Government. Department of Industry, Science, Energy and Resources. Australian Greenhouse Emissions Information System. URL: https://ageis.climatechange.gov.au/Electricity.aspx (the date of access: March 22, 2021).

[914] Australian Energy Council. Australian Energy Council backs net zero emissions by 2050. URL: https://www.energycouncil.com.au/news/australian-energy-council-backs-net-zero-emissions-by-2050/ (the date of access: March 22, 2021).

away from coal-fired energy.[915] The major electricity companies are covered by the RET scheme and the Safeguard Mechanism.

Mining

527. Mining sector generated around 15% of Australia's total GHG emissions.[916] A number of Australia's large mining companies have established emission reduction targets. For example, Rio Tinto has set a goal to reach net-zero emissions across its operations by 2050.[917] Major companies in this sector are subject to the Safeguard Mechanism and are therefore required to keep net GHG emissions below an emission limit. ERF also provides opportunities to generate Australian carbon credit units by managing coal mine gas and improving electricity and fuel efficiency.[918] There were many projects of these types registered under ERF.[919]

Manufacturing

528. Manufacturing sector, including industrial processing, is responsible for about 10% of Australia's emissions.[920] The industry bodies and groups support global action on climate change and Australia-wide technology measures minimizing adverse impacts on trade-exposed industries.[921] The Australian Industry Greenhouse Network outlines principles that include government policies to support technologies and fairly share the burden of reducing GHG emissions.[922] Some manufacturing companies are also subject to the Safeguard Mechanism.

Transport

529. Commercial transport sector accounted for about 6% of Australia's total GHG emissions.[923] Road transport companies are making efforts to improve efficiency of their operations by upgrading their fleet and refining logistics planning. As for major Australian airlines, including Qantas, Virgin Australia, and others, they have certified their voluntary carbon offsetting schemes against the National Carbon Offset Standard. Australia currently does not have mandatory light vehicle CO_2 emission standards. The average

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[915] *Yeates C.* One area where the banks are getting it right: curbing coal // The Sydney Morning Herald. January 22, 2018. URL: https://www.smh.com.au/business/banking-and-finance/one-area-where-the-banks-have-got-it-right-curbing-coal-20180119-p4yymp.html (the date of access: March 22, 2021).

[916] Australian Government. Department of Industry, Science, Energy and Resources. Australian Greenhouse Emissions Information System.

[917] Rio Tinto. Climate change. URL: https://www.riotinto.com/en/sustainability/climate-change (the date of access: March 22, 2021).

[918] Australian Government. Clean Energy Regulator. National Greenhouse and Energy Reporting. Corporate emissions and energy data 2017-18. URL: http://www.cleanenergyregulator.gov.au/NGER/Pages/Published%20information/Reported%20greenhouse%20and%20energy%20information,%20by%20year/Corporate-emissions-and-energy-data-2017–18.aspx (the date of access: March 22, 2021).

[919] Australian Government. Clean Energy Regulator. Emissions Reduction Fund. Project and contract registers. URL: http://www.cleanenergyregulator.gov.au/ERF/project-and-contracts-registers (the date of access: March 22, 2021).

[920] Australian Greenhouse Emissions Information System.

[921] Australian Industry Greenhouse Network, Minerals Council of Australia, Cement Industry Federation, Australian Aluminium Council, Australian Steel Institute submissions to the Climate Change Authority's review of the National Greenhouse and Energy Reporting legislation.

[922] AIGN. AIGN Climate Change Policy Principles. URL: http://aign.net.au/policy_principles.html (the date of access: March 22, 2021).

[923] Australian Greenhouse Emissions Information System.

emissions for light vehicles sold in Australia was 213 g/km in 2010.[924] By way of comparison, the EU achieved 160 g/km in 2005 and has mandated a target of 130 g/km by 2015 and 95 g/km in 2020.[925] The Federal Government released a Vehicle Emissions Discussion Paper in 2016[926] and Light Vehicle Emission Standards for Cleaner Air — Draft Regulation Impact Statement in 2020.[927] However, the federal government has taken no further definitive action.

Waste

530. The waste sector accounted for 1.7% of Australia's emissions.[928] Many waste facilities are involved in projects comprising landfill methane capture. These are driven by state and territory regulations, reputational and social factors, and financial returns. Australian Government regulations also encourage this practice and inclusion of waste sector companies in the RET scheme. In the waste sector, more than 100 landfill gas capture and combustion projects are registered under ERF.[929]

Agriculture

531. Agriculture is responsible for about 21% of Australia's emissions.[930] According to the National Farmers' Federation 2030 Roadmap, Australian agriculture is moving towards 50% of farm energy sources being renewable by 2030.[931] The agriculture and land sector can also participate in the Government's carbon-related initiatives. For example, many abatements from the Government's ERF are from the land sector, including projects of revegetation, avoiding deforestation, sequestration of organic matter in soils, savanna burning, and manure management.

Forestry

532. ***Forests and plantations*** are major carbon sinks. Recently, there has been a transition away from harvesting in the native forest sector to commercial plantations.[932] Australia has approximately 2 million hectares of commercial plantations.[933] Improved forest management allows forests to store more carbon in trees and soils while maintaining production. Forests may be certified by independent accreditation systems for complying with sustainable forest management practices. There are two accepted systems in

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[924] Parliament of Australia. Vehicle fuel efficiency standards.

[925] Ibid.

[926] Ministers for the Department of Industry, Science, Energy and Resources. Vehicle Emissions Discussion Paper. URL: https://www.minister.industry.gov.au/ministers/frydenberg/media-releases/vehicle-emissions-discussion-paper (the date of access: March 22, 2021).

[927] Light Vehicle Emission Standards for Cleaner Air Draft Regulation Impact Statement. URL: https://www.infrastructure.gov.au/vehicles/environment/forum/files/light-vehicle-emission-standards-for-cleaner-air.pdf (the date of access: March 22, 2021).

[928] Australian Greenhouse Emissions Information System.

[929] Australian Government. Clean Energy Regulator. Emissions Reduction Fund. Emissions Reduction Fund project register. URL: http://www.cleanenergyregulator.gov.au/ERF/project-and-contracts-registers/project-register (the date of access: March 22, 2021).

[930] Australian Greenhouse Emissions Information System.

[931] Meat & Livestock Australia. Red meat industry can be carbon neutral by 2030. URL: https://www.mla.com.au/news-and-events/industry-news/red-meat-industry-canbe-carbon-neutral-by-2030/ (the date of access: March 22, 2021).

[932] Australian Government. National Inventory Report 2017 Volume 2. 6 June 2019.

[933] Ibid.

Australia: the Forest Stewardship Council standard and the Responsible Wood Certification Scheme.[934] Around 26 million hectares of Australian forests are currently certified under the Responsible Wood Certification Scheme.[935]

1.2. Nationally Determined Contribution

533. In its updated submission to the UNFCCC Secretariat[936] of December 2020, Australia reaffirmed its commitment to reduce its GHG emissions by 26–28% below 2005 levels by 2030.[937] The submission was criticized for not improving the 2030 target as compared to Australia's initial commitment made in 2015.[938]

2. Implementation and Enforcement of Climate Policy

534. As stated above (**para. 525 of the Analytical Report**), The Clean Energy Regulator is a Government body responsible for GHG emissions reduction for Australia through the administration of the NGER scheme, RET, and the ERF. It was established in April 2012 as an autonomous statutory authority by the Clean Energy Regulator Act 2011.[939]

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Policies and Reporting

535. Under the United Nations Framework Convention on Climate Change, Australia prepares and submits to the Secretariat a National Inventory Report[940] on GHG emissions on an annual basis, a Biennial Report[941] on Australia's progress in achieving emission reductions and provisions of support to developing countries, and a quadrennial National Communications.[942]

536. As for reporting at the national level, the NGER Act requires the Clean Energy Regulator to annually publish information about all designated large facilities with emissions of over 100,000 tons of CO_2

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[934] Australian Government. Department of Agriculture, Water and the Environment. Growing a Better Australia – a Billion Trees for Jobs and Growth. URL: http://www.agriculture.gov.au/forestry/publications/growing-better-australia (the date of access: March 22, 2021).

[935] Ibid.

[936] NDC Registry. Australia. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=AUS (the date of access: March 22, 2021).

[937] Australian Government. Australia's Nationally Determined Contribution. COMMUNICATION 2020. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Australia%20First/Australia%20NDC%20recommunication%20FINAL.PDF (the date of access: March 22, 2021).

[938] *Readfern G.* Australia's new climate pledge to UN criticised for not improving on 2030 target // The Guardian. January 5, 2021. URL: https://www.theguardian.com/australia-news/2021/jan/05/australias-new-climate-pledge-to-un-criticised-for-not-improving-on-2030-target (the date of access: March 22, 2021).

[939] Clean Energy Regulator Act 2011 No. 163, 2011.

[940] United Nations Climate Change. Australia. 2020 National Inventory Report (NIR). URL: https://unfccc.int/documents/228017 (the date of access: March 22, 2021).

[941] United Nations Climate Change. Australia. Biennial report (BR). BR 4. URL: https://unfccc.int/documents/208374 (the date of access: March 22, 2021).

[942] Australia's 7th National Communication on Climate Change. URL: https://unfccc.int/files/national_reports/national_communications_and_biennial_reports/application/pdf/024851_australia-nc7-br3-1-aus_natcom_7_br_3_final.pdf (the date of access: March 22, 2021).

equivalent during each financial (reporting) year.[943] For each facility covered by the Safeguard Mechanism in a reporting year, information published includes the baseline emissions number in force for that year, total reported emissions, the responsible emitter(s) for each facility, and any Australian carbon credit units surrendered.[944]

537. The Climate Change Authority is responsible for providing independent expert advice on Australian climate change policy. The Climate Change Authority Act 2011 requires the Authority to undertake reviews and make recommendations on CFI and the NGER system.[945] The Authority plays an important role in the governance of Australia's GHG emission mitigation policies. It can also conduct reviews on other matters as requested by the Minister responsible for climate change or the Australian Parliament. All reviews include public consultation, and all reports are available on the Authority's website after they have been presented to the Minister.[946]

b. Private Parties Reporting and Disclosure Obligations

538. Under the NGER scheme, all responsible emitters must report their emissions to the Clean Energy Regulator by October 31 each year.[947] NGER provides for mandatory (direct and indirect emissions) and voluntary (other indirect emissions) GHG emissions reporting schemes.[948] The NGER regime covers emitters who:

- emit 25 kilotons or more of CO_2 equivalent;
- produce 100 terajoules or more of energy; or
- consume 100 terajoules or more of energy.

539. NGER also contains corporate thresholds:

- emission of 50 kt kilotons or more of CO_2 equivalent;
- production of 200 terajoules or more of energy; or
- consumption of 200 terajoules or more of energy.

540. It should be noted that the NGER Act has had a positive effect of increasing voluntary environmental disclosures in non-regulated companies.

541. Generally, the Clean Energy Regulator encourages the NGER scheme participants to voluntarily comply with the law. The Regulators' approach is based on the following considerations:

- assisting scheme participants to understand their rights and obligations through education and training programs;

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[943] Australian Government. Clean Energy Regulator. National Greenhouse and Energy Reporting. The safeguard mechanism. URL: http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism (the date of access: March 22, 2021).

[944] Ibid.

[945] Australian Government. Climate Change Authority. Act 2011 No. 143, 2011.

[946] Australian Government. Climate Change Authority.

[947] Australian Government. Clean Energy Regulator. National Greenhouse and Energy Reporting. The safeguard mechanism.

[948] Ibid.

- supporting those who want to report and reduce emissions and, where appropriate, incorporating feedback into enhancement of systems and processes;

- exercising monitoring and enforcement powers independently in the public interest with integrity and professionalism;

- ensuring that decision-making takes place within rigorous corporate governance processes;

- actively pursuing scheme participants who opportunistically or deliberately contravene the law;

- ensuring regulatory responses are proportionate to the risks posed by any non-compliance and taking into account the conduct of scheme participants, including their compliance history; and

- ensuring the investigative process and the resolution of enforcement matters are conducted as efficiently as possible.[949]

c. Emission Trading and Carbon Pricing Systems

542. There has been some experience with the deployment of emission trading systems in Australia. At a sub-national (state) level, the New South Wales Greenhouse Gas Abatement Scheme was launched in 1997 and became mandatory in 2003 imposing obligations on all electricity retailers in New South Wales.[950] This was one of the world's first mandatory GHG ETSs.[951]

543. The Labor Government came to power in 2007, ratified the Kyoto Protocol and also introduced a carbon pricing scheme that was designed very similar to an emission trading scheme. The carbon pricing scheme covered four of the six GHGs counted under the Kyoto Protocol, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and perfluorocarbon (PFC), and had broad coverage of the following emissions sources:

- the stationary energy sector;

- industrial processes sector;

- fugitive emissions (other than from decommissioned coal mines); and

- emissions from non-legacy waste.[952]

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[949] Australian Government. Clean Energy Regulator. Compliance policy for education, monitoring and enforcement activities. URL: http://www.cleanenergyregulator.gov.au/About/Policies-and-publications/Compliance-policy-for-education-monitoring-and-enforcement-activities (the date of access: March 22, 2021).

[950] IPART, Greenhouse Gas Reduction Scheme. URL: https://www.ipart.nsw.gov.au/Home/Industries/Energy/Energy-Savings-Scheme/Greenhouse-Gas-Reduction-Scheme (the date of access: March 22, 2021).

[951] Ibid.

[952] Stationary energy includes emissions from fuel consumption for electricity generation, fuels consumed in the manufacturing, construction and commercial sectors, and other sources like domestic heating. Industrial processes emissions are side-effects of production from non-energy sources, for example, it includes emissions from cement production, metal production, chemical production, and consumption of HFCs and SF6 gases. The fugitive emissions relate to the energy sector and cover emissions that are linked with the production, processing, transport, storage, transmission and distribution of fossil fuels such as black coal, oil and natural gas. The waste emissions relate to waste dumped at landfills. Parliament of Australia. Clean Energy Bill 2011, Explanatory Memorandum.

544. The scheme covered around 500 entities each emitting 25,000 tons of CO_2 per year or more, and certain waste facilities emitting more than 10,000 tons of CO_2 per year, constituting about 50% of Australia's GHG emissions.[953] The carbon pricing scheme operated from July 1, 2012, as a temporary measure designed to reduce GHG emissions. The carbon price was AU$ 23 for the 2012–2013 financial year and was designed to increase by 2.5% in each of the following two years.[954] Under the scheme, liable entities bought and surrendered carbon units equal to their direct emissions (based on historic levels) of CO_2 equivalents. Failure to surrender necessary carbon units resulted in a fine. After the transitional period, the carbon pricing mechanism was to convert to a cap-and-trade emission trading system with a flexible carbon price.[955] From July 1, 2015, the carbon units were intended to be auctioned.

545. There was no cap on emissions during the fixed price period and the number of carbon units was unlimited.[956] However, starting from the 2015–2016 financial year,[957] it was intended that the Climate Change Authority would set a cap on emissions taking into consideration international and Australian emission reduction targets. At that time, Australia was committed to reduce emissions by 5% compared to 2000 levels by 2020, and by 80% compared to 2000 by 2050.[958] The carbon pricing scheme and relevant legislation were repealed by the Liberal government in July 2014 and replaced by the Direct Action Plan by the end of that year.[959]

546. The Direct Action Plan includes the ERF as a centerpiece[960]designed to provide incentives for GHG reduction activities across the entire Australian economy.[961] Under the ERF scheme, the Government pays for projects that will reduce CO_2 emissions at a minimal cost. Funding from ERF is allocated through auctions. A range of possible projects for CO_2 reduction includes: energy efficiency, cleaning up power stations, reforestation and revegetation and/or improvement of soil carbon.[962]

547. The Direct Action Plan was heavily criticized from the start. The Direct Action Plan is voluntary in nature and strikingly different from carbon pricing and/or emissions trading mechanisms favored by former Australian Governments. Generally, ERF is modeled on the Clean Development Mechanism (CDM)

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[953] Australia Institute. 2020. The Carbon Pricing Mechanism under the Gillard Government.

[954] Ibid.

[955] Ibid.

[956] Ibid.

[957] Financial year starts on July 1 and ends on June 30.

[958] The Australian Government has been criticized for these low GHG reduction targets. For example, Professor Garnaut (the federal government's climate change adviser) recommended a 25% reduction, while many other commentators suggest that an even more ambitious GHG reduction target is needed. See, for example, *Garnaut R.* Australia Counts Itself out // The Age. December 20, 2008. URL: https://www.theage.com.au/national/australia-counts-itself-out-20081219-72ei.html (the date of access: March 22, 2021); *Brook B.* Carbon tax or cap-and-trade? The debate we never had // Brave New Climate. February 14, 2009. URL: http://bravenewclimate.com/2009/02/14/carbon-tax-or-cap-and-trade-the-debate-we-never-had/ (the date of access: March 22, 2021).

[959] *Collins P.* How not to introduce a carbon tax: The Australian experience // The Irish Times. January 3, 2019. URL: https://www.irishtimes.com/news/environment/how-not-to-introduce-a-carbon-tax-the-australian-experience-1.3746214 (the date of access: March 22, 2021).

[960] Parliament of Australia. Senate Standing Committees on Environment and Communications. The Government's Direct Action Plan, Chapter 5.

[961] Australian Government. Clean Energy Regulator. Emissions Reduction Fund. URL: http://www.cleanenergyregulator.gov.au/ERF (the date of access: March 22, 2021).

[962] Ibid.

of the Kyoto Protocol. The project must fall within the "methodology determination" made under the CFI Act.[963] The Environment Minister must have regard to:

- whether the determination complies with the offsets integrity standards;
- advice of the Emissions Reductions Assurance Committee; and
- whether any adverse environmental, economic, or social impacts are likely to arise from carrying out the kind of project.[964]

548. The "offsets integrity standards" provisions require that any methodology determination should result in carbon abatement that is unlikely to occur in the ordinary course of events, involving:

- removal of one or more GHGs from the atmosphere (for example, when a company invest in planting trees that absorb CO2, thus removing it from the atmosphere);
- reduction of emissions of one or more GHGs into the atmosphere;
- emission of one or more GHGs into the atmosphere (for example, when a mining company burns methane (that is a byproduct of coal exploration) that results in CO2 emissions. However, since methane is significantly more potent than CO2, burning methane is an effective way to slow global warming); and
- if removal, reduction, or emission is measurable and capable of being verified.[965]

549. After the end of the reporting period a person may apply to the Clean Energy Regulator for the issue of a certificate of entitlement. The Regulator must be satisfied that the project relevantly meets the "additionality" requirements, including the newness requirement (the project had not already begun); the regulatory additionality requirement (the project is not being carried out under another law)[966]; and the government program requirement (the project is not carried out under another program/scheme)[967].[968]

550. The ERF scheme has three elements: crediting emission reductions, purchasing emission reductions, and safeguarding emission reductions.[969]

551. *Crediting emission reductions.* To receive credits, the amount of reduction delivered by the project is first determined. Reductions must exceed business-as-usual activities. The Clean Energy Regulator issues one Australian Carbon Credit Unit[970] for each tone of emissions reduction delivered.

552. *Purchasing emissions reductions.* The ERF project participants may then sell their emissions reductions Australian Carbon Credit Units to the Government through competitive reverse auctions[971] run

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[963] Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth).

[964] Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth) Pt 10; ss 106, 123A.

[965] Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth) s 133.

[966] For example, Renewable Energy (Electricity) Regulations 2001.

[967] Another program or scheme refers to Renewable Energy Target scheme and similar programs at the States level.

[968] Clean Energy Regulator. Emissions Reduction Fund. URL: http://www.cleanenergyregulator.gov.au/ERF/Pages/default.aspx (the date of access: March 22, 2021).

[969] Carbon Farming Initiative Amendment Act 2014 (Cth).

[970] Australian Carbon Credit Units (ACCUs) are issued under section 162 of the Carbon Credits (Carbon Farming Initiative) Act 2011 (CFI Act 2011).

[971] Carbon Credits (Carbon Farming Initiative) Act 2011, Parts 2A and 3.

by the Clean Energy Regulator.[972] The Regulator purchases emissions reductions at the lowest available cost.[973]

553. *Safeguarding emissions reductions.* The Safeguard Mechanism requires Australia's largest emitters to keep their emissions within baseline levels.[974] The mechanism ensures that emissions reductions paid through ERF are not offset by significant increases in emissions elsewhere in the economy.[975]

554. ERF was originally allocated a budget of AU$ 2.55 billion for government purchases of Australian Carbon Credit Units and projected to generate 240 megatons of CO_2 equivalent of emission reductions between 2021 and 2030.[976] In February 2019, the Government announced an extra AU$ 2 billion in funding over the next 10 years, which is projected to contribute an additional 103 of CO_2 equivalent of emission reductions by 2030.[977]

555. Numerous commentators argue that a voluntary carbon mechanism does not provide an incentive for businesses to participate and compete for participation in the ERF scheme.[978] The Australian Senate inquiry on the Direct Action Plan provided the following comment: "The committee is persuaded that the government's Direct Action Plan and the proposed ERF are fundamentally flawed. They ignore the well-established principle of 'polluter pays,' and instead propose that the Australian taxpayer should effectively subsidize big polluters."[979]

556. ERF is considered more of an artifice than an effective measure for reducing emissions and encouraging cross-sector involvement. ERF is primarily criticized for its failure to achieve its objectives (meeting Australia's emissions reduction target). The scheme has been lampooned as "paying farmers to plant trees."[980] A recent review of ERF found that the scheme would need to perform less of Australia's emissions reductions over time and other policies would be needed to take up the challenge of decarbonizing the economy and delivering structural change.[981]

557. Evidently, any policy to reduce Australia's GHG emissions requires a limit or "cap" on overall emissions, and mechanisms preventing polluters from exceeding emission limits. Initially, the Direct Action Plan did not provide emissions caps or instruments that would ensure that the polluters are limiting their GHG emissions. To address this issue, the Safeguard Mechanism was introduced in July 2016. The

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[972] Clean Energy Regulator. Emissions Reduction Fund.

[973] Ibid.

[974] Introduced in 2016 under the National Greenhouse and Energy Reporting (Safeguard Mechanism), Rule 2015.

[975] National Greenhouse and Energy Reporting Act 2007 (Cth); National Greenhouse and Energy Reporting (Safeguard Mechanism), Rule 2015 (Cth).

[976] Emission Reduction Fund. URL: http://www.cleanenergyregulator.gov.au/About/Pages/Accountability%20and%20reporting/Annual%20Reports/Annual%20Report%202017-18/Emissions-Reduction-Fund.aspx (the date of access: March 22, 2021).

[977] Ibid.

[978] See, for example, Australian Government, Department of Environment (2013), Emissions Reduction Fund – Green Paper, public submission of Professor David Karoly, Professor Ross Garnaut, WWF Australia and others. URL: http://www.environment.gov.au/climate-change/emissions-reduction-fund/green-paper (date of access: March 22, 2021).

[979] The Australian Senate. Environment and Communications References Committee (2014), Direct Action: Paying Polluters to Halt Global Warming. Para. 5.124.

[980] *Ludlow M.* Carbon Farming Scheme Pays Money to Farmers to Plant Trees // Australian Financial Review. May 6, 2016. URL:

[981] Australian Government. Climate Change Authority. Review of the Emissions Reductions Fund. December 2017. P. 97. URL: https://www.climatechangeauthority.gov.au/sites/default/files/2020-06/CFI%202017%20December/ERF%20Review%20Report.pdf (the date of access: March 22, 2021).

mechanism applies to facilities that must report under the NGER scheme and emit more than 100,000 tons of CO_2 equivalent emissions in a financial year.[982] This extends to businesses across a broad range of industry sectors, including electricity generation, mining, oil and gas extraction, manufacturing, transport, and waste. There are 210 facilities covered under the safeguard mechanism.[983] Emissions baselines represent the reference point against which future emissions performance will be measured under the Safeguard Mechanism.[984] A covered facility must keep its net emission levels at or below its baseline.[985]

d. Other Incentives and Financial Mechanisms

558. Under the RET scheme, liable entities such as electricity retailers and large industrial users must purchase a specified percentage of their electricity from renewable sources each year. From January 1, 2011, the scheme was divided into two parts: LRET for large renewable electricity developments like wind and solar farms, and SRES for small technology installations like rooftop solar and solar hot water heaters.[986] Liable entities need to meet obligations under both SRES and LRET by acquiring renewable energy certificates (large and small-scale renewable energy technologies). Generally, RET creates a financial incentive for new or expanded renewable energy power stations, such as wind and solar farms. There are evidence that RET is a successful and effective policy. For example, according to Clean Energy Council, the share of renewable energy in the national electricity market was around 24% in 2019 already.[987]

2.2. Enforcement

559. The NGER regime provides the Clean Energy Regulator with a number of administrative, civil, and criminal responses for breach of respective legislative provisions. In particular, breach of the NGER Act may entail a civil penalty of up to AU$ 440,000 and daily fines of up to AU$ 17,000 for each day of non-compliance.[988]

560. The Clean Energy Regulator collaborates with other agencies that have responsibilities under climate change and other legislation. The Regulator may take enforcement action to prevent harm from certain unlawful business models, to remove dishonest participants and to take further enforcement actions if needed.[989]

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[982] National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth).

[983] Clean Energy Regulator Annual Report 2018-19. URL: https://www.transparency.gov.au/annual-reports/clean-energy-regulator/reporting-year/2018-2019-22 (the date of access: March 22, 2021).

[984] Clean Energy Regulator. National Greenhouse and Energy Reporting. The safeguard mechanism.

[985] National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015, Part 3, division 2.

[986] Australian Government. Department of Industry, Science, Energy and Resources. Renewable Energy Target scheme. URL: https://www.industry.gov.au/funding-and-incentives/renewable-energy-target-scheme (the date of access: March 22, 2021).

[987] Clean Energy Council. Clean Energy Australia Report. URL: https://www.cleanenergycouncil.org.au/resources/resources-hub/clean-energy-australia-report (the date of access: March 22, 2021).

[988] National Greenhouse and Energy Reporting Act 2007, Part 5, subdivision A.

[989] Ibid.

3. Climate Litigation

561. Climate change litigation is quite common in Australia.[990] The climate change-related litigation has primarily focused on administrative law challenges to approvals for projects associated with significant emissions and adaptation measures, including litigation regarding property impacted by sea level rise. The most common of these are coal mines, coal-fired power stations, and gas exploration projects.[991] More recently, there is a move towards litigation that is aimed to hold corporations responsible for the climate change impact of their activities.

562. Among recent examples, the Land and Environment Court rejected approval for a new coal mine in New South Wales, indicating that the mine exploitation was contrary to the public interest and the values of sustainable development. Most importantly, the court also acknowledged Australia's obligations under the Paris Agreement.[992]

563. Further, the case of superannuation beneficiary Mark McVeigh[993] is of interest. He alleged that the trustee of his retirement fund, the Retail Employees Superannuation Trust, is in breach of trust as it has failed "to formulate, review regularly and give effect to an investment strategy... to manage... the operational risk to the entity" caused by global climate change.[994] On November 2, 2020, a settlement was reached. the Retail Employees Superannuation Trust agreed, *inter alia*, to incorporate financial risks related to climate change in its investments and implement carbon neutrality by 2050 objective.[995]

564. In September 2020, a group of young people filed a complaint seeking an injunction to block a coal project.[996]

565. In January 2020, Australian bushfire victims and Friends of the Earth Australia filed a complaint against Australia and New Zealand Banking Group (ANZ) to the Australian National Contact Point citing the Organisation for Economic Cooperation and Development Guidelines for Multinational Enterprises.[997] The complaint alleged ANZ's failure to be entirely transparent about its indirect emissions and to conduct climate risk assessments.

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[990] Climate Change Litigation Databases (URL: http://climatecasechart.com/search-non-us/?fwp_non_us_jurisdiction=australia (the date of access: March 22, 2021)) records 115 climate cases, whereas the Grantham Research Institute's "climate change laws of the world" (URL: https://climate-laws.org/litigation_cases?from_geography_page=Australia&geography%5B%5D=9 (the date of access: March 22, 2021)) records 116 cases.

[991] See for example, *Waratah Coal Pty Ltd v Youth Verdict Ltd &* Ors [2020] QLC 33; *Sharma and Ors v Minister for Environment* (Commonwealth). Federal Court. VID607/2020.

[992] *Gloucester Resources Limited v Minister for Planning the NSW* [2019] NSWLEC 7.

[993] *McVeigh v Retail Employees Superannuation Pty Ltd.* Federal Court. NSD1333/2018.

[994] Ibid.

[995] Rest reaches settlement with Mark McVeigh // Rest. November 2, 2020. URL: https://rest.com.au/why-rest/about-rest/news/rest-reaches-settlement-with-mark-mcveigh (the date of access: March 22, 2021). See also case information page Federal Court of Australia. *McVeigh v. Retail Employees Superannuation Trust.* URL: http://climatecasechart.com/non-us-case/mcveigh-v-retail-employees-superannuation-trust/ (the date of access: March 22, 2021).

[996] Federal Court of Australia. *Sharma and others v Minister for the Environment.* URL: https://climate-laws.org/geographies/australia/litigation_cases/sharma-and-others-v-minister-for-the-environment (the date of access: March 22, 2021).

[997] *Friends of the Earth Australia & Ors v Australia and New Zealand Banking Group*. (Complaint to the Australian National Contact Point, 30 January 2020).

566. It appears that domestic climate change litigation will only intensify and Australian company directors will be called to seriously consider climate change risks. For example, a former judge of the High Court of Australia Kenneth Hayne recently observed that "[d]irectors have a duty to respond to climate-related risks and that the continuing work of Task Force on Climate-related Financial Disclosures shows directors what they should do."[998] The Australian Securities and Investments Commission published a report suggesting that directors of listed companies need to understand and continually re-examine existing and emerging risks to a company's business associated with climate change.[999]

[998] CPD Business Roundtable on Climate and Sustainability // CPD. URL: https://cpd.org.au/2019/12/climate-roundtable/ (the date of access: March 22, 2021).

[999] ASIC. Climate risk disclosure by Australia's listed companies. September 2018. URL: https://download.asic.gov.au/media/4871341/rep593-published-20-september-2018.pdf (the date of access: March 22, 2021).

IX. BRAZIL

Executive Summary

567. Brazil's policies and actions in the field of climate change are guided by Law No. 12,187/2009 introducing NPCC and Decree No. 9,578/2018 that consolidates and regulates the normative provisions of the referred law.

568. The main instruments used to achieve climate goals are action plans for preventing and controlling deforestation in protected biomes and sectoral plans (in forestry, energy, agriculture, and industry sectors) for mitigation and adaptation to climate change.

569. In its updated NDC submission of December 2020, Brazil confirmed its earlier general commitment to reduce its GHG emissions by 37% by 2025 and 43% by 2030 compared to 2005 levels. Brazil also underlined the compatibility of its NDC with a long-term objective to reach climate neutrality by 2060.

570. Although NPCC authorizes the creation of MBRE, it has not yet become operational. The closest mechanism that operates similarly to an emissions trading scheme is Brazil's biofuel policy RenovaBio.

571. Climate matters are litigated more and more actively in Brazil. Two main trends of climate-related litigation can be observed: (1) transition from a predominantly "indirect litigation" to "direct litigation"; (2) linking climate change inaction by the government to human rights violations.

1. Climate Policy in Brazil

1.1. National Climate Legislation and Policies

a. National Legislation and Policy Documents

572. Brazil's policies and actions in the field of climate change are guided by NPCC enacted by Law No. 12,187/2009,[1000] Decree No. 9,578/2018[1001] that consolidates and regulates the normative provisions of the referred law.

573. Law No. 12,187/2009 provides for the legal and institutional framework for the development and implementation of the country's climate policies, actions, and regulations. NPCC establishes a set of principles,[1002] guidelines,[1003] and instruments of climate change policy.[1004] NPCC pursues the following aims:

- making social-economic development compatible with the protection of the climate system;
- reducing anthropogenic GHG emissions with regard to their different sources;
- strengthening anthropogenic removals by sinks of GHG in national territory;
- implementing measures to promote adaptation to climate change across the 3 tiers of the Federation, with the participation and collaboration of economic and social agents concerned and of beneficiaries, particularly those especially vulnerable to the adverse effects of climate change;
- preservation, conservation, recovery, and rehabilitation of environmental resources, with particular attention to the large natural biomes regarded as National Heritage;
- consolidation and expansion of legally protected areas and incentives to reforestation and recomposition of vegetation cover in degraded areas;
- encouraging the development of MBRE.[1005]

574. Decree No. 9,578/2018 supplements Law No. 12,187/2009 by providing instruments for achieving the GHG emission reduction targets by virtue of development of sectoral mitigation and adaptation plans at the local, regional, and national levels.

[1000] Law No. 12,187/2009. URL: http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2009/Lei/L12187.htm (the date of access: March 22, 2021). For English translation see URL: https://www.preventionweb.net/files/12488_BrazilNationalpolicyEN.pdf (the date of access: March 22, 2021).

[1001] Decree No. 9,578/2018. URL: http://www.planalto.gov.br/ccivil_03/_Ato2015-2018/2018/Decreto/D9578.htm (the date of access: March 22, 2021).

[1002] Law No. 12,187/2009, Article 3.

[1003] Ibid., Article 5.

[1004] Ibid., Article 6.

[1005] Ibid., Article 4.

575. NPCC is largely driven by Brazil's international obligations under the UNFCCC and Kyoto Protocol thereto and "and other documents on climate change the country may come to sign,"[1006] in particular, the Paris Agreement which was adopted several years after the adoption of Law No.12,187/2009.

b. Scope of the Climate Change Strategy

576. NPCC sets forth Brazil's voluntary commitment to reduce its emissions by 36.1-38.9% by 2020 as compared to 2005 levels.[1007] In order to achieve this goal, Decree No. 9,578/2018 calls for actions aimed at the reduction of total GHG emissions between 1,168 million and 1,259 million tonnes of CO_2e.[1008] Although at the moment there appears to be no precise data on Brazil's GHG emissions for 2020, it has been argued that Brazil has been failing to meet the 2020 goal.[1009]

577. Decree No 9,578/2018 provides for instruments to achieve climate goals: action plans for preventing and controlling deforestation in protected biomes and sectoral plans for mitigation and adaptation to climate change (**paras. 581–588 of the Analytical Report**). Other actions include restoring 15 million hectares of degraded pastures, expansion of the biological nitrogen fixation in substitution to nitrogen-based fertilizers, expansion in forest areas in 3 million hectares, and expansion of technology for the treatment of 4.4 million cubic meters of animal waste.[1010]

c. Institutional Framework

578. NPCC established[1011] the institutional framework consisting of:

- the IMCCC, composed of several Ministries such as the Environment, Foreign Affairs, Economy, Mining and Energy, Infrastructure, and others.[1012] The IMCCC aims to establish guidelines, coordinate and ensure implementation of the country's public actions and policies related to climate change,[1013] align relevant government initiatives, and guide preparation, implementation, monitoring, and evaluation of NPCC;[1014]

- the Interministerial Commission on Global Climate Change used to articulate government action on climate change and coordinate the climate actions of different ministries. The decree establishing the Commission[1015] was annulled and its resolutions are to be endorsed by the IMCCC;[1016]

[1006] Ibid., Article 5 (1). [Citation from the English translation of the Law].

[1007] Ibid., Article 12.

[1008] Decree No. 9,578/2018, Article 19.

[1009] *Angelo C., Rittl C.* Is Brazil on the way to meet its climate targets? Explainer note by the climate observatory. P. 3. URL: https://www.oc.eco.br/wp-content/uploads/2019/09/Is-Brazil-on-the-way-to-meet-its-climate-targets_-1.pdf (the date of access: March 22, 2021).

[1010] Decree No. 9,578/2018, Article 19.

[1011] Law No. 12,187/2009, Article 7.

[1012] Decree No. 10,145/2019, Article 3. URL: https://www.in.gov.br/en/web/dou/-/decreto-n-10.145-de-28-de-novembro-de-2019-230458399 (the date of access: March 22, 2021).

[1013] Decree No. 10,145/2019, Article 5.

[1014] Ibid., Article 5.

[1015] Decree No. 10,223/2020, Article 1 (CV). URL: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/decreto/d10223.htm (the date of access: March 22, 2021).

[1016] Decree No. 10,145/2019, Article 17.

- the Brazilian Network for Research on Global Climate Change generates and disseminates knowledge on climate change and prepares regular reports;[1017]

- the Coordination Committee for Meteorology, Climatology, and Hydrology Activities, incorporated within the Ministry of Science and Technology, articulates governmental action in the areas of space, oceanography, and the environment;[1018]

- Brazilian Climate Change Forum,[1019] administratively linked to the Ministry of the Environment,[1020] is a scientific body with the objective of advising the Presidency of the Republic, studying the problem of global warming and its implications, assisting in the creation and promotion of policies and disseminating relevant information.

579. Although not listed in NPCC, the National Commission for Reducing Emissions of GHGs from Deforestation and Forest Degradation, Conservation of Forest Carbon Stocks, Sustainable Forest Management and Increase of Forest Carbon Stocks is responsible for coordinating, monitoring, and reporting the implementation of the National Strategy for the Reduction of GHG Emissions.[1021]

580. Furthermore, Law No. 12,114/2009 establishes the Climate Fund to ensure resources to support projects, studies, and finance ventures aimed at mitigating climate change and adapting to climate change and its effects.[1022] Decree No. 9,578/2018 also details areas in which the Fund's support can be obtained.[1023]

581. It is important to mention that the current administration dissolved the Secretariat for Climate Change under the Ministry of the Environment, and consequently several other bodies and administrative divisions.[1024] In mid-2020, the Minister of the Environment announced the re-creation of the Climate Secretariat[1025] with a new structure to include the Climate and International Relations Secretariat; that of Protected Areas; and that of the Amazon and Environmental.[1026]

[1017] Rede Clima. URL: http://www.ccst.inpe.br/projetos/rede-clima/ (the date of access: March 22, 2021).

[1018] Decree 6,065/2017. URL: http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2007/Decreto/D6065.htm (the date of access: March 22, 2021).

[1019] Fórum Brasileiro de Mudanças Climáticas (FBMC). URL: https://forumclimabrasil.org/ (the date of access: March 22, 2021). *Spernaza J. et al.* Monitoramento da implementação da política climática brasileira: implicações para a Contribuição Nacionalmente Determinada. Working paper. P. 11. URL: https://wribrasil.org.br/sites/default/files/monitoramento-da-implementacao-da-politica-climatica-brasileira.pdf (the date of access: March 22, 2021).

[1020] Decree No. 9,082/2017, Article 3.

[1021] Decree No. 10,144/2019, Article 3. URL: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/D10144.htm (the date of access: March 22, 2021); Ordonnance No. 544/2020. URL: https://www.in.gov.br/en/web/dou/-/portaria-n-544-de-26-de-outubro-de-2020-285005520 (the date of access: March 22, 2021).

[1022] Law No. 12,114/2009, Article 6; Decree No. 9.578/2018, Chapter II.

[1023] Decree No. 9.578/2018, Article 7.

[1024] *Wenzel F.* Governo extingue órgãos que lideravam negociações do Brasil sobre mudanças climáticas. URL: https://www.oeco.org.br/reportagens/governo-extingue-orgaos-que-lideravam-negociacoes-do-brasil-sobre-mudancas-climaticas/ (the date of access: March 22, 2021).

[1025] The terminology is different: "Climate", and not "Climate Change", as previously.

[1026] ClimaInfo. Salles muda estrutura do MMA e cria secretaria para a Amazônia. URL: https://climainfo.org.br/2020/08/13/salles-muda-estrutura-do-mma-e-cria-secretaria-para-a-amazonia/ (the date of access: March 22, 2021).

d. Sectoral Climate Strategies

582. Sectoral plans for mitigating and adapting to climate change are part of NPCC.[1027] Decree No. 9.578/2018 contains a non-exhaustive list of sectoral plans[1028] containing measures on the mitigation of effects of climate change and adaptation to climate change: PPCDAm;[1029] PPCerrado;[1030] PDE;[1031] Plano ABC;[1032] Steel Sector Emissions Reduction Plan. The latter has never been adopted. Instead, the Industry Plan[1033] (not specifically mentioned in NPCC) contains a provision regarding the annual inventory of emissions to be prepared by large companies of the steel sector.

583. Noteworthy, NPCC aims to unify approaches to climate change issues within and across all sectors.[1034] However, in practice, NPCC has been barely considered during the process of elaboration of legal norms, plans, and policies. For example, the National Policy on Solid Waste, despite having been enacted after the NPCC adoption, lacks emissions reduction targets for the sector.[1035]

Forestry and land use

584. Land use and forestry targets form the backbone of Brazilian domestic and international climate commitments.

585. NPCC set forth a target to reduce deforestation by 80% by 2020 compared to 2005 levels.[1036] PPCDAm is recognized as the most successful amongst the plans.[1037] It was structured to tackle deforestation in a comprehensive, integrated, and intensive manner.[1038]

[1027] Law No. 12,187/2009, Article 11.

[1028] Article 17 of Decree No. 9,578/2018. Additional actions and plans may be set up by the government (Art. 19, par. 2 of Decree No. 9,578/2018).

[1029] Plano de Ac¸ão para Prevenc¸ão e Controle do Desmatamento da Amazoˆnia. URL: http://redd.mma.gov.br/en/legal-and-public-policy-framework/ppcdam (the date of access: March 22, 2021).

[1030] Plano de Ação para prevenção e controle do desmatamento e das queimadas no Cerrado. URL: http://redd.mma.gov.br/en/legal-and-public-policy-framework/ppcerrado (the date of access: March 22, 2021).

[1031] Plano Decenal de Expansão de Energia 2030. URL: https://www.gov.br/mme/pt-br/assuntos/noticias/plano-decenal-de-expansao-de-energia-2030-e-entregue-ao-presidente-da-republica/PDE2030.pdf (the date of access: March 22, 2021).

[1032] Agricultura de Baixa Emissão de Carbono (Plano ABC). URL: https://www.gov.br/agricultura/pt-br/assuntos/sustentabilidade/plano-abc/plano-abc-agricultura-de-baixa-emissao-de-carbono (the date of access: March 22, 2021).

[1033] Plano Setorial de Mitigação e Adaptação à Mudança do Clima para a Consolidação de uma Economia de Baixa Emissão de Carbono na Indústria de Transformação. URL: http://educaclima.mma.gov.br/wp-content/uploads/2019/11/Plano-Setorial-Ind%C3%BAstria-2013.pdf (the date of access: March 22, 2021).

[1034] Law No. 12,187/2009, Article 11; Brazil: an emissions trading case study. P.3. URL: https://www.ieta.org/resources/Resources/Case_Studies_Worlds_Carbon_Markets/brazil_case_study_may2015.pdf (the date of access: March 22, 2021).

[1035] Law No. 12,305/2010. URL: http://www2.mma.gov.br/port/conama/legiabre.cfm?codlegi=636 (the date of access: March 22, 2021); Avaliação da política nacional sobre mudança do clima. Sumário-executivo. URL:

http://legis.senado.leg.br/sdleg-getter/documento/download/c002f430-7ece-4ccb-aad3-9247f62713ab (the date of access: March 22, 2021).

[1036] Decree No. 9,578, Article 19 (1I).

[1037] Avaliação da política nacional sobre mudança do clima. Sumário-executivo. P. 33.

[1038] PPCDAm. URL: http://redd.mma.gov.br/en/legal-and-public-policy-framework/ppcdam (the date of access: March 22, 2021).

586. PPCDam and PPCerrado are the responsibility of inter-ministerial working groups with a greater degree of involvement of the Ministry of the Environment and its agencies: the Federal Environmental Protection Agency, the Biodiversity Conservation Agency, and the Brazilian Forest Service.

Energy

587. PDE is a planning instrument in the areas of energy, oil, gas, fuels, and electricity and its main objective is to indicate prospects for the expansion of the energy sector in the horizon of ten years. It lacks a specific target for emission reduction. According to PDE, 48% of the Brazilian energy matrix was renewable in 2020 and this level is to be maintained by 2030. In the electricity sector, the supply of 2020 was 85% renewables; the level is expected to reach 88 % by 2030. PDE refers to Brazil's NDC commitment as regards emission reduction targets.[1039]

Agriculture

588. Plano ABC refrains from establishing a clear emission reduction target, but it considers that the combination of all the agriculture-related actions will lead to a reduction between 133.9 and 162.9 megatonnes of CO_2e. Measures include restoration of 15 million hectares of degraded lands through adequate soil management; the increase of agriculture-forest-land use in 4 million hectares; nitrogen biological fixation in 8 million hectares; reforestation, by increasing the areas destined to fibers, timber, and cellulose from 6 to 9 million hectares.[1040]

Industry

589. The Industry Plan comprises measures in the manufacturing industry, mining, transport, and urban mobility sectors. The Industry Plan sets an emission reduction target of 5% (308.16 megatonnes of CO_2e) in the manufacturing industry in 2020, compared to the business-as-usual scenario.[1041] To date, there is no precise data to conclude whether the target was reached. The Industry Plan aims to prepare the national industry for a scenario of greater energy efficiency in order to guarantee the continuity of competitive development in Brazil.

590. The strategies of the Industry Plan to achieve these objectives include:

- to create the technical, institutional, and financial conditions so that all segments of the industry which will be progressively included in the Plan, can carry out, from their corporate inventories, carbon management under the MVR regime;

- to promote the use of equipment and practices that combine competitiveness and sustainability through efficient use of energy and materials;

- to develop specific policies for the sectors responsible for the highest volumes of emissions included in the Plan, which guarantee their international competitiveness in terms of GHG emissions per product unit;

- to encourage innovation and training, both in the public and private sectors.

[1039] PDE. Foreword.

[1040] Plano ABC, P. 19-20.

[1041] Industry Plan, P. 13; Brazilian Third Communication to the UNFCCC, Executive Summary. P. 33. URL: https://unfccc.int/resource/docs/natc/branc3es.pdf (the date of access: March 22, 2021).

e. Climate Strategy Updating

591. NPCC should be updated every two years and its revision should occur before the adoption of every Pluriannual Plan (a budgetary instrument).[1042] However, since the adoption of Decree No. 9,578/2018, NPCC has not been updated, and the Pluriannual Plan contains climate-specific actions which are not necessarily aligned with the NPCC goals.

592. There are three relevant draft amendments to NPCC that are pending before the two Congressional houses:

- Proposed bill No. 3280/2015 (House of Representatives) concerns ensuring that renewable sources are included in the energy matrix. It also proposes procedures for restoring degraded areas, recovery of degraded pastures, and crop-livestock-forest integration;[1043]

- Proposed bill No. 4816/2019 (Senate) establishes transparency measures related to NPCC, PPCDAm, and PPCerrado, in particular, annual and five-year evaluation with subsequent publication of the evaluation reports on the official website;[1044]

- Proposed bill No. 712/2015 (Senate) sets a target for the inclusion of renewable sources in the Brazilian energy matrix for the year 2040.[1045]

1.2. Nationally Determined Contribution

593. In its updated NDC submission of December 2020, Brazil confirmed its earlier general commitment to reduce its GHG emissions by 37% by 2025 and by 43% by 2030 compared to 2005 levels.[1046] Brazil also underlined the compatibility of its NDC with a long-term objective to reach climate neutrality by 2060.[1047] Discussion concerning the adoption of a National Strategy for the Implementation of the Brazilian NDC so far yielded no results.[1048]

[1042] Decree No. 9,578/2018, Article 3 (1).

[1043] Projeto de Lei 3280/2015. URL: https://www.camara.leg.br/proposicoesWeb/fichadetramitacao?idProposicao=2017411&ord=1 (the date of access: March 22, 2021).

[1044] Projeto de Lei n° 4816, de 2019. URL: https://www25.senado.leg.br/web/atividade/materias/-/materia/138480 (the date of access: March 22, 2021).

[1045] Projeto de Lei do Senado n° 712, de 2015. URL: https://www25.senado.leg.br/web/atividade/materias/-/materia/123890 (the date of access: March 22, 2021).

[1046] Brazil's NDC. Brazil homepage. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=BRA (the date of access: March 22, 2021).

[1047] Ibid.

[1048] Proposta Inicial de Implementação da NDC. URL: https://www.centrobrasilnoclima.org/acoes/Proposta-Inicial-de-Implementa%C3%A7%C3%A3o-da-NDC (the date of access: March 22, 2021).

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Strategy and Reporting

594. Under the UNFCCC Brazil submits a Biennial Report[1049] and a quadrennial National Communication[1050] which are the main reporting instruments on the progress of implementation of Brazilian climate laws and policies. These documents provide, *inter alia*, a thorough picture of the state of development of the national inventories of anthropogenic emissions, a general description of the measures undertaken at the domestic level, information on MVR, and an evaluation of vulnerabilities and adaptation measures.[1051]

595. Brazil's only currently operating[1052] MVR system is SIRENE[1053] launched in 2016. Its main objective is to make publicly available the information on GHG emissions sources and removals by sinks and on other emission accounting initiatives. The mission is to provide security and transparency to the process of making inventories of GHG emissions, and also to support decision making within the scope of policies, plans, programs, and projects in the area of climate change.[1054] The system follows the standards and guidelines of the International Panel on Climate Change. SIRENE reports are publicly available on its website.[1055]

596. Annual implementation reports are prepared as regards PPCDAm sectoral actions.[1056]

597. As for the Plano ABC, the ABC Observatory supervises and monitors the ABC Program. It presents the data disaggregated by financing line, state and source of disbursed resources.[1057]

598. The Brazilian Forum on Climate Change must present an annual report on the activities carried out and an annual work plan for the following period.[1058]

[1049] Brazil. Biennial update report (BUR). BUR4. URL: https://unfccc.int/documents/267661 (the date of access: March 22, 2021).

[1050] Brazil. National communication (NC). NC 4. URL: https://unfccc.int/documents/267657 (the date of access: March 22, 2021).

[1051] Comunicações Nacionais do Brasil. URL: https://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/Comunicacao_Nacional/Comunicacao_Nacional.html (the date of access: March 22, 2021).

[1052] A proposal to establish another monitoring system (SMMARE) was made in 2013. Since then, however, there has been no progress. See Brazil. Biennial update report (BUR). BUR4. P. 87.

[1053] SIRENE. URL: https://sirene.mctic.gov.br/portal/opencms/ (the date of access: March 22, 2021).

[1054] Brazil's Third Biennial Update Report to the UNFCCC. P. 11. URL: https://unfccc.int/sites/default/files/resource/2018-02-28_BRA-BUR3_ENG_FINAL.pdf (the date of access: March 22, 2021).

[1055] SIRENE. URL: https://sirene.mctic.gov.br/portal/opencms/index.html (the date of access: March 22, 2021).

[1056] Assunto: Resposta ao Ofício 1a Sec/RI/E/n. 898/2019 - Requerimento de Informação 1577/2019. URL: https://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-temporarias/externas/56a-legislatura/politicas-para-integracao-meio-ambiente-e-economia/documentos/documentos-recebidos/ric-1577-2019-ministerio-do-meio-ambiente-oficio (the date of access: March 22, 2021).

[1057] Observatório ABC. URL: http://observatorioabc.com.br/wp-content/uploads/2019/11/Sumario_2019-FINAL-Grafica-1.pdf (the date of access: March 22, 2021).

[1058] Decree No 9,082/2017, Article 8. URL: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/decreto/D9082.htm (the date of access: March 22, 2021).

b. Private Parties Reporting and Disclosure Obligations

599. The government has not yet defined any specific reporting standard to guide the private sector implementation of climate change commitments.

600. Brazil does not have a binding rule that requires reporting GHG emissions by private entities. However, private entities have shown some degree of voluntary engagement in initiatives such as the Brazilian GHG Protocol Program,[1059] the B3 Carbon Efficiency Index (ICO_2),[1060] and the Carbon Disclosure Project in Brazil,[1061] which address whether the companies' inventory of emissions and their practices are in line with the recommendations of the Task Force on Climate-Financial Related Disclosures, which are divided into four dimensions: Governance, Strategy, Risk Management, and Metrics and Goals.

601. Regarding risk management and investment decision-making, banks are encouraged to use tools that estimate the impact of eventual carbon pricing in order to analyze corporate investment and financial portfolios in view of the risks associated with climate change.[1062]

602. The Brazilian environmental legislation provides for the Environmental Impact Study[1063] which implies preventive control of environmental impacts. Once potential damage to the environment has been identified, mechanisms for preventing or minimizing damages should be considered. The National Environmental Policy Law[1064] determines that projects and activities that use environmental resources and can effectively or potentially pollute or degrade the environment must be identified and evaluated in the implementation and operation phases of the activity. The project sponsors are obliged, after the assessment phase, to indicate the measures for avoiding or mitigating the negative impacts along with the elaboration of a follow-up and monitoring program.

603. Some local governments have passed laws requiring businesses and local authorities to consider the climate impacts of projects or activities in the environmental licensing process, either by requiring an inventory of emissions or mitigation or compensatory measures. Decree No. 46,890/019 under the State Policy on Climate Change of the State of Rio de Janeiro stipulates that when there are projects or activities with significant GHG emissions, it is mandatory to present, in the environmental licensing phase, an inventory of emissions, a mitigation plan and/or emissions compensation.[1065] A wider inventory may be required for the installation license (the second step in the environmental licensing process in Brazil), subject to the obligation of total or partial neutralization of GHG emissions.[1066]

[1059] Programa Brasileiro GHG Protocol. URL: https://eaesp.fgv.br/centros/centro-estudos-sustentabilidade/projetos/programa-brasileiro-ghg-protocol (the date of access: March 22, 2021).

[1060] Carbon Efficient Index (ICO2 B3). URL: http://www.b3.com.br/en_us/market-data-and-indices/indices/sustainability-indices/carbon-efficient-index-ico2.htm (the date of access: March 22, 2021).

[1061] CDP. URL: https://www.cdp.net/en/partners/plantar-carbon (the date of access: March 22, 2021).

[1062] Avaliação de riscos climáticos é próximo desafio na gestão de riscos socioambientais dos bancos. URL: https://portal.febraban.org.br/noticia/3176/pt-br/ (the date of access: March 22, 2021).

[1063] CONAMA Resolution n° 001/1986. URL: http://www.ima.al.gov.br/wizard/docs/RESOLU%C3%87%C3%83O%20CONAMA%20N%C2%BA001.1986.pdf.

[1064] Law No. 6,938/1981. URL: http://www.planalto.gov.br/ccivil_03/LEIS/L6938.htm (the date of access: March 22, 2021).

[1065] Decree No. 46,890/2019, Article 2(4). URL: https://www.legisweb.com.br/legislacao/?id=388039 (the date of access: March 22, 2021).

[1066] Law 5,690/2010. URL: http://alerjln1.alerj.rj.gov.br/contlei.nsf/f25571cac4a61011032564fe0052c89c/a9593961f9d00ab28325770a005bd6a4?OpenDocument (the date of access: March 22, 2021); Decree No. 43,216/2011. URL: https://www.normasbrasil.com.br/norma/decreto-43216-2011-rj_158916.html (the date of access: March 22, 2021).

604. Brazil does not impose any obligation on companies to develop climate strategies. However, there is a growing concern within the corporate sector on the adoption of corporate strategies for adapting to climate change and offsetting GHG emissions.

605. As an example, the Brazilian Federation of Banks has been sealing partnerships with think tanks, NGOs, and academia to improve the sustainability performance of the Brazilian banking sector and to unpack repercussions of the commitments assumed by the country under the Paris Agreement and the Sustainable Development Goals.[1067] Information on progress made at the sector level is becoming more publicly available despite its overall generic character.

606. Embrapa, a public enterprise that develops cutting-edge agricultural technology, has directly supported main governmental actions to mitigate and adapt the agricultural sector to climate change through the Plano ABC and the National Plan for Adaptation to Climate Change in line with NDC commitments.[1068]

c. Financial and Economic Mechanisms

607. NPCC expressly refers to financial and economic mechanisms as instruments to achieve the country's mitigation targets.[1069] Although this NPCC provision authorizes the creation of MBRE,[1070] it has not yet become operational.

608. Thus, the Brazilian experience associated with systems of emissions trading is still quite incipient. The initiatives are primarily associated with the Clean Development Mechanism and other international mechanisms, including the voluntary market, through which projects to reduce emissions in the country are financed.[1071]

609. At the subnational level, some climate laws and policies provide for the creation of local carbon markets, such as Rio de Janeiro's State Policy on Global Climate Change and Sustainable Development (Law No. 5,690/2010).[1072] In 2012, the government of the State of Rio de Janeiro, in partnership with BVRio (Rio de Janeiro's Green Exchange) — an entity that promotes the use of market mechanisms to facilitate compliance with environmental laws — elaborated the specifications of a GHG emission reduction trading system for the state's industrial sector (Carbon Trading System). Despite being ready to operate, the system has not yet been activated since this type of emission control measure has not been implemented at the federal level.[1073]

[1067] Nossa Atuação em Sustentabilidade. URL: https://portal.febraban.org.br/pagina/3059/37/pt-br/responsabilidade-socioambiental (the date of access: March 22, 2021).

[1068] *De Oliviero A. F. et al*, Políticas, planos e estratégias nacionais para combate às mudanças climáticas. URL: https://ainfo.cnptia.embrapa.br/digital/bitstream/item/183537/1/PL-Politicas-planos-ODS-13.pdf (the date of access: March 22, 2021).

[1069] Law 12,187/2009, Article 6 (XI).

[1070] Brazil: an emissions trading case study. P. 4. URL: https://www.ieta.org/resources/Resources/Case_Studies_Worlds_Carbon_Markets/brazil_case_study_may2015.pdf (the date of access: March 22, 2021).

[1071] *Bruno de Andrade C.* A Regulação do Sistema de Comércio de Emissões no Brasil: Alternativa para cumprimento do dever estatal de proteção perante as mudanças climáticas / Bruno de Andrade Christofoli ; orientadora, Cristiane Derani - Florianópolis, SC, 2015. P. 190. URL: https://repositorio.ufsc.br/xmlui/bitstream/handle/123456789/169651/339005.pdf?sequence=1&isAllowed=y (the date of access: March 22, 2021).

[1072] Law No. 5,690/2010.

[1073] Rio de Janeiro's Carbon Market. URL: https://www.bvrio.org/en/rio-carbon-market (the date of access: March 22, 2021).

610. Since 2011 the World Bank has been involved in carbon market debates in Brazil by conducting analytical studies, impact assessment of policy tools, capacity-building, and other activities with the Brazilian government and non-state actors under the Partnership for Market Readiness, which supports Brazil to explore options for various types of carbon pricing schemes in order to select a suitable instrument for implementation and to build MRV capacity[1074]. So far it has explored different options for the design of carbon pricing instruments in Brazil, but the project is yet to be translated into an operational carbon market or a carbon pricing policy, like a carbon tax or a cap-and-trade scheme.

611. The closest mechanism that operates similarly to an emissions trading scheme is Brazil's RenovaBio[1075] program, Brazil's biofuels policy. It consists of a mechanism akin to a carbon market restricted to the liquid fuels sector, involving the transport sector. RenovaBio makes it compulsory for fuel distributors to purchase CBIO proportionally to their respective market share in the distribution of fossil fuels. In turn, each biofuel producer or importer that chooses to generate CBIO credits will be allowed to issue these credits, reflecting CO_2 emissions hypothetically avoided due to the use of biofuel instead of fossil fuel. The National Commission on Energy Policy shall establish each year the annual total target of CBIO credits that all fuel distributors will have to purchase. The credits are to be traded in the stock market and, at the moment, financial institutions are working on operationalizing the financial asset.[1076]

612. RenovaBio is part of the new National Biofuel Policy instituted by Law No. 13,576/2017[1077] aimed at expanding the production of biofuels in Brazil. The Policy is composed of three strategic axes: 1) Decarbonization Goals; 2) Certification of Biofuel Production; 3) CBIO. In the first axis, the Government annually establishes national targets for ten years, which are deployed for fuel distributors. In the second axis, producers voluntarily certify their production and receive, as a result, energy-environmental efficiency scores. These notes are multiplied by the volume of biofuel traded which results in the quantity of CBIOs that a certain producer will be able to issue and sell on the market, which is the third axis.[1078]

613. In August 2020, the National Congress overthrew the presidential veto that kept CBIO taxation at 40.1%, to reinstate the differentiated tax rate of 15% to the certificates, as a measure to stimulate the biofuel markets.[1079]

614. RenovaBio is linked to the National Agency of Petroleum, Natural Gas, and Biofuels, which formed a Working Group[1080] to analyze and recommend the inclusion of new biofuel production routes. The members of the Working Group[1081] analyze the use of biofuels as instruments to reduce emissions; the certification of biofuels produced and used in Brazil considering the measurement of energy and environmental performance; energy efficiency and the search for greater energy efficiency; the

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[1074] Partnership for market readiness. Brazil. URL: https://www.thepmr.org/country/brazil-0 (the date of access: March 22, 2021).

[1075] RenovaBio. URL; http://antigo.mme.gov.br/web/guest/secretarias/petroleo-gas-natural-e-biocombustiveis/acoes-e-programas/programas/renovabio (the date of access: March 22, 2021).

[1076] PMR Project implementation status report (ISR). P. 9. URL: https://www.thepmr.org/system/files/documents/Brazil%20PMR%20Project%20Implementation%20Status%20Report%202019_PA21.pdf (the date of access: March 22, 2021).

[1077] Law No. 13,576/2017. URL: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/L13576.htm (the date of access: March 22, 2021).

[1078] *Miranda G*. RenovaBio Takes off. URL: http://ethanolproducer.com/articles/16841/renovabio-takes-off (the date of access: March 22, 2021).

[1079] Congresso derruba veto sobre tributação do CBIO. URL: https://unica.com.br/sem-categoria/congresso-derruba-veto-sobre-tributacao-do-cbio/ (the date of access: March 22, 2021).

[1080] Agência Nacional do Petróleo, Gás Natural e Biocombustíveis. URL: http://legislacao.anp.gov.br/?path=legislacao-anp/portarias-anp/administrativas/2018/agosto&item=panp-303-2018 (the date of access: March 22, 2021).

[1081] Specialists from areas related to the production, distribution and use of biofuels.

improvement of the fuel matrix, with the gradual decarbonization of the matrix in the short, medium, and long term.[1082]

d. Other Incentives

615. NPCC[1083] provides for fiscal and tax measures to encourage the reduction of emissions and GHGs removal, including differentiated rates, exemptions, compensations and incentives to be defined in a specific law. However, a respective law has not yet been adopted.

616. BNDES manages investments that contribute to the reduction of environmental impacts caused by agricultural activities that aim at adapting or regularizing rural properties in accordance with the applicable environmental legislation. BNDES also offers differentiated interest rates for projects related to reducing GHG emissions and adapting to climate change through the Climate Fund.[1084]

617. The National Electricity Conservation Program, coordinated by the Ministry of Mining and Energy, and implemented by the state-owned Eletrobras, promotes investments in the efficient use of electric energy and to reduce waste. The actions under the Program are aimed at contributing to increasing the efficiency of goods and services through the granting of guarantees for the development of practices and knowledge about efficient energy consumption.[1085]

618. Decree No. 10,387/2020[1086] is the first administrative act to promote green bonds through tax benefits. The decree gave preferential tax treatment to infrastructure projects that provide environmental benefits in the area of transport, energy, basic sanitation, and in isolated urban areas.[1087]

2.2. Enforcement and Accountability

619. Enforcement of climate laws in Brazil is mostly embedded in the enforcement of the overall environmental legislation and policies. The public administration uses its enforcement powers when dealing with activities or projects that may result in pollution or damages to the environment. The basic regulatory instruments of environmental policy are standards, licenses, permits, and zoning.

620. Law No. 6,938/1981[1088] provides that National Environmental System bodies, including the Federal Environmental Agency, are responsible for exercising the power of the environmental enforcement, inspecting and investigating environmental administrative infractions, and applying, after the due legal process, appropriate administrative sanctions to the pollution or degradation of natural resources,

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[1082] RenovaBio. URL: P. 3. http://antigo.mme.gov.br/documents/36224/459914/P%26R+-+RenovaBio.pdf/15053f36-eb31-3ed4-04b4-8b0775fc8e82 (the date of access: March 22, 2021).

[1083] Law No. 12,187/2009, Article 3.

[1084] Apoio à agroindustria. URL: https://www.bndes.gov.br/wps/wcm/connect/site/90bcd5b4-40f8-49c6-82b6-036c019ee2b7/Folheto+Apoio+ao+Agro+-+BNDES+v2020.07.pdf?MOD=AJPERES&CVID=ne2evSB (the date of access: March 22, 2021).

[1085] Procel - Programa Nacional de Conservação de Energia Elétrica. URL: at: http://www.procelinfo.com.br/main.asp?TeamID=%7B921E566A-536B-4582-AEAF-7D6CD1DF1AFD%7D (the date of access: March 22, 2021).

[1086] Decree No. 10,387/2020. URL: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/decreto/D10387.htm (the date of access: March 22, 2021).

[1087] The Decree has included infrastructure projects that provide environmental benefits, giving effect to the financing of investments and stimulating the capital market fiscal incentive of Law No 12,431/2011.

[1088] Law No. 6,938/1981.

including imposing on offenders, regardless of their guilt (strict liability), the obligation to indemnify or repair the damage caused to the environment and third parties affected by their activity.

621. In the electric sector, the National Electric Power Agency has the normative, supervisory, sanctioning, and mediating power on conflicts related to this area and involving the public administration.[1089]

622. There are several direct and indirect, administrative and criminal sanctions, arising from non-compliance with environmental obligations: fines, revocation of license, total or partial suspension of activity, personal administrative and criminal liability.[1090]

623. The Environmental Crimes Law defines that the legal entity, author, or co-author of the environmental infraction, can be penalized, even with compulsory dissolution, in case it was created or used to facilitate or conceal an environmental crime. The fines can reach BRL 50 million and the punishment is extinguished only after the recovery of the environmental damage is proven.[1091]

624. In the Law of the National Environment Policy, the polluter is obliged to compensate the environmental damage caused, regardless of fault or intent, and the Public Prosecutor's Office can initiate civil liability actions for damages to the environment, also imposing on the polluting company the obligation to recover damages caused. In practice, persons responsible for the offense can also be imprisoned.[1092]

625. If there is a licensable project in respect of which the environmental agency prescribed to limit the volume of emissions, the respective violation can give rise to liability. In practice, however, GHG emission caps are largely absent from environmental impact assessments and licensing procedures. The only known case where this is being litigated is the *Ibama v. Siderúrgica São Luiz*, in which the federal environmental agency is seeking compensation for illegal emissions by a steel company arising from the use of illegally sourced timber. It is argued that whenever a company emits GHG in violation of any of the applicable legal and regulatory standards, such emission is illegal and may give rise to civil liability. In this case, the plaintiff seeks to differentiate between 'environmental damage' and 'climate damage', arguing that the latter causes disruption to climate stability and is linked to illegal emissions.[1093]

3. Climate Litigation

626. Climate matters are litigated in Brazil.[1094] The cases can be divided into two categories: direct and indirect climate litigation. The cases belonging to the first group have climate change as a central

[1089] Law No. 9,427/1996. URL: http://www.planalto.gov.br/ccivil_03/leis/l9427cons.htm (the date of access: March 22, 2021).

[1090] Law No. 6,514/2008. URL: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm (the date of access: March 22, 2021).

[1091] Law No. 9,605/1998. URL: http://www.planalto.gov.br/ccivil_03/leis/l9605.htm (the date of access: March 22, 2021).

[1092] Law No. 6,938/1981.

[1093] *Federal Environmental Agency (IBAMA) v. Siderúrgica São Luiz Ltd. and Martins*. As of March 2021 the case is pending. URL: http://climatecasechart.com/non-us-case/federal-environmental-agency-ibama-v-siderurgica-sao-luiz-ltda-and-martins/ (the date of access: March 22, 2021).

[1094] As of March 2021, the The Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science (URL: https://climate-laws.org/litigation_cases?geography%5B%5D=24 (the date of access: March 22, 2021)) recorded 11 cases; The Sabin Center for Climate Change Law at Columbia University (URL: http://climatecasechart.com/search-non-us/?fwp_non_us_jurisdiction=brazil (the date of access: March 22, 2021)) recorded 10 cases.

component of the case. These cases are brought by NGOs, political parties, or the Prosecutor's office against the federal government or private companies parties.

627. Among the recent cases falling into the first group the following can be noted as the most remarkable*:*

(1) *PSB et al. v. Brazil*[1095] — pending Supreme Court case on deforestation brought by seven political parties against the federal government. The plaintiffs allege the violation of fundamental rights of indigenous peoples and present and future generations due to failure to implement PPCDAm;

(2) *Institute of Amazonian Studies v. Brazil*[1096] — pending class action concerning the recognition of a right to a healthy and stable climate. The plaintiffs allege, in particular, that the government failed to meet the GHG emission reduction targets set in NPCC and seek to compel the government to comply with NPCC;

(3) *PSB et al. v. Brazil*[1097] — ongoing Supreme Court litigation initiated by four political parties concerning alleged failure of the Ministry of the Environment to ensure proper operation and functioning of the Climate Fund.

628. The majority of the cases of the second type consist of enforcement actions against companies and environmental agencies for violations of natural resource management laws or the failure by the governmental bodies to implement environmental policies with climate consequences.[1098]

629. It appears that the climate litigation in Brazil will see continued growth. Plaintiffs are requesting the judiciary to make decisions that can have more direct impacts on climate change mitigation and adaptation efforts and policies. Overall, the biggest trend in Brazilian climate change litigation is a transition from predominantly "indirect litigation" to "direct litigation". It can also be noted that linking climate change inaction by the government to human rights violations is becoming more common.

[1095] *PSB et al. v. Brazil* (on deforestation and human rights). URL: https://climate-laws.org/geographies/brazil/litigation_cases/psb-et-al-v-brazil-on-deforestation-and-human-rights (the date of access: March 22, 2021).

[1096] *Institute of Amazonian Studies v. Brazil*. URL: https://climate-laws.org/geographies/brazil/litigation_cases/institute-of-amazonian-studies-v-brazil (the date of access: March 22, 2021).

[1097] *PSB et al. v. Brazil* (on Climate fund). URL: https://climate-laws.org/geographies/brazil/litigation_cases/psb-et-al-v-brazil-on-climate-fund (the date of access: March 22, 2021).

[1098] *Setzer J. Et al*,. Climate Change Litigation In Brazil. (Forthcoming).

X. MEXICO

Executive Summary

630. The current federal climate change policy in Mexico is formed by GLCC, NSCC, and SPECC. These documents establish an institutional framework in the climate sphere, set climate objectives and targets, and contain a general strategy to foster transition to sustainable, low-carbon emissions and competitive economy. Sectoral strategies are envisaged in separate plans that contain, *inter alia*, climate-related provisions.

631. GLCC and policy instruments are driven by Mexico's international commitments deriving, in particular, from the Paris Agreement and UNFCCC. In its latest submission to the UNFCCC Secretariat, Mexico committed to reduce GHG emissions by 22% and black carbon emissions by 51% compared to a baseline under a business-as-usual scenario.

632. GLCC provides for an opportunity to design such economic instruments as taxes, financial mechanisms, or trade instruments. At the moment, clean energy certificates, carbon tax, and emission trading are the functioning mechanisms to incite economic actors to reduce their GHG emissions. Mexico's ETS is currently in its pilot phase of implementation.

633. The main trend in climate litigation in Mexico is that NGOs/groups of citizens successfully challenge governmental acts based on the alleged breach of the right to a healthy environment. Several cases have already been granted while others are currently pending.

1. Climate Policy in Mexico

1.1. National Climate Legislation and Policies

a. National Legislation and Policy Documents

634. The main law that governs climate change issues in Mexico is GLCC adopted in 2012.[1099] GLCC provides for mitigation of and adaptation to climate change through the cooperation of governments of all levels in view of the transition to competitive and sustainable economy.[1100]

635. GLCC is a framework instrument with a regulatory, organizational, and planning component.[1101]

636. GLCC is driven by Mexico's international obligations: it refers[1102] to the Paris Agreement temperature target[1103] and to the objective of regulation of GHG emissions as provided for by UNFCCC.[1104]

637. GLCC shares synergies with previous laws that were amended to include climate provisions and with laws and regulations adopted after GLCC.[1105]

638. GLCC enlists a series of public policy instruments where the objectives or the law are expanded. These instruments are:

- NSCC;[1106]
- PECC;[1107]
- National Policy on Adaptation;

[1099] Ley General de Cambio Climático. First published on the Official Gazette on June 6, 2012, last amendment published on November 6, 2020. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LGCC_061120.pdf (the date of access: March 22, 2021).

[1100] GLCC. Articles 1 and 2.

[1101] For a comprehensive analysis on the GLCC, see *Averchenkova A. and Guzmàn Luna S.* Mexico's General Law on Climate Change: Key achievements and challenges ahead. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science, 2018. URL: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2018/11/Policy_report_Mexico%E2%80%99s-General-Law-on-Climate-Change-Key-achievements-and-challenges-ahead-29pp_AverchenkovaGuzman-1.pdf (the date of access: March 22, 2021).

[1102] GLCC. Article 2.

[1103] Paris Agreement. Article 2(1)(a).

[1104] United Nations Framework Convention on Climate Change. Article 2.

[1105] General Law on Ecological Equilibrium and Environment Protection. Adopted on January 26, 1988. URL: https://mexico.justia.com/federales/leyes/ley-general-del-equilibrio-ecologico-y-la-proteccion-al-ambiente/ (the date of access: March 22, 2021); General Law for Sustainable Development Forests. First published on June 5, 2018. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LGDFS_130420.pdf (the date of access: March 22, 2021); Energy Industry Law. First published on August 11, 2014. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LIElec_061120.pdf (the date of access: March 22, 2021); Energy Transition Law. Published on December 24, 2015. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LTE.pdf (the date of access: March 22, 2021); Special Tax Law on Products and Services. First published on December 30, 1980. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/78_241219.pdf (the date of access: March 22, 2021).

[1106] Estrategia Nacional de Cambio Climático.

[1107] Programa Especial de Cambio Climático.

- NDC;
- Programs of states.[1108]

639. NSCC,[1109] adopted on May 29, 2013, is the main public policy instrument that sets pathways to tackle the effects of climate change and to foster transition to a sustainable, low-carbon emissions, and competitive economy.[1110] According to Articles 8 and 9 of GLCC, federal and state governments are required to formulate and implement public policies based on NSCC.

640. PECC is one of the public policy instruments integrating NSCC. In accordance with GLCC and NSCC, the federal government adopted PECC for 2009–2012, 2014–2018, and recently for 2018–2024.

641. As far as PECC for 2018–2024 remains unpublished to date, it may be useful to describe PECC for 2014–2018 to show the structure and goals enshrined in this kind of public policy instrument. PECC 2014–2018 was adopted in April 2014.[1111] It incorporates five targets alienated to those of NSCC and the National Development Plan, namely:

- reduction of vulnerability and increasing of strategic sectors and vulnerable population;
- conservation, restoration, and sustainable management of ecosystems to guarantee its environmental services in the mitigation and adaptation to climate change;
- reduction of GHG emissions to reach an energy transition and a low carbon economy;
- reducing emissions from short-lived climate pollutants and fostering health and well-being benefits; and
- consolidation of a national climate change policy through efficient instruments and mechanisms, in coordination with states, local governments, legislative branch, and population.[1112]

642. National Atlas on Vulnerability to Climate Change assists during the framing and decision-making process of adaptation policies. The atlas establishes four main sources of vulnerability to climate change: sea level rise, temperature increase, and decrease and increase of precipitation.[1113]

b. Institutional Framework

643. GLCC created an institutional framework for the adequate coordination in the formulation and implementation of public policies and regulations:

[1108] GLCC. Article 58.

[1109] SEMARNAT. National Strategy on Climate Change. Adopted on May 29, 2013, published in the Official Gazette on June 3, 2013. URL: http://www.dof.gob.mx/nota_detalle.php?codigo=5301093&fecha=03/06/2013 (the date of access: March 22, 2021).

[1110] GLCC. Article 60.

[1111] Programa Especial de Cambio Climático 2014–2018 PECC (versión difusión). URL: https://www.gob.mx/inecc/documentos/programa-especial-de-cambio-climatico-2014-2018-pecc-version-difusion (the date of access: March 22, 2021).

[1112] Ibid.

[1113] SEMARNAT-INECC. National Atlas on Vulnerability to Climate Change, 2019. URL: https://atlasvulnerabilidad.inecc.gob.mx/page/fichas/ANVCC_LibroDigital.pdf (the date of access: March 22, 2021).

- *INECC,*[1114] whose mandate is to conduct and coordinate scientific research on climate change and environment protection, and to give scientific and technical advice to the Ministry of Environment (SEMARNAT)[1115] on the above matters.[1116] On October 14, 2020, INECC adopted its institutional program for 2020–2024.[1117] The program is aimed at ensuring proper functioning and organization of INECC and at achieving INECC's objectives with due consideration to climate change goals established in the National Development Plan, Environment Sectorial Plan, and PECC;

- *IMCCC.* This permanent body coordinates actions of federal entities related to climate change, drafts public policies for the mitigation of and adaptation to climate change, approves the national strategy on climate change and Nationally Determined Contributions;[1118]

- *Council on Climate Change* is an advisory body that provides advice to IMCCC. The Council consists of at least 15 members coming from private, public, and academic sectors, and being qualified in climate change matters;[1119]

- *National System on Climate Change* serves as a mechanism for collaboration and communication among different authorities dealing with climate issues. The National System on Climate Change ensures consistent application of climate change policies on all governmental levels;[1120]

- *Evaluation Body* evaluates national climate change policy. It consists of the head of INECC and six advisers representing the scientific, academic, technical, and industrial community.[1121]

c. Scope of the Climate Change Strategy

644. GLCC and NSCC set reduction of emissions target:[1122]

- conditional: By 2020, Mexico commits to reduce GHG emissions by 30% compared to the 2000 baseline; by 2050 — by 50%. These commitments are subject to the establishment of international financing mechanisms and technology transfer from developed countries to developing countries, including Mexico. Based on Mexico's most recent submission to the UNFCCC Secretariat (**para. 661 of the Analytical Report**), the 2020 target does not appear to be met;

- unconditional: Mexico commits to reduce its GHG emissions by 22% and its black carbon emissions by 51% compared to the 2000 baseline. Necessary reduction of emissions is calculated sector-by-sector: transport — by18%, electricity — by 31%, residential and commercial — by 18%,

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[1114] Instituto Nacional de Ecología y Cambio Climático. Previously known as the National Institute on Ecology.

[1115] Secretaría de Medio Ambiente y Recursos Naturales.

[1116] GLCC. Article 15; INECC. Organization Manual of the National Institute on Climate Change and Ecology. Published in the Official Gazette on November 22, 2017. URL: http://www.dof.gob.mx/nota_detalle.php?codigo=5505376&fecha=22/11/2017 (the date of access: March 22, 2021).

[1117] Programa Institucional del Instituto Nacional de Ecología y Cambio Climático 2020–2024. URL: https://dof.gob.mx/nota_detalle.php?codigo=5602730&fecha=14/10/2020 (the date of access: March 22, 2021).

[1118] Ibid. Articles 45 and 47.

[1119] Ibid. Articles 51 and 57.

[1120] GLCC. Article 40.

[1121] Ibid. Article 23.

[1122] GLCC. Transitional Article 2; NSCC, Section 7.2.

oil and gas — by 14%, industry — by 5%, agriculture and cattle raising — by 8%, and waste — by 28%.[1123] If a global agreement is reached to set an international carbon price, carbon taxes, technical cooperation, access to low-cost financial resources and technology transfer, Mexico is ready to reduce its GHG emissions by 35% and its black carbon emissions by 70% by 2030.

645. NSCC[1124] rests on six pillars ("cross-cutting policies") and defines areas of action in relation to adaptation to and mitigation of climate change:

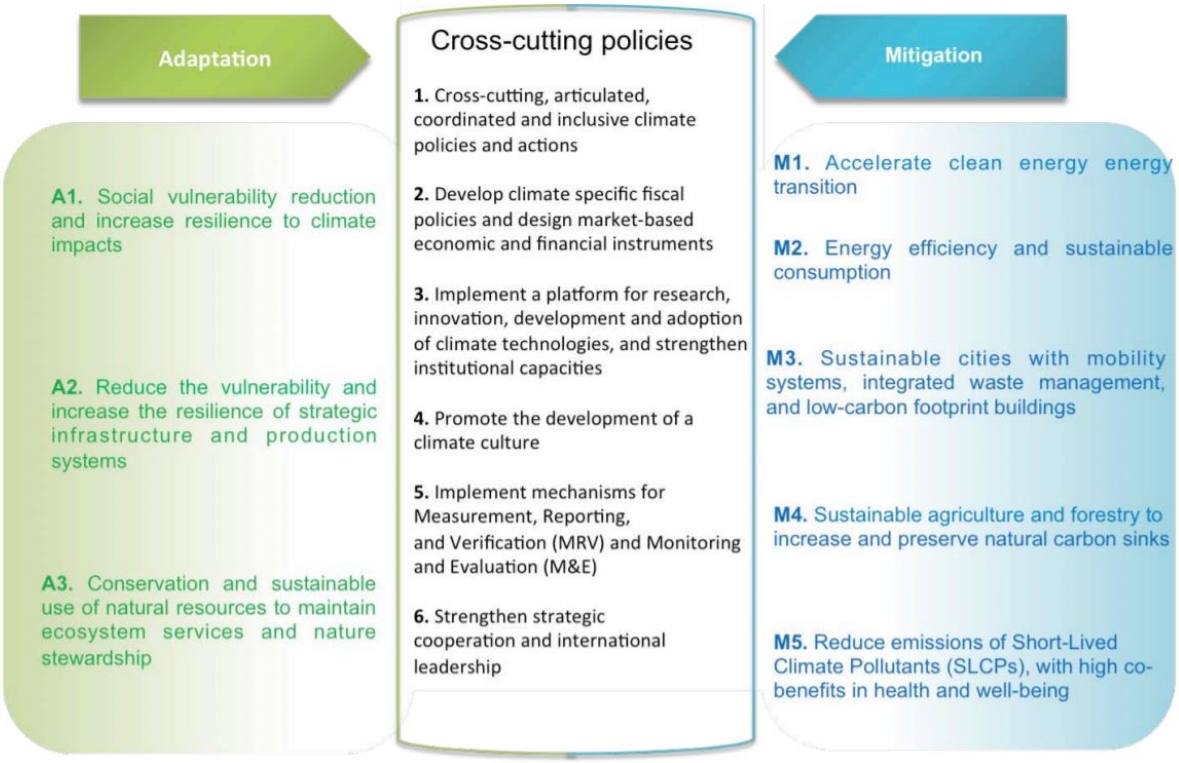

Figure 1. Structure of the National Strategy on Climate Change[1125]

d. Sectoral Climate Strategies

646. There is no unified document containing sectoral climate strategies. In Mexico, the National Development Plan and further sector-specific instruments address, *inter alia*, climate concerns. Provided that Mexico is a federal State, it is crucial for the effective implementation of the climate policy that competent state and local authorities adopt their own sectoral plans in furtherance of federal provisions.

647. The National Development Plan for the period 2013-2018 established a strategy for enhancing the climate change policy and the environment protection to reach a competitive, resilient, and low-carbon

[1123] GLCC. Second transitional provision; UNFCCC. Intended Nationally Determined Contribution: Mexico. March 2016. URL: https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Mexico/1/MEXICO%20INDC%2003.30.2015.pdf (the date of access: March 22, 2021).

[1124] For a comprehensive description of the National Climate Strategy, see SEMARNAT-INECC. Mexico's Climate Change Mid-Century Strategy, Mexico City, Mexico, 2016. P. 18–21. URL: https://unfccc.int/files/focus/long-term_strategies/application/pdf/mexico_mcs_final_cop22nov16_red.pdf (the date of access: March 22, 2021).

[1125] Ibid. P. 20.

economy.[1126] Conversely, the current National Development Plan for the period of 2019–2024 only makes reference to sustainable development but not to climate change.[1127]

Energy

648. The last adopted plan is the Energy Sector Plan 2020–2024.[1128] The plan's main climate-oriented goal to promote energy efficiency and rational consumption derives from Mexico's international commitments under UNFCCC and the Agenda 2030 on Sustainable Development.[1129] Following this goal, the Energy Sector Plan recognizes the need to reduce carbon emissions during energy production and the importance of fostering transition to cleaner energy.

649. Furthermore, the strategy refers to the relevance of the NSCC goals and the Transition Strategy to Promote Cleaner Technologies and Fuels.[1130]

650. The Energy Sectorial Plan also[1131] contains provisions on gradual inclusion of clean energies in the production of electric energy and respective midterm targets:

- by 2020 — 32%, not achieved (**para. 652 of the Analytical Report**);
- by 2021 — 33%;
- by 2022 — 33%;
- by 2023 — 33%;
- by 2024 — 35%.[1132]

651. Noteworthy, the Energy Sectorial Plan calls for an increase in exploration and exploitation of oil and enhancing the required infrastructure. This point has been criticized and litigated[1133] as going against national and international climate change policies.

[1126] National Development Plan 2013–2018. Published in the Official Gazette on May 25, 2013. Strategy 4.4.3. URL: http://www.dof.gob.mx/nota_detalle.php?codigo=5299465&fecha=20/05/2013 (the date of access: March 22, 2021).

[1127] National Development Plan 2019–2024. Published in the Official Gazette on July 12, 2019. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5565599&fecha=12/07/2019 (the date of access: March 22, 2021).

[1128] SENER. 2020–2024 Energy Sector Program. Published in the Official Gazette on July 8, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5596374&fecha=08/07/2020 (the date of access: March 22, 2021).

[1129] Ibid. Para. 6.4.

[1130] SENER. Update to the Transition Strategy to Promote Cleaner Technologies and Fuels. Published in the Official Gazette on February 7, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5585823&fecha=07/02/2020 (the date of access: March 22, 2021).

[1131] Relevant provisions on increase of energy production from clean sources are also contained in the Energy Transition law: by 2021, 30% of electric energy; and by 2024, 35% of electric energy. See Energy Transition Law, published in the Official Gazette on December 24, 2015, third transitional provision. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LTE.pdf (the date of access: March 22, 2021).

[1132] SENER. 2020–2024 Energy Sector Program. P. 81.

[1133] *Greenpeace v. Ministry of Energy and others.* Complaint filed on August 20, 2020. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200820_12534_complaint.pdf (the date of access: March 22, 2021).

652. As for 2020 target of increasing the share of clean energy, the percentage of clean energy production for 2020 was 29% according to the Development Program for the National Electric System,[1134] published in January 2021. Therefore, the target was not achieved. Likewise, it is projected that the goal for 2024 of reaching 35% of clean energy will be achieved only in 2025 and not 2024, as established by the Energy Transition Law[1135] and the Energy Sectoral Plan.

Environment

653. The current sectorial program on environment and natural resources was adopted in July 2020. This instrument sets as priority goals the following:

- to promote the conservation, protection, restoration, and sustainable use of ecosystems and biodiversity following a territorial and human rights-based approach;
- to strengthen the climate action to reach a low-carbon economy and resilience of population, ecosystem, and strategic ecosystems, supported by the available scientific, traditional, and technological knowledge;
- to promote water as a pillar of well-being;
- to promote an environment free of pollution;
- to strengthen environmental governance through public participation in decision-making processes and access to justice.[1136]

Health

654. The current Health Sectoral Plan[1137] envisages the necessity of updating the risk vulnerability diagnosis of the infrastructure of the health in accordance with scenarios produced by climate change. In this regard, it calls for monitoring the emerging risks related to climate change that may entail consequences for public health.[1138]

Communications and transport

655. Although the current Sectoral Plan for Communications and Transport 2020–2024[1139] lacks a clear climate target on transition to cleaner energy in the transport sector, the plan nevertheless refers to

[1134] PRODESEN is published by the Ministry of Energy and contains the planning of the National Electric System, covering the generation, transmission and distribution. SENER. Programa de Desarrollo del Sistema Eléctrico Nacional. Published on January 31, 2021. URL: https://www.gob.mx/sener/articulos/prodesen-2020-2034 (the date of access: March 22, 2021).

[1135] By 2021, 30% of the electric energy; and by 2024, 35% of the electric energy. See Energy Transition Law.

[1136] SEMARNAT. Sectoral Plan for Environment and Natural Resources 2020–2024. Published in the Official Gazette on July 7, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5596232&fecha=07/07/2020 (the date of access: March 22, 2021).

[1137] Ministry of Health. Sectoral Plan for Health 2020–2024. Published in the Official Gazette on August 17, 2020. URL: https://www.gob.mx/cms/uploads/attachment/file/570535/PROGRAMA_Sectorial_de_Salud_2020-2024.pdf (the date of access: March 22, 2021).

[1138] Ibid. Strategies 3.6 and 3.1.7.

[1139] SCT. Sectoral Plan for Communications and Transport 2020–2024. Published in the Official Gazette on July 2, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5596042&fecha=02/07/2020 (the date of access: March 22, 2021).

sustainability and provides for the adoption of pilot projects of electric mobility, reduction of GHG emissions, and mitigation of climate change.[1140]

Agricultural, territorial and urban development

656. The current Agricultural, Territorial and Urban Development Sectoral Plan[1141] fosters the integration of policies and actions related to climate change, risk management, mobility, and urban development. Likewise, it comprises a strategy to foster the update of construction regulations to include risk prevention and promote climate change mitigation and adaptation actions. Furthermore, strategy 4.3 entails fostering, in coordination with state and municipal governments, actions in relation to mitigation of and adaptation to climate change, as well as habitat risk management.[1142]

Agriculture and rural development

657. The Agriculture and Rural Development is Sectoral Plan[1143] adopted in June 2020, comprises a priority strategy aimed at promoting climate change adaptation and mitigation actions for proper risk management. In this regard, it points out the necessity to strengthen the adaptive and resilient capacity of the sector to tackle risks related to climate change. It also fosters coordinated use of genetic resources for food security and agriculture.[1144]

e. Review and evaluation

658. NSCC should be reviewed at least every ten years as regards mitigation of climate change and every six years as regards adaptation to it and, if necessary, updated.[1145] For this purpose, SEMARNAT and IMCCC will coordinate the review procedure with the assistance of the Council on Climate Change. PECC and state programs must be adjusted accordingly. Under no circumstance will the reviews and updates lessen the goals, projections, and objectives previously stated.[1146]

659. IMCCC may propose and approve adjustments or modifications to scenarios, trajectories, actions, or goals comprised in NSCC when: 1) new international commitments on the matter have been adopted; 2) new relevant scientific or technological knowledge is developed; 3) required by environment, natural resources, economy, energy, sustainable transportation, health, and alimentary security policies; and 4) indicated by the results of the evaluation carried by INECC's Coordination for Evaluation.[1147]

[1140] Ibid. Priority strategy 2.5.9 to goal 2.

[1141] Ministry of Agrarian, Rural and Urban Development. Sectoral Plan for the Agricultural, Rural and Urban Development. First published in the Official Gazette on June 26, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5595683&fecha=26/06/2020 (the date of access: March 22, 2021).

[1142] Ibid. Strategies 1.2.2, 3.2.1 and 4.3.

[1143] Ministry of Agriculture and Rural Development. Sectoral Plan for the Agriculture and Rural Development 2020–2024. Published in the Official Gazette on June 25, 2020. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5595549&fecha=25/06/2020 (the date of access: March 22, 2021).

[1144] Ibid. Strategies 3.2.1 and 3.3.1.

[1145] GLCC. Article 61.

[1146] Ibid.

[1147] SEMARNAT-INECC. Mexico's Climate Change Mid-Century Strategy, Mexico City, Mexico, 2016. P. 95.

660. The Overall national climate change policy is subject to evaluation by the Evaluation Body, at least every two years.[1148] The results of the evaluations should be considered in view of updating NSCC, PECC, and programs adopted by state and local governments. The results of the last evaluation were published in January 2019.[1149]

1.2. National Determined Contribution

661. Mexico submitted its first NDC on March 30, 2015, before the Paris Agreement was open to signature.[1150] The latest submission of Mexico to the UNFCCC Secretariat is its 2020 update to the original NDC.[1151] In terms of mitigation of climate change, Mexico commits to reduce GHG emissions by 22% and black carbon — by 51% compared to a baseline under a business-as-usual scenario. In terms of adaptation to climate change, the updated NDC concentrates on the course of action to be taken in the main sectors of economy.

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

a. State Obligations Regarding Implementation of Climate Strategy and Reporting

662. Under UNFCCC, Mexico prepares and submits to the Secretariat a National Inventory Report[1152] on GHG emissions on an annual basis, a Biennial Report[1153] on Mexico's efforts to combat climate change and progress in achieving GHG emission reductions targets, and quadrennial National Communications.[1154]

663. Public authorities in Mexico are subject to freedom of information regimes (both on regional[1155] and domestic[1156] levels) whereby they are required to disclose information on request from a member of the public (subject to exceptions). Climate-related information is made available to the public via a website.[1157]

[1148] GLCC. Articles 98 and 104.

[1149] INECC. Results and Recommendations from the Strategic Evaluation to the National Policy on Climate Change. Published in the Official Gazette on February 5, 2020. URL: http://www.dof.gob.mx/nota_detalle.php?codigo=5549585&fecha=05/02/2019 (the date of access: March 22, 2021).

[1150] UNFCCC. Intended Nationally Determined Contribution: Mexico. March 2016.

[1151] Nationally Determined Contributions 2020 Update. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Mexico%20First/NDC-Eng-Dec30.pdf (the date of access: March 22, 2021).

[1152] Latest available report is Mexico. 2019 National Inventory Report (NIR). URL: https://unfccc.int/documents/199233 (the date of access: March 22, 2021).

[1153] Mexico. Biennial update report (BUR) BUR 2. National Communication (NC). NC6. URL: https://unfccc.int/documents/185500 (the date of access: March 22, 2021).

[1154] Ibid.

[1155] Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean. Adopted in Escazú, Costa Rica, on March 4, 2018. The Agreement is to enter into force on April 22, 2021. URL: https://www.cepal.org/en/escazuagreement (the date of access: March 22, 2021).

[1156] GLCC. Articles 26(X) and 106-108.

[1157] CEPAL. Cambio climático. URL: https://www.cepal.org/es/temas/cambio-climatico (the date of access: March 22, 2021).

b. Private Parties Reporting and Disclosure Obligations

664. The main enforceable obligation derived from GLCC[1158] is the duty to report emissions to SEMARNAT by presenting an Annual Operating Card. For this purpose, GLCC created the National Registry of Emissions in which emissions by stationary[1159] or mobile[1160] sources[1161] are recorded.

665. The obligation to report GHG emissions is imposed on persons responsible for operating activities within energy, transport, industrial, agricultural and livestock, waste, commerce, and service sectors in case emissions equal or exceed 25,000 tons of CO_2 per year.[1162] The Regulations on the Emission Registry further specify subsectors, specific activities, and GHG gasses and compounds to clarify the scope of the reporting obligation.[1163] Persons covered by the reporting obligation are to keep the information, data, and other documents related to their reports for a period of five years after reporting.[1164]

666. This obligation is enforced by the Mexican Federal Prosecutor for Environment Protection. The administrative procedure emerging from the obligation to report emissions is governed[1165] by GLCC, General Law on Ecological Equilibrium and Environment Protection, and the Federal Administrative Procedure Law.[1166]

c. Incentives and Financial Mechanisms

667. In order to incentivize compliance with the climate targets established in the Mexican climate national policy, GLCC provides for an opportunity to design such economic instruments as taxes, financial mechanisms, or trade instruments.[1167]

[1158] GLCC, Chapter 8.

[1159] Those permanently and physically allocated in a determined site from which activities and development GHG are produced. This definition comprises sites involving industrial, commercial, services, agricultural, forest, waste disposal and waste water treatment activities.

[1160] Any machinery or equipment with no permanent site but able to produce GHG emissions while operating internal combustion engines. This include all kind of vehicles or machinery non-attached to stationary sources but works through an internal combustion engine.

[1161] Regulations to the General Law on Climate Chance on the National Registry of Emissions. Published in the Official Gazette on October 28, 2014. Articles 2 (IV and V). URL: http://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGCC_MRNE_281014.pdf (the date of access: March 22, 2021).

[1162] Regulations to the General Law on Climate Chance on the National Registry of Emissions. Articles 3–6.

[1163] GLCC. Article 87; Regulations to the General Law on Climate Chance on the National Registry of Emissions. Articles 3, 4 and 5.

[1164] Supreme Court of Justice of Mexico. Jurisprudence 2a./J. 34/2013 (10a.). Second Chamber. March 31, 2013.

[1165] Supreme Court of Justice of Mexico. Jurisprudence 2a./J. 34/2013 (10a.). Second Chamber. March 31, 2013.

[1166] GLCC. Articles 111–116; General Law on Ecological Equilibrium and Environment Protection. First adopted on January 26, 1988, last amendment adopted on June 5, 2018. Articles 176–181; Federal Administrative Procedure Law. First published in the Official Gazette on August 4, 1994, last amendment published on May 18, 2018. Articles 83–96.

[1167] GLCC. Articles 90–95.

668. Furthering GLCC provisions, the Energy Industry Law establishes a clean energy certificate as a tool to foster the use of clean energies in the electric industry. This mechanism entails a series of rights, obligations[1168] , and respective sanctions.[1169]

669. Similarly, the Special Tax Law on Products and Services sets a carbon tax for the consumption and import of fossil fuels.[1170] As an alternative to pay the tax, the law provides for carbon credits (economic instrument established in UNFCCC and the Kyoto Protocol).[1171]

670. These mechanisms may be complementary to ETS which is currently under implementation.[1172] The mode of interplay and application of these mechanisms is to be decided upon.

d. Emission Trading System

671. ETS is one of the mitigation mechanisms established in GLCC[1173] in order to reach GHG emission targets set on the national and international levels.[1174] The architecture of ETS retakes practices of the European Union and Canada. In this regard, Mexico received technical support from Germany as part of the International Climate Initiative and from the Partnership of Market Readiness of the World Bank. ETS is currently at the early stages of its implementation.

672. ETS is administered by SEMARNAT and INECC, in coordination with the Commission on Climate Change, the National Council on Climate Change, and the involved sectors (energy and industry sectors).

673. As a starting point, the 2018 amendment to GLCC provides for the establishment of a pilot ETS without economic effects for the participants: ETS entails no sanctions and the allowances are allocated for free based on historical emissions of entities.

674. In October 2019, the Government released regulations on the pilot phase of ETS, which comprise the timeframes and operation details of ETS. The pilot phase comprises two periods: the first period, running from January 1, 2020, to December 31, 2021, is the pilot phase of ETS and the second period, running from January 1, 2021, to December 31, 2022, will be the transition phase from the pilot program to the operative phase of ETS.[1175] The regulations for the second period will be published in 2022.

[1168] Electric Industry Law. First published in the Official Gazette on August 11, 2014, last amendment published on November 6, 2020. Article 3 (VIII) and articles 121–129. See also Regulations to the Electric Industry Law, published in the Official Gazette on October 31, 2014. Articles 83 and 84.

[1169] Energy Regulatory Commission. Resolution establishing the criteria for imposing sanctions derived from breaching obligation related to clean energies, published in the Official Gazette on April 27, 2016.

[1170] Special Tax Law on Products and Services. First published in the Official Gazette on December 30, 1980, last amendment published on December 9, 2019. Articles 1(I) and 2 (I) (H).

[1171] Ibid. Articles 2(1)(H) and 5.

[1172] See GIZ-SEMARNAT. Clean Energy Certificates and Emissions Trading in Mexico: Reciprocal Effects and Interactions, 2018. URL: https://www.giz.de/en/downloads/giz2019-EN-Clean-Energy-Certificates.pdf (the date of access: March 22, 2021).

[1173] GLCC. Article 94.

[1174] For a general overview on the status of the ETS in Mexico, see ICAP. Mexico: ETS Detailed Information, 2019. Last updated on February 23, 2021. URL: https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems[]=59 (the date of access: March 22, 2021).

[1175] SEMARNAT. Decree Establishing the Preliminary Basis for the ETS Pilot Program. Published in the Official Gazette on October 1, 2019. Article Sixth. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5573934&fecha=01/10/2019 (the date of access: March 22, 2021).

675. ETS operates on a "cap and trade" basis. It covers those activities whose direct CO_2 emissions derived from stationary sources are at or above 100,000 tons of CO_2. The system applied to the industry[1176] and energy[1177] sectors.[1178]

676. On November 27, 2019, the Government issued the caps for the first period, allocating values as follows:

- 2020: 271.3 megatonnes of CO_2;
- 2021: 273.1 megatonnes of CO_2.[1179]

677. Finally, under Article 95 of GLCC, participants to ETS may conduct transactions and operations linked to emission trading systems of other countries or the international system of emission trading. Mexico concludes the Paris Declaration on Carbon Pricing in the Americas[1180] and intends to participate in the Carbon Offsetting and Reduction Scheme for International Aviation.[1181]

2.2. Enforcement and Accountability

a. Measures to Ensure Implementation

678. GLCC follows the principle of environmental liability, which entails that anyone performing activities that affect or may affect the environment is obliged to prevent, mitigate, repair, restore, and compensate for the harm.[1182]

679. Federal Law on Environmental Liability[1183] elaborates on the reparation and compensation mechanisms standards which are also applicable in other judicial procedures of a criminal, administrative, and constitutional character.[1184] The procedure established in this law is open to individual and legal persons who are seeking compensation for environmental damage. The plaintiffs should probe the causal link between the activity and the environmental harm, for this purpose, technical and scientific evidence can be used.[1185]

[1176] Fossil-fuel exploitation, production, transport, and distribution; and electricity generation, transmission, and distribution subsectors.

[1177] Automobiles, cement, lime, chemical industry, food and beverages, glass, iron, steel, metallurgical, mining, petrochemicals, pulp and paper, and other sectors generating direct emissions from stationary sources subsectors.

[1178] SEMARNAT. Decree Establishing the Preliminary Basis for the ETS Pilot Program. Article Seventh.

[1179] SEMARNAT. Notice on the Emission Trade System Pilot Phase, published on the November 27, 2019. URL: https://www.gob.mx/cms/uploads/attachment/file/513702/Aviso_Tope.pdf (the date of access: March 22, 2021).

[1180] See the text of the declaration. URL: https://www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/international-collaboration/paris-declaration-carbon-pricing-americas.html (the date of access: November 30, 2020).

[1181] See ICAO. Climate Change Mitigation: CORSIA. URL: https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20Environmental%20Report%202019_Chapter%206.pdf (the date of access: March 22, 2021).

[1182] GLCC. Article 26 (VIII).

[1183] Federal Law on Environmental Liability. First published in the Official Gazette on June 7, 2013. Article 1. URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/LFRA.pdf (the date of access: March 22, 2021).

[1184] Ibid. Article 3.

[1185] Ibid. Articles 34–36.

680. Administrative or criminal sanctions may follow a breach of obligations enshrined in or deriving of GLCC. For instance, as regards GHG reporting obligation, failure to submit information, data, or required documents to SEMARNAT within a prescribed deadline or submission of false information is followed by fines irrespective of potential further civil liability or criminal responsibility.[1186] Provision of false information in order to comply with environmental obligations is punishable under the Federal Criminal Code by a fine and a term of imprisonment for up to four years.[1187]

b. Accountability

681. GLCC is silent on accountability mechanisms that can be used to bring direct claims against government agencies for failing to comply with climate targets. The Mexican judicial system, nevertheless, provides for tools to bring a claim against the government for failing to comply with its climate targets in connection with international obligations derived from the Paris Agreement and regional human rights instruments. These could be administrative or constitutional mechanisms.

682. As established in the climate change litigation section (**paras. 683–685 of the Analytical Report**), Mexican courts heard climate cases in which regulations or public policy instruments adopted by the government were challenged on the basis of alleged contradiction to the targets and goals established in GLCC. As a most recent example, in early March 2021, the Second District Court on Administrative Matters Specialized on Economic Competition, Broadcasting and Telecommunications granted several provisional suspensions requested by companies against the decree amending the Electric Industry Act, published on March 9, 2021.[1188] On March 17, 2021, the Ministry of Energy challenged these decisions.[1189]

3. Climate Litigation

683. Climate matters are litigated in Mexico between NGOs/groups of citizens and governments and mainly focus on the alleged breach of the right to a healthy environment. This trend is in line with the recent jurisprudence of the Inter-American Court on Human Rights concerning the human right to a healthy environment.[1190]

684. Among recent cases, the following can be noted:

- *Amendment to Ethanol Fuel Rule — Supreme Court of Mexico* — NGOs "Centro Mexicano de Derecho Ambiental" and "Poder del Consumidor" challenged a federal amendment allowing to increase the amount of ethanol in gasoline sales. The NGOs alleged that the amendment violated the human right to a healthy environment due to the effects of ethanol on climate change and its relation to human rights. On January 22, 2020, the Supreme Court of Mexico found in favor of plaintiffs and held, in particular, that the Mexican Energy Regulatory Commission failed to consider Mexico's international obligations under Article 4(13) of the Paris Agreement and comply with

[1186] GLCC. Articles 114 and 155.

[1187] Federal Criminal Code. First published in the Official Gazette on August 14, 1931, last amendment published on July 1, 2020. Article 420 Quarter (II). URL: http://www.diputados.gob.mx/LeyesBiblio/pdf/9_010720.pdf (the date of access: March 22, 2021).

[1188] Decree of amendment to the Electric Industry Act. Published in the Official Gazette on March 9, 2021. URL: https://www.dof.gob.mx/nota_detalle.php?codigo=5613245&fecha=09/03/2021 (the date of access: March 22, 2021).

[1189] Secretaría de Energía impugna la suspensión de la reforma eléctrica. URL: https://www.forbes.com.mx/secretaria-de-energia-impugna-la-suspension-de-la-reforma-electrica/ (the date of access: March 22, 2021).

[1190] IACtHR. *Human rights and the environment*. Advisory Opinion OC-23/17. Series A, No. 23; IACtHR. *Case of the Indigenous Communities of the Lhaka Honhat Association (Our Land) v. Argentina*. Reparations and Costs. Judgment of February 6, 2020. Series C No. 400.

GLCC's requirements concerning public participation and the precautionary principle.[1191] The Second Chamber also found that economic reasons could not outweigh the environmental harm derived from the activity;[1192]

- *Greenpeace Mexico v Ministry of Energy and Others (1)* — the litigation also concerned the alleged violation of the right to a healthy environment and Mexico's international obligations in the climate sphere. Likewise, the case was decided in favor of the plaintiffs;[1193]

- *Youth v Government of Mexico* — pending litigation concerning the alleged violation of the right to a healthy environment in respect of 15 young people and future generations.[1194] The plaintiffs allege a lack of regulations to implement GLCC;

- *Greenpeace Mexico v Ministry of Energy and Others (2)* — pending litigation concerning the alleged violation of the right to a healthy environment by the Energy Sector Program for 2020–2024 due to alleged fostering of fossil-fuel projects and decreasing competitiveness of renewable energy projects.[1195] The Energy Sector Program's application is currently suspended.[1196]

685. In sum, climate change litigation in Mexico is based on the reliance on the writ of *"amparo"* ('defense') as a constitutional control mechanism to challenge administrative acts issued by the executive and legislative branches.[1197] Since the writ of *"amparo"* implies an analysis of potential constitutional violations and human rights, climate change litigation follows a trend of constitutional law and human rights-based claims.

[1191] Supreme Court of Mexico. *Amparo en Revision 610/2019*. Second Chamber. Decision of January 22, 2020. P. 76-80. URL: https://www.scjn.gob.mx/sites/default/files/listas/documento_dos/2020-01/AR%20610-2019.pdf (the date of access: March 22, 2021).

[1192] Ibid. P. 80–81.

[1193] Greenpeace Mexico. Greenpeace Mexico obtain Amparo. Press Release. November 19, 2020. URL: https://www.greenpeace.org/mexico/noticia/9194/acuerdo-del-cenace-y-politica-de-confiabilidad-de-la-sener-invalidados-y-sin-efecto-greenpeace-obtiene-amparo/ (the date of access: March 22, 2021).

[1194] *Youth v. Government of Mexico*. Thirteenth District Court on Administrative Matters. Decision on Admissibility. March 5, 2020. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200902_12113_complaint.pdf (the date of access: March 22, 2021).

[1195] *Greenpeace v. Ministry of Energy and others*. Complaint filed on August 20, 2020. URL: http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200820_12534_complaint.pdf (the date of access: March 22, 2021).

[1196] *Greenpeace Mexico v. Ministry of Energy and Others.* URL: http://climatecasechart.com/non-us-case/greenpeace-mexico-v-ministry-of-energy-and-others/#:~:text=Summary%3A,Sector%20Program%20for%202020%2D2024.&text=The%20Court%20suspended%20the%20program,that%20is%20difficult%20to%20repair (the date of access: March 22, 2021).

[1197] See *de la Garza J. M. S.* Amparo // Max Planck Encyclopedia of Comparative Constitutional Law. URL: https://oxcon.ouplaw.com/view/10.1093/law-mpeccol/law-mpeccol-e200 (the date of access: March 22, 2021).

XI. CHINA

Executive Summary

686. In the absence of a unified climate-specific document, China's national strategy has been formulated in a number of policy papers and state planning documents. While the Climate Law is being developed, the main laws regulating, *inter alia*, climate issues are the Environmental Protection Law, the Law on the Prevention and Control of Atmospheric Pollution. In addition, the climate strategy is formulated in a number of documents, namely policy papers (including programs, action plans, strategies, which can be general and area-specific) and state planning documents (including national five-year social and economic development plans and sectoral five-year development plans).

687. In its First NDC submitted under the Paris Agreement China committed to achieve peak emissions by 2030. Moreover, in September 2020 China announced its intention to become carbon neutral by 2060.

688. The climate strategies are implemented mainly through national standards and through reporting requirements for state authorities and private parties.

689. Moreover, China is developing its own national emission trading system that is currently undergoing its test phase and covers only the electricity generation sector.

690. Climate matters are litigated in China in strict accordance with government policies and the number of climate cases is limited at the moment.

1. Climate Policy in China

1.1. National Climate Legislation and Policies

a. National legislation and Policy Documents

691. The Chinese Government started to work on the national strategy in the field of climate change in 2007 when China overtook the United States position of the world's biggest dioxide carbon emitter.[1198] In recent years, Chinese authorities make efforts to develop a multifaceted national strategy for mitigation and adaptation to climate change. As a result, a significant regulatory framework including laws, by-laws, and other government regulations has been created.

692. In China, there is currently no unified document dealing exclusively with climate change issues. Instead, the national strategy has been formulated in a number of policy papers and state planning documents.

693. Although the Chinese Government started drafting the Climate Law in early 2009, it is still under development. The first draft was released for public discussion in 2012. The draft Climate Law structure and content mainly reflected previously adopted climate papers. Despite the fact that the law was generally finalized in 2014,[1199] further legislation process has been delayed, as some experts believe, due to the lack of relevant technologies and a clear understanding of some core issues.[1200]

694. According to Chinese experts, the Climate Law was expected to become the fundamental, comprehensive framework law that would have played a guiding role in developing and integrating national and regional climate change regulations[1201] and would have established general principles, main systems and measures, legal responsibilities, etc.

695. The EPL[1202] is a basic environmental law that also contains provisions on climate change. It is an implementing act that specifies rights and obligations[1203] as well as legal liability[1204] of governmental bodies, enterprises, and individuals.[1205] Under the EPL national and local governments work out national

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[1198] *Vidal J., Adam D.* China overtakes US as world's biggest CO_2 emitter. URL: https://www.theguardian.com/environment/2007/jun/19/china.usnews (the date of access: March 22, 2021).

[1199] 中国起草完成《气候变化应对法》草案 [China Complete Climate Law Draft]. URL: http://www.cma.gov.cn/2011xwzx/2011xqhbh/2011xdtxx/201407/t20140725_253673.html (the date of access: March 22, 2021).

[1200] *Zhang J., Jiang X., Pan X.* Regional legislation to address climate change in China: necessity and feasibility // International Journal of Climate Change Strategies and Management. Vol. 11. 2019. No. 4. P. 536-551. URL: https://www.emerald.com/insight/content/doi/10.1108/IJCCSM-05-2018-0046/full/pdf (the date of access: March 22, 2021).

[1201] *Mingde C., Tianyu Z.* Progress and Suggestions on Climate Change Legislation [in Chinese] // China Environment 2020.4. China Academic Journal Electronic Publishing.

[1202] 中华人民共和国环境保护法 [The Environmental Protection Law of the People's Republic of China]. URL: http://www.gov.cn/xinwen/2014-04/25/content_2666328.htm (the date of access: March 22, 2021).

[1203] Ibid. Chapters III–V.

[1204] Ibid. Chapter VI.

[1205] Ibid. Chapters III–V.

and local environmental protection plans[1206] aimed at promotion of clean energy with low pollutant emission.[1207]

696. The Law on the Prevention and Control of Atmospheric Pollution[1208] regulates, *inter alia*,[1209] greenhouse gas emissions by virtue of the 2015 amendments.[1210]

697. China's climate strategy is formulated in a number of documents, which can be subdivided (in general and not exhaustive manner) into policy papers (including programs, action plans, strategies, that can be both of general action and applied to the specific areas) and state planning documents (including national five-year social and economic development plans and sectoral five-year development plans).

698. The goals of the climate strategy are set relying on international obligations of China (**para. 718–721 of the Analytical Report**), current economic environment and technology level, determined on the basis of a scientific approach using relevant statistical data.[1211]

699. China's National Climate Change Program is the first climate change initiative adopted by the Chinese Government in 2007.[1212] The Program stipulated basic principles and set objectives to be achieved by 2010.[1213] Although the activities within the framework of the Program have now been completed, the foundations laid down in the document still determine the general course of Chinese policy in this area.

700. Initiatives formulated in the Program were integrated into the overall national economic and social development plans and in territorial and municipal plans.[1214] Although the national development plans are not considered as a part of the Chinese legislation, their provisions are obligatory, including binding targets and deadlines.[1215]

701. Moreover, the Program specified a list of laws and regulations that were expected to be formulated or improved. According to the Program, the Energy Law, the Renewable Energy Law, the Forest Law have been adopted; the Energy Conservation Law has been amended; the system of laws and regulations has been established and improved based on the existing Law of Agriculture, the Law of Grassland, the Law on Land Management, the Marine Environment Protection Law; the relevant laws and regulations have been

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[1206] Ibid. Article 13.

[1207] Ibid. Article 40.

[1208] 中华人民共和国大气污染防治法 [The Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution]. URL: http://www.mee.gov.cn/ywgz/fgbz/fl/201811/t20181113_673567.shtml (the date of access: March 22, 2021).

[1209] In the context of this Law, "pollutants" include both GHG and other elements such as dust. The Law mentions some GHGs: methane (Article 34), nitrogen and sulfur oxides (Article 43).

[1210] *Lijian Z., Xie T., Tang J.* How China's new air law aims to curb pollution. URL: https://chinadialogue.net/en/pollution/8512-how-china-s-new-air-law-aims-to-curb-pollution/ (the date of access: March 22, 2021).

[1211] United Nations. Climate Change. China. National communication (NC). NC 3. Chapter 4. URL: https://unfccc.int/documents/197660 (the date of access: March 22, 2021).

[1212] China's National Climate Change Programme. URL: https://en.ndrc.gov.cn/newsrelease_8232/200706/P020191101481828642711.pdf (the date of access: March 22, 2021).

[1213] Ibid. Foreword.

[1214] Ibid. Part 4. Preamble.

[1215] *Troshchinsky P.* The legal system of China. IDV RAN, 2016. P. 47. [in Russian].

implemented in order to strengthen the Law on Prevention of Environmental Pollution Caused by Solid Waste.[1216]

702. In 2007, China's Science and Technology Actions on Climate Change[1217] has been promulgated. The paper aimed to strengthen climate mitigation measures and develop the necessary scientific and technical base.

703. In addition, in 2013, the Chinese Government issued China's National Climate Adaptation Strategy that outlines specific measures and principles to be implemented by 2020 for the purpose of climate change adaptation.[1218]

704. A year later the provisions formulated in Program have been further expanded in the 2014–2020 Plan,[1219] and the further development of the regulatory framework continued during the implementation of the plan. In particular, several narrowly focused regulatory documents have been developed, for example, the Management Method for Assessing and Labelling Green Construction Material, the Interim Measures for the Promotion and Management of Energy-Saving, Low Carbon Technologies, the Action Plan on Prevention and Control of Air Pollution.[1220]

705. The measures addressing climate change are mirrored in state planning documents, which are the 12th, 13th, and 14th Five-Year National Economic and Social Development Plans. The nationwide priorities to be achieved by 2020 were stipulated in the 13th Five-Year Plan[1221] which was divided into three sections: GHG Emissions Control, Adaptation to Climate Change, and International Cooperation. Further goals are set in the 14th Five-Year Plan published in March 2021.[1222]

706. Priorities set in the national plan are further elaborated in a number of documents. For the 13th Five-Year period these documents were:

- the 13th Five-Year Work Plan for Controlling GHG Emissions;[1223]
- the Nationwide Energy Conservation Action Plan during the 13th Five Year Plan;[1224]

[1216] The Program, Part 4.

[1217] 中国应对气候变化科技专项行动 [The China's Science and Technology Actions on Climate Change]. URL: http://www.mee.gov.cn/gkml/hbb/gwy/200910/W020071122477729724814.pdf (the date of access: March 22, 2021).

[1218] 国家适应气候变化战略 [The National Strategy for Climate Change Adaptation]. URL: https://www.gov.cn/gzdt/att/att/site1/20131209/001e3741a2cc140f6a8701.pdf (the date of access: March 22, 2021).

[1219] 国家应对气候变化规划 (2014-2020 年) [The National Climate Change Plan for 2014-2020]. URL: https://climate-laws.org/geographies/china/policies/national-plan-for-tackling-climate-change-2014-2020 (the date of access: March 22, 2021).

[1220] Ibid. Part I.

[1221] The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China (2016–2020). Part X. Chapter 46. URL: https://en.ndrc.gov.cn/policyrelease_8233/201612/P020191101482242850325.pdf (the date of access: March 22, 2021).

[1222] For a brief overview, see *Meidan M. at al.* Key issues for China's 14th Five Year Plan // The Oxford Institute for Energy Studies. March 2021. URL: https://www.oxfordenergy.org/wpcms/wp-content/uploads/2021/03/Key-issues-for-Chinas-14th-Five-Year-Plan.pdf (the date of access: March 22, 2021).

[1223] '十三五'控制温室气体排放工作方案 [The 13th Five-Year Work Plan for Controlling GHG Emission]. URL: http://www.ncsc.org.cn/SY/zywj/202003/t20200323_770035.shtml (the date of access: March 22, 2021).

[1224] United Nations. Climate Change. China. National communication (NC). NC 3.

- the Comprehensive Work Plan on Energy Conservation and Emission Reduction for the 13th Five-Year Plan (updated following achievement of the first-set targets).[1225]

707. New work plans are expected to be developed under the 14th Five-Year Plan, including an action plan to achieve peak carbon emissions by 2030.[1226]

708. Finally, the first national-level Climate Change Special Plan is currently being drafted by the MEE.[1227]

b. Scope of the Climate Strategy

709. China's climate strategy is comprehensive. Policy papers include climate change mitigation and adaptation measures in a number of areas (economics, management, legislative work, science and technology, statistics and analysis) together with sectoral measures (in energy, infrastructure, industry, agriculture, forestry, water resources, and coastal areas sectors).[1228]

710. While adaptation measures include a number of specific actions that are or ought to be taken in different sectors, measures on mitigation imply adjusting the industrial structure, improving energy conservation and efficiency, optimizing energy structure, controlling emission from non-energy activity, increasing carbon sinks capacity.

c. Institutional Framework

711. In June 2007, the Chinese Government set up the National Leading Group on Climate Change, Energy Conservation, and Emissions Reduction.[1229] It is a cross-department coordination organization, the main tasks of which are the development of national strategies, policies, and measures in the field of climate change, making overall arrangements related to climate change regulations, study, and review of international cooperation and negotiation proposals, dealing with the main issues related to climate change. Under the guidance of the Central Government of China, territorial and municipal governments have established Provincial Leading Groups on Climate Change.[1230]

712. In 2012, the National Center for Climate Change Strategy and International Cooperation was established[1231] in order to ensure the implementation of climate measures. The Center conducts research

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[1225] Ibid.

[1226] 中华人民共和国国民经济和社会发展第十四个五年规划和2035年远景目标纲要 [The 14th Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-Term Goals for 2035]. Chapter 38. Section 4. URL: https://baijiahao.baidu.com/s?id=1694091087066118819&wfr=spider&for=pc (the date of access: March 22, 2021).

[1227] Statement: China's 14th Five-Year Plan Sets Foundation for Climate Action, But Important Details Are Still Needed. URL: https://www.wri.org/news/2021/03/statement-china-s-14th-five-year-plan-sets-foundation-climate-action-important-details (the date of access: March 22, 2021).

[1228] Noteworthy, Chinese government primarily ocused mainly on adaptation. The Program, Part I, Article 2 stipulated, that "for developing countries, mitigation is considered as a long and arduous challenge while adaptation to climate change is a more present and imminent task."

[1229] 国务院关于成立国家应对气候变化及节能减排工作领导小组的通知 [Notice of the State Council on the Establishment of the National Leading Group on Climate Change, Energy Conservation and Emissions Reduction]. URL: http://www.mee.gov.cn/zcwj/gwywj/201811/t20181129_676429.shtml?keywords=气候 (the date of access: March 22, 2021).

[1230] Ibid.

[1231] Ibid.

in the field of climate change, provides technical support for national projects, carries out statistical analysis and data evaluation.[1232]

713. In 2018 MEE was established.[1233] The responsibilities on controlling GHG emissions and combating climate change were transferred to it from the National Development and Reform Commission.[1234] MEE is authorized to guide and coordinate the enforcement of China's environmental laws.[1235] While MEE exercises administration at the national level, the people's territorial and municipal governments are responsible for administration and monitoring at the local level.

d. Sectoral Climate Strategies

714. Sectoral climate strategies are developed either in furtherance of national program documents or under five-year plans. Most of the sectoral documents set goals and action plans taking into account the conditions of a specific industry. Provisions regarding climate change can be provided as a separate climate change strategy (for example, the Action Plan of Industries Addressing Climate Change for 2012–2020)[1236] or be integrated into the overall development plan (for example, the Nationwide Energy Conservation Action Plan during the 13th Five Year Plan).[1237]

715. The sector-specific national climate strategies provide for more detailed recommendations and actions for a particular sector within a prescribed period of time. The sectoral goals strictly correspond to the objectives specified in the programs of an upper level or the planning documents.

716. However, to some extent, the Chinese Government implements a 'bottom-up approach' which implies a possibility of testing some schemes on the regional level. This is more common for pilot projects in provinces and cities or for those aspects in relation to which it is difficult to formulate regulations at the current stage.[1238]

717. Since 2007, the Chinese Government has been extending efforts in order to formulate and improve the regulatory framework through sectoral laws and regulations (**paras. 701 and 704 of the Analytical Report**). Laws and regulations are developed as part of the unified framework and follow guidelines of the national climate change programs and national development plans.

[1232] 国家应对气候变化战略研究和国际合作中心 [National Center for Climate Change Strategy and International Cooperation]. URL: http://www.ncsc.org.cn/gyzx/zxjj/ (the date of access: March 22, 2021).

[1233] *Jinpeng W.* Reform of China's Environmental Governance: The Creation of a Ministry of Ecology and Environment // Chinese Journal of Environmental Law. 2 (2018). P. 112-117.

[1234] Ibid.

[1235] 深化党和国家机构改革方案 [The Plan on Deepening Reform of Party and State Institutions]. Central Committee. URL: http://www.gov.cn/zhengce/2018-03/21/content_5276191.htm#1 (the date of access: March 22, 2021).

[1236] 工业领域应对气候变化行动方案 (2012-2020 年) [The Action Plan of Industries Addressing Climate Change for 2012–2020]. URL: https://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057542/n3057544/c3865061/part/3865062.pdf (the date of access: March 22, 2021).

[1237] See 能源发展"十三五"规划 [The Nationwide Energy Conservation Action Plan during the 13th Five Year Plan]. URL: https://policy.asiapacificenergy.org/sites/default/files/能源发展"十三五"规划pdf.pdf (the date of access: March 22, 2021).

[1238] *Zhang J., Jiang X., Pan X.* Regional legislation to address climate change in China: necessity and feasibility. P. 536-551.

1.2. Nationally Determined Contribution and Integration of International Commitments into the National Climate Strategy

718. International obligations are mainly integrated into strategic programs and state planning documents but are not directly integrated into Chinese laws. Still, environmental standards set on the basis of legislation are developed with due consideration to the national goals and international obligations of China.[1239]

719. The Program was issued in order to fulfill China's international obligations[1240] and in strict accordance with the requirements of Articles 4–6 of the UNFCCC.

720. International obligations of China are also highlighted in the 14th Five Year Plan: China is planning to lead international cooperation on climate change, promote the implementation of the UNFCCC and the Paris Agreement, and actively carry out South-South cooperation in the field of climate change.[1241]

721. In 2015, after the Paris Agreement adoption, in which China took an active part, the Chinese Government reviewed its national targets and committed to achieve emission peak CO_2 emissions by 2030.[1242] On September 22, 2020, President Xi Jinping in his speech at the UN General Assembly confirmed China's intention to reach a peak by 2030 and announced plans to become carbon neutral by 2060.[1243] Further, China's goals regarding the timeline for achieving emission peak by 2030 and carbon neutrality by 2060 were also confirmed within the 14th Five Year Plan.[1244]

2. Implementation and Enforcement of Climate Policy

2.1. Implementation Mechanisms

722. In China, standards are one of the main tools for implementing climate strategies. In particular, there are national standards for environmental quality that are set by MEE[1245] and national standards for the discharge of pollutants elaborated on their basis.[1246] In addition, territorial and municipal governments may establish their local environment quality standards when national standards are absent or in order to strengthen the existing ones.

723. Control over pollutants emission is carried out through the system of reporting by business entities and supervisory authorities.[1247] The relevant legislative procedures are provided for in the EPL and the

[1239] The Program, Foreword.

[1240] Ibid.

[1241] The 14th Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-Term Goals for 2035. Chapter 38. Section 4.

[1242] NDC Registry. China First NDC. URL: https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=CHN (the date of access: March 22, 2021).

[1243] UN News. 'Enhance solidarity' to fight COVID-19, Chinese President urges, also pledges carbon neutrality by 2060. September 22, 2020. URL: https://news.un.org/en/story/2020/09/1073052 (the date of access: March 22, 2021).

[1244] The 14th Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-Term Goals for 2035. Chapter 38. Section 4.

[1245] EPL. Article 15.

[1246] Ibid. Article 16.

[1247] Ibid.

Environmental Impact Assessment Law. The reporting procedures most often imply the disclosure of information.

724. The Chinese Government strictly obliges the importers (suppliers) of foreign goods/services to comply with national climate standards.[1248]

a. State Obligations Regarding the Implementation of Climate Strategy and Reporting

725. Under the UNFCCC, China prepares and submits to the Secretariat a Biennial Report[1249] on China's arrangements to address to issue of climate and a quadrennial National Communications.[1250]

726. On the national level, the authorities release environmental status bulletins with environmental quality, monitoring data of key pollutant sources, and other major environmental information on a regular basis. In addition, supervising departments add the information on environmental violation cases into archive systems (social credit information) and promptly disclose the list of lawbreakers to the public.[1251]

b. Private Parties Reporting and Disclosure Obligations

727. Under the EPL, governments establish a monitoring system,[1252] and the private parties are obliged to report on compliance with environmental standards.[1253] Enterprises are required to disclose the relevant information,[1254] while state representatives are empowered to conduct on-site inspections.[1255] In addition, the state applies risk control measures and establishes environmental emergencies response.[1256]

728. The Chinese legislation provides for both impact assessments and on-site audits carried out by the supervisory authorities. EIA is an obligatory procedure aimed at the assessment of potential environmental impacts of a proposed plan or construction project. Private entities are obliged to provide environmental information both at the construction stage and during the realization of a project. In addition to assessing the environmental risks of a proposed project, the EIA reports also propose measures to lower negative impacts, as well as respective monitoring measures.[1257] In order to obtain necessary data and effectively monitor compliance with the EIA reports, competent departments conduct on-site inspections.[1258] The information contained in such reports is disclosed and made public.[1259]

729. At the construction stage, the relevant information is submitted to the competent department responsible for the project's examination and approval. The department publishes the EIA reports upon

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[1248] Ibid. Article 46.

[1249]The People's Republic of China Second Biennial Update Report on Climate Change. December 2018. URL: https://unfccc.int/sites/default/files/resource/China%202BUR_English.pdf (the date of access: March 22, 2021).

[1250] China. National communication (NC). NC 3.

[1251] The EPL. Article 54.

[1252] Ibid. Article 17.

[1253] Ibid. Article 19.

[1254] Ibid. Articles 55-57.

[1255] Ibid. Article 24.

[1256] Ibid. Article 47.

[1257] The Environmental Impact Assessment Law of the People's Republic of China. Article 2.

[1258] EPL. Article 24.

[1259] Ibid. Articles 53 and 56.

receipt thereof, commercial secrets and confidential information excluded.[1260] In case construction starts before the EIA reports are approved, the competent government department orders to stop the construction, imposes a fine, and may require restoration of the construction sites.[1261]

730. During the realization stage, key emission units shall in good faith disclose the names of major pollutants, emission channels, emission volume and concentration, as well as information on pollution prevention and control facilities.[1262] Failure to disclose relevant information or provision of false environmental information empowers the competent government department to order full disclosure of information, impose a fine, and issue a public notice regarding the violation.[1263]

731. Apart from the EIA requirements, private parties are also expected to comply with the Chinese climate strategy. Program documents and state planning documents impose obligations on Chinese government bodies, enterprises, and citizens. As a result, companies are expected to introduce environmental strategies into their corporate strategies. A good example is provided by the leading government-related oil and gas company CNPC. In 2019, the company announced its Green Development Action Plan 2.0 which set up a task force for carbon emission management.[1264] Currently, the majority of Chinese companies do the same.

732. Noteworthy, citizens and organizations are entitled to report on alleged instances of environmental pollution and activities causing ecological damage carried out by any enterprises and individuals.[1265] If the reported information is verified, the informer receives a reward.[1266] State authorities that receive such a report shall keep the relevant information on the informants confidential, as well as protect their legitimate rights and interests.[1267] In case the information is reported by a staff member, subsequent retaliatory action is prohibited:[1268] for instance, termination of or change in an employment contract will be followed by sanctions prescribed by law.[1269]

c. Emission Trading

733. China is developing its own national emission trading system[1270] established in 2017 by the National Carbon Emission Trading Market Construction Plan (Power Generation Industry).[1271] Currently, the national carbon emission trading system is in its pilot phase and covers electricity generation.[1272] Upon testing and improvement of the national system, the market emission trading mechanism will be gradually introduced

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[1260] Ibid. Article 56.

[1261] Ibid. Article 61.

[1262] Ibid. Article 55.

[1263] Ibid. Article 62.

[1264] CNPC Annual Report 2019. Environment and Society. URL: http://www.cnpc.com.cn/en/2014enbvfgrme/202007/3a75135d51914f97a543139a5cacf971/files/42f3827d8b304eebaa85f03dc241794d.pdf (the date of access: March 22, 2021).

[1265] EPL, Article 57.

[1266] The Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution. Article 31.

[1267] EPL. Article 54.

[1268] The Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution. Article 31.

[1269] Ibid. Article 124.

[1270] Ibid. Article 21.

[1271] 全国碳排放权交易市场建设方案（发电行业）[The National Carbon Emission Trading Market Construction Plan (Power Generation Industry)]. URL: http://www.ncsc.org.cn/SY/tpfqjy/202003/t20200319_769749.shtml (the date of access: March 22, 2021).

[1272] Ibid.

for other industries.[1273] The national emissions market was formed in several stages; authorities took into account experience[1274] gained during the implementation of pilot projects launched in 2011 by the Chinese Government in seven provinces and municipalities.[1275]

734. The national emission trading system will operate on the basis of free or paid allocation of quotas for GHG emissions and certified voluntary emission reductions.[1276] The system currently operates only for quotas trading.

735. Carbon emission trading is based on the combination of government guidance and market operations.[1277] The emission trading market administration is divided into three stages: (1) initial allocation of quotas by the state, (2) emission trading, (3) quotas verification and settlement.

736. Procedures on allocation and management of quotas, as well as on quota verification and settlement have been provided for in the Interim Measures on Administration of Carbon Emission Trading issued in 2014.[1278]

737. Chinese experts acknowledge that the emission trading legal regulatory framework and established market mechanisms are insufficient and need to be improved. One of the tasks is to provide a specific concept of carbon emission from the Chinese theory of law perspective.[1279]

d. Financial Mechanisms and Other Incentives

738. Manufacturers of environmental protection equipment and respective service providers are supported and encouraged.[1280] If an enterprise achieves results on pollution reduction that are beyond statutory discharge standards, the government extends encouragement and support to such enterprise under the law.[1281] The government supports enterprises that act in order to improve the environment by way of, for instance, relocating business premises or shutting them down.[1282]

739. There is no carbon tax applied to the importers of foreign products in China. However, there is a general requirement that all imported goods (services) must strictly comply with Chinese national standards.[1283]

[1273] Ibid. Article 1, P. 2.

[1274] 林宣佐、姜昱妃。我国碳排放权交易体系的立法现状及对策 [Legislative Status and Correction Measures of Chinese Carbon Emission Trading System] // Modern Business Trade Industry. (25) 2019, P. 142-143.

[1275] 国家发展改革委办公厅关于开展碳排放权交易试点工作的通知 [Notice of the National Development and Reform Commission Office on the Work of Carbon Emission Trading Pilots]. URL: http://www.ncsc.org.cn/SY/tpfqjy/202003/t20200319_769725.shtml (the date of access: March 22, 2021).

[1276] 碳排放权交易管理暂行办法 [Interim Measures for the Administration of Carbon Emission Trading]. Article 3. URL: http://www.ncsc.org.cn/SY/tpfqjy/202003/t20200319_769746.shtml (the date of access: March 22, 2021).

[1277] Ibid. Article 4.

[1278] Ibid.

[1279] 林宣佐、姜昱妃。我国碳排放权交易体系的立法现状及对策 [Legislative Status and Correction Measures of Chinese Carbon Emission Trading System] // Modern Business Trade Industry (25) 2019, P. 142-143.

[1280] EPL. Article 21.

[1281] Ibid. Article 22.

[1282] Ibid. Article 23.

[1283] Ibid. Article 46.

2.2. Enforcement and Accountability

740. The EPL contains general provisions regarding taxation and legal liability. Tax rates and procedures are determined in the Environmental Protection Tax Law[1284] and the Rules for Implementation of the Environmental Protection Tax Law.[1285]

741. The EPL also contains provisions on environmental violations, respective procedures, and sanctions together with references to civil and criminal law norms. Government officials, enterprises, and individuals are covered by those provisions.[1286] For instance, those causing damage due to environmental pollution and ecological destruction shall bear tort liability in accordance with the Tort Liability Law;[1287] those committing a criminal offense and violating the EPL shall be investigated and punished under applicable criminal law norms.[1288] Disciplinary actions (varying from reprimands to dismissal) may be taken against government officials, persons directly in charge, and other personnel subject to liability.[1289]

742. The EPL contains provisions on the following administrative enforcement measures: fines;[1290] production restriction;[1291] suspension of production or operation;[1292] administrative detention.[1293]

743. Corresponding provisions on environmental violations are included in the Law on the Prevention and Control of Atmospheric Pollution: damage resulting from emissions of pollutants into the atmosphere is to be compensated in a manner prescribed by law,[1294] and in case of a criminal violation respective penalties will follow.[1295]

3. Climate Litigation

744. Climate matters are litigated in China. However, since state authorities are vested with a broad range of powers when it comes to regulating climate change issues, climate matters are litigated in strict accordance with government policies and their number is limited.[1296]

745. The most common cases are civil contractual disputes. Among contractual disputes, 27% involve energy management service contracts. The parties to these disputes are typically energy-saving service

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[1284] 中华人民共和国环境保护税法 [The Environmental Protection Tax Law of the People's Republic of China]. URL: http://www.gov.cn/xinwen/2016-12/26/content_5152775.htm (the date of access: March 22, 2021).

[1285] 中华人民共和国环境保护税法实施条例 [The Rules for Implementation the Environmental Protection Tax Law of the People's Republic of China]. URL: http://www.gov.cn/zhengce/content/2017-12/30/content_5251797.htm (the date of access: March 22, 2021).

[1286] EPL. Chapter VI 'Legal Liability'.

[1287] Ibid. Article 64.

[1288] Ibid. Article 69.

[1289] Ibid. Article 68.

[1290] Ibid. Article 59.

[1291] Ibid. Article 60.

[1292] Ibid. Article 60.

[1293] Ibid. Article 63.

[1294] The Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution, Article 125.

[1295] Ibid. Article 127.

[1296] *Zhao Y., Lyu S., Wang Z.* Prospects for Climate Change Litigation in China. Transnational Environmental Law, 8:2 (2019). P. 349-377. Cambridge University Press, 2019.

companies and industrial energy consumers that are in the process of transition to low-carbon production processes.

746. The second most frequent category is the one concerning the protection and transfer of technologies aimed at protecting the environment and biological diversity.[1297] Disputes arise between agricultural enterprises using biotechnology.[1298]

747. The significant feature of climate-related litigation in China is the high degree of influence that the policy of the Chinese Government has on the decision-making process. As a result, the role of courts is deliberately reduced, which distinguishes Chinese jurisprudence from the practice of other states.[1299]

[1297] Ibid.

[1298] Ibid.

[1299] Ibid.

XII. CORPORATE CLIMATE STRATEGIES

Executive Summary

748. All of the companies under consideration in all the corresponding sectors declare their intentions to reduce greenhouse gas emissions. However, their intentions vary in terms of specificity (general declaration / specific quantitative targets) and ambitiousness (reduction / full decarbonization).

749. The targets set by companies also vary in their temporal perspective. Almost all of the companies under consideration set their GHG emissions reduction targets for short-, mid-, and long-term perspectives. Most often, companies' mid-term perspectives (before 2030) coincide with the timeframe set in the UN Sustainable Development Goals which are at the heart of the 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015.[1300] Companies' long-term perspectives (before 2050) are consonant with the UNFCCC COP Decision 1/CP 21, which invited Parties to communicate their mid-century, long-term low greenhouse gas emission development strategies in accordance with Article 4, paragraph 19 of the Paris Agreement.[1301] For the purposes of this review the goals the companies set for the 2020s are therefore considered as the short-term goals. Due to the peculiarities of each sector and the differences in life cycle of their products/services, the time frames may, however, differ.[1302]

750. Hence, in their climate strategies the companies, though not bound by the mentioned UN instruments, follow the timeframes adopted by countries.

751. There is no unanimity among the considered companies as regards the base year (also referred to as "baseline") — a point in time against which future emissions and, accordingly, emission cuts are compared. The baseline chosen by different companies varies from 2005 to 2019. However, 2017 appears to be the most common choice. There is no unified methodology for selecting the base year. According to SBTi,[1303] companies can choose it of their preference.[1304]

752. The reduction targets are most often aligned with the Paris Agreement goal. On the other hand, it was not common among the considered companies to sign the Paris Pledge for Action, at the time the initiative was open for joining. Also, only 6 out of 20 companies (predominantly in the Power sector) participate in the SBTi which shows how much and how quickly the companies need to cut their GHG emissions.[1305]

[1300] United Nations, The 17 Goals. URL: https://sdgs.un.org/goals (the date of access: April 2, 2021).

[1301] United Nations Climate Change. Communication of long-term strategies. URL: https://unfccc.int/process/the-paris-agreement/long-term-strategies (the date of access: April 2, 2021).

[1302] For example, POSCO (Steel sector) shifts its short-, mid-, and long-term targets to 2030, 2040, and 2050 correspondently.

[1303] The SBTi is a partnership between Carbon Disclosure Project (CDP), the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi, *inter alia*, defines and promotes best practice in emissions reductions and net-zero targets in line with climate science, as well as provides companies with independent assessment and validation of targets. See Science Based Targets. Who we are. URL: https://sciencebasedtargets.org/about-us#who-we-are (the date of access: April 2, 2021).

[1304] Science Based Targets. New Resources and Criteria for Setting Science-based Targets. P. 32. URL: https://sciencebasedtargets.org/resources/legacy/2019/04/Asia-SBTi-update-webinar.pdf (the date of access: April 2, 2021).

[1305] This is without prejudice to the validity of targets of those companies that do not participate in SBTi.

753. Most of the companies commit to reaching net-zero emissions in mid- to long-term perspectives. Short-term goals may vary a lot depending on how a particular company understands emission reduction: some commit to reducing carbon emissions in absolute terms, others — to reduce carbon intensity of their operations/products.

754. The majority of the companies under consideration view their climate commitments as a part of their corporate social responsibility. With CSR performance being regularly disclosed in companies' annual reports, most companies are motivated to set climate targets in order to meet the expectations of their shareholders and investors. In this light, corporate climate activities are tightly interconnected with the ESG agenda, which provides for more concrete quantifiable indicators of compliance with corporate climate commitments. Moreover, it may be observed that companies with high level of ESG-compliance expect higher stock returns.[1306]

755. In setting their climate strategy, most of the companies under consideration also refer to customers' demand for "green" products and services (especially in the power sector), as well as to the companies' broader responsibility for the Planet.

756. Except for the steel sector, almost no company in its emissions reduction plan refers to national strategies or laws. The steel sector companies more readily point out that their strategies follow the national climate goals of the respective countries. However, the companies often refer to the benchmarks set by the Paris Agreement, while their target years echo the time frames set for countries: 2030 and 2050.

757. Carbon capture, utilization, and storage, renewables, energy efficiency improvements are the most commonly referred to tools for achieving emissions reduction targets. Among renewables, the most frequently referred to sources are solar, wind, biofuels, and hydrogen.

758. Though some emissions reduction measures are common across the sectors under consideration (e.g. reduction of direct emissions from operation and energy efficiency), there are certain peculiarities in how the companies of a particular sector tackle their emissions. The most common measures among the companies under consideration are:

- oil&gas: reduction of direct emissions from operations, CCUS; with the growing importance of energy transitions (switching to renewable sources);
- power: growing reliance on renewables sources of electricity;
- transportation: energy efficiency (low-emission fleet, fuel efficiency);
- steel: CCUS, hydrogen steel making.

759. In their transition to renewables and low-emission fuel alternatives, every sector has a pertinent technology solution available to facilitate that shift. Aviation and shipping sub-sectors, however, are lagging behind other sectors under consideration as the current state of technologies does not allow companies to substitute their fleet with zero-emission airplanes and vessels. The companies in the mentioned sub-sectors, however, are actively exploring lower-emission fuel solutions and energy-efficient carriers.

760. Green financing (green bonds) becomes an increasingly important and frequently used tool for companies to implement their green transition initiatives.

[1306] See PRI. Linking ESG ratings to returns and volatility. URL: https://www.unpri.org/listed-equity/linking-esg-ratings-to-returns-and-volatility/164.article (the date of access: March 22, 2021); Amundi Research. The Alpha and Beta of ESG investing. URL: https://research-center.amundi.com/article/alpha-and-beta-esg-investing (the date of access: March 22, 2021).

761. Though a state policy of tackling the impact on climate change, carbon pricing is becoming increasingly advocated in the oil&gas sector and fully supported by the companies under consideration in the power sector. The companies of the transportation and steel sectors tend to avoid discussing the policy in their climate strategies.

1. Introduction

762. The review covers four high-carbon intensive sectors: oil&gas,[1307] power,[1308] transportation,[1309] and steel,[1310] and analyzes corporate climate strategies of the five most prominent representatives from each sector.

a. Sectors

763. The oil&gas and the power sectors are by far the greatest contributors to global GHG emissions. Global energy-related CO_2 emissions in 2019[1311] amounted to around 33 gigatons.[1312] The oil&gas sector alone accounts for 42% of global GHG emissions: 9% direct (so-called "Scope 1"[1313]) and indirect ("Scope 2") emissions from operations; 33% — emissions from its value chain ("Scope 3" emissions). The power sector accounts for 27% of global GHG emissions.[1314]

[1307] Reviewed companies of the **oil&gas** sector: China Petroleum & Chemical Corporation (Sinopec), Royal Dutch Shell (Shell), Saudi Aramco, British Petroleum (BP), ExxonMobil. See Offshore Technology. Top ten oil and gas companies in 2020. URL: https://www.offshore-technology.com/features/top-ten-oil-and-gas-companies-in-2020/ (the date of access: April 2, 2021).

[1308] Reviewed companies of the **power** sector: Enel, Electricite de France (EDF), E.ON, Iberdrola, Exelon. See Offshore Technology. Top ten power companies in 2020. URL: https://www.power-technology.com/features/top-ten-power-companies-in-2020/ (the date of access: April 2, 2021).

[1309] Reviewed companies of the **transportation** sector: United Parcel Service (UPS), Deutsche Post, Delta Airlines, Lufthansa, A.P. Moller–Maersk. See Fortune. Global 500: Sector — Transportation. URL: https://fortune.com/global500/2019/search/?sector=Transportation (the date of access: April 2, 2021).

[1310] Reviewed companies of the **steel** sector: China Baowu Group, ArcelorMittal, POSCO, Nippon Steel Corp, Thyssenkrupp Group. See Fortune. Global 500: Industry — Metals. URL: https://fortune.com/global500/2019/search/?industry=Metals (the date of access: April 2, 2021).

[1311] The review specifically choses 2019 as the basis for emissions comparison as this is the closest "business as usual" year, free from pandemic distortions and market abnormalities of 2020.

[1312] IEA. Global CO2 emissions in 2019. URL: https://www.iea.org/articles/global-co2-emissions-in-2019 (the date of access: April 2, 2021).

[1313] Scope 1, Scope 2, and Scope 3 emissions are terms adopted by many companies across every sectors. The term was put forth by the Greenhouse Gas protocol (GHGP), a partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) which develops GHG accounting and reporting standards. See: Greenhouse Gas Protocol. About Us. URL: https://ghgprotocol.org/about-us (the date of access: April 2, 2021).

[1314] *Beck C., Rashidbeigi S., Roelofsen O., Speelman E*. The future is now: How oil and gas companies can decarbonize. URL: https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-future-is-now-how-oil-and-gas-companies-can-decarbonize (the date of access: April 2, 2021). These figures (33 and 27 percent), however, could not be combined and counted collectively because of the overlaps in emissions. Part of oil&gas Scope 3 emissions could be included in calculation of Scope 1 and 2 emissions of the power and also transportation sectors, which use oil and gas as fuels in their operations. These figures rather illustrate the volume of emissions by the sector when considered separately.

764. The transportation sector is responsible for about 7.5 Gt, or about 14% of global GHG emissions.[1315] Carbon dioxide emissions of the steel sector equate to roughly 8% of overall global emissions.[1316]

b. Companies

765. The selection of particular companies in each sector is based on the following factors:

- **revenue**, which may serve as an indicator, though indirect, of the company's outputs. The higher the output, the larger carbon emissions. Selected are only the companies with the highest revenues in 2019[1317] in the corresponding sector;

- **geographic representation**. To the extent possible only one company per country is selected in each sector.[1318] This approach is not fully applicable in the transportation sector as it is composed of several sub-sectors: logistics, airlines, shipping. The leading companies by revenue in logistics and airlines represent the USA. Therefore, as an exception, the review of this sector covers two American companies;

- **availability of pertinent information**. The review covers only those leaders of the sectors under consideration that make the information related to the company's climate strategy publicly available.[1319]

2. Oil&Gas

2.1. Companies Under Consideration

- China Petroleum & Chemical Corporation (Sinopec);
- Royal Dutch Shell (Shell);
- Saudi Aramco;
- British Petroleum (BP);
- ExxonMobil.

[1315] Deutsche Post DHL Group. Sustainability report 2019. P. 85. URL: https://www.dpdhl.com/content/dam/dpdhl/en/media-center/responsibility/sustainability-report-2019/04dpdhl-sustainability-report-2019-environment.pdf (the date of access: April 2, 2021).

[1316] *Hoffmann C., Van Hoey M., Zeum B.* Decarbonization challenge for steel. URL: https://www.mckinsey.com/industries/metals-and-mining/our-insights/decarbonization-challenge-for-steel (the date of access: April 2, 2021).

[1317] 2019 — the closest "business as usual" year, free from pandemic distortions and market abnormalities of 2020.

[1318] For example, among the top-10 steel producers six represent China. Hence, only the one with the largest revenue was selected among those Chinese companies: China Baowu Group.

[1319] For example, China Post Group appears to be the biggest logistics company in the world by revenue in 2019 and 2020. However, no climate related plans of the company are currently available in English. For the mentioned reason, the company is not within the scope of this review.

2.2. GHG Emissions Reduction Targets

766. The companies under consideration tend to be cautious about setting specific GHG reduction targets. Some sector leaders (by revenue), e.g. Sinopec and Saudi Aramco, while establishing their adherence to reducing GHG emissions,[1320] avoid setting specific targets. Even those companies that undertake to set the most specific targets may, at the same time, disclaim that a great deal of success depends on society's energy demands.[1321]

767. Although, it is not uncommon for the companies in the sector to specify their **short-, mid-, and long-term** goals. The base year chosen by every company, however, differs from 2015 to 2019. The companies also appear reluctant to clearly explain how they select the base year. The assumption was that the baseline corresponds to the years of emission peaks. However, this hypothesis did not find sufficient support in the companies' strategies. For example, Shell's emissions peaked in 2018,[1322] while the company chose 2016 as a baseline for setting its GHG emissions reduction targets.

768. As regards short- and mid-term perspective:

- Sinopec aims at 12.6 mmt CO_2-e reduction by 2023 as compared to the 2017 level;[1323]

- BP also used to set its target in absolute value: to achieve 3.5 mmt of sustainable GHG emissions reduction by 2025 compared to the end of 2015 as the base year.[1324] However, in 2020, the company declared another set of targets: a 20% reduction in operational emissions (Scope 1&2) by 2025 and a 30-35% reduction by 2030 against the 2019 baseline. Additionally, the company is also targeting a 2025 reduction of 5% in carbon intensity of its products and aims to reduce it by 15% by 2030 — also against the 2019 baseline;[1325]

- Shell sets a target of a 3-4% reduction of carbon intensity by the end of 2022 compared to a 2016 baseline, 6-8% reduction by 2023, 20% reduction by 2030, and 45% by 2035.[1326] The

[1320] Sinopec. Low Carbon Development: "The Company has proactively identified the risks and opportunities related to climate change, developed the low-carbon development strategy, strengthened the management of carbon assets, and promoted energy efficiency and greenhouse gas emissions reduction." URL: http://www.sinopec.com/listco/en/csr/pdf/dtfz.shtml#a3 (the date of access: April 2, 2021); Amin H. Nasser, President and CEO, Saudi Aramco: "We are committed to reducing greenhouse gas emissions by focusing our research, development, and funding on high impact technologies that reduce cost and create significant environmental advantages." Saudi Aramco. Addressing the climate challenge. URL: https://www.aramco.com/en/making-a-difference/planet/oil-and-gas-climate-initiative (the date of access: April 2, 2021).

[1321] Shell. Our Climate Target: Frequently Asked Questions: "If society changes its energy demands more quickly, we intend to aid that acceleration. If it changes more slowly, we will not be able to move as quickly as we would like". URL: https://www.shell.com/energy-and-innovation/the-energy-future/what-is-shells-net-carbon-footprint-ambition/faq.html (the date of access: April 2, 2021).

[1322] Shell. Our Climate Target: Our Approach. URL: https://www.shell.com/energy-and-innovation/the-energy-future/our-climate-target.html#iframe=L3dlYmFwcHMvY2xpbWF0ZV9hbWJpdGlvbi8 (the date of access: April 2, 2021).

[1323] Sinopec. 2019 Sinopec Corp. Communication on Progress for Sustainable Development. P. 18. URL: http://www.sinopec.com/listco/en/Resource/Pdf/2020032945.pdf (the date of access: April 2, 2021).

[1324] BP. Sustainability report 2019. P. 20. URL: https://www.bp.com/content/dam/bp/country-sites/de_at/austria/home/news/publikationen/bp-sustainability-report-2019.pdf (the date of access: April 2, 2021).

[1325] BP. GHG Emissions. URL: https://www.bp.com/en/global/corporate/sustainability/getting-to-net-zero/ghg-emissions.html (the date of access: April 2, 2021).

[1326] Shell. Our Climate Target; for long-term targets see: Shell. Our climate target: Frequently Asked Questions.

company's target covers the emissions associated with the production, processing, transport, and end-use of the company's energy products (i.e., Scope 1, 2, and 3 emissions);[1327]

- ExxonMobil foresees an estimated 30% reduction in absolute GHG emissions in Upstream business[1328] (Scope 1 and Scope 2 emissions) by 2025 compared to 2016 levels.[1329] Regarding the downstream[1330] emissions, the company notes that changes in society's energy use coupled with technological development will be required in order to drive meaningful Scope 3 emissions reduction.[1331]

769. The companies describe their targets differently: carbon intensity reduction; reduction in absolute GHG emissions.

770. Carbon intensity referred to by Shell and BP is the amount of GHG emissions associated with each unit of energy sold by the company and used by its customers. This means that the company aims to produce less GHG emissions per unit of energy sold. However, if the output grows, then so do total emissions. Hence, there is no guarantee that the reduced carbon intensity of those emissions would offset the total growth of emissions.

771. Reduction in absolute GHG emissions mentioned in ExxonMobil's climate plan covers actual emissions, and implies total GHG reductions, as opposed to reductions in carbon intensity per unit of energy.

772. Overall, rarely do the companies of the sector include downstream emissions in their reduction plans. However, it is noted that the very fact that some companies are developing targets for Scope 3 emissions indicates "an important shift in how these companies engage on climate change".[1332]

773. With respect to the long-term objectives, another ambitious but rather rare corporate target is the net-zero operation. For example, BP undertakes to become a net-zero company by 2050 or sooner.[1333] By the same year, Shell also aims to be a net-zero emissions energy business.[1334] Both companies intend to achieve net-zero emissions from operations (Scope 1 and 2 emissions) and also, with certain exceptions,[1335]

[1327] Shell. Our Climate Target.

[1328] Operations associated with oil&gas production phase (extraction of crude oil and natural gas).

[1329] ExxonMobil. Positioning for a lower-carbon future. URL: https://energyfactor.exxonmobil.com/insights/focus/positioning-lower-carbon-future/ (the date of access: April 2, 2021).

[1330] Operations related to post-production of crude oil and natural gas activities.

[1331] ExxonMobil. 2021 Energy & Carbon Summary. P. 43. URL: https://corporate.exxonmobil.com/-/media/Global/Files/energy-and-carbon-summary/Energy-and-Carbon-Summary.pdf (the date of access: April 2, 2021).

[1332] *Dietz S., Jahn V. J., Gardiner D., Noels J.* Emissions targets in the oil and gas sector: How do they stack up? URL: https://www.lse.ac.uk/granthaminstitute/news/emissions-targets-in-the-oil-and-gas-sector-how-do-they-stack-up/ (the date of access: April 2, 2021).

[1333] BP. BP sets ambition for net zero by 2050, fundamentally changing organisation to deliver. P. 1. URL: https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/12-feb-2020/bp-sets-ambition-for-net-zero-by-2050-fundamentally-changing-organisation-to-deliver.pdf (the date of access: April 2, 2021).

[1334] Shell. Our Climate Target: Frequently Asked Questions.

[1335] Scope 3 emissions associated with carbon in BP's net production of oil and gas excludes Rosneft. See BP. Getting to net zero. URL: https://www.bp.com/en/global/corporate/sustainability/climate-change/our-role-in-the-energy-transition.html (the date of access: April 2, 2021).

from the consumption of the energy products they sell (Scope 3 emissions). ExxonMobil and Saudi Aramco do not set specific long-term targets, while Sinopec in November 2020 announced an "in-depth research on the strategic path of having CO_2 emissions peak and achieve carbon neutrality before 2030[1336] following China's action plan".[1337]

774. Important to note that the concept of net-zero emissions (or carbon neutrality) does not mean the emissions would be reduced to zero. "Net-zero emissions" implies overall balance, when the amount of GHG released into the atmosphere is offset with the same amount of GHG taken out of the atmosphere.[1338] This mainly refers to carbon capture and storage technologies, which alone, however, would not be capable of offsetting the current level of emissions. Hence, the reduction of overall carbon intensity is put first in every climate strategy.

2.3. Companies' Motivations to Reduce their GHG Emissions

775. In their climate targets, save for Sinopec[1339], none of the companies under consideration referred to laws or policy plans set by the government of the countries where they operate or where they are incorporated.

776. The companies view their strategies as being part of the global effort to tackle climate change:

- "to help the world get to net zero"[1340] (BP);
- "we will contribute to a net-zero world"[1341] (Shell);
- "the actions taken to reduce emissions across its operations are consistent with these global efforts"[1342] (ExxonMobil);
- "meeting global emissions reduction targets"[1343] (Saudi Aramco).

777. Sinopec, being a Chinese state-owned company, rather refers to the national policy objectives: "strategic path <...> following China's action plan"[1344]; "China is driving ahead reforms in energy production

[1336] Important to note that China's strategic plan implies CO_2 emissions peak before 2030 and achieving carbon neutrality before 2060, as Chinese President Xi Jinping announced at the general debate of the 75th session of the United Nations General Assembly, in September 2020. See XinhuaNet, Xi Focus: Walk the talk: Xi leads China in fight for carbon-neutral future. URL: http://www.xinhuanet.com/english/2021-03/16/c_139814792.htm.

[1337] Sinopec. Sinopec kickstarts extensive research on CO2 emissions peak and carbon neutral. URL: http://www.sinopecgroup.com/group/en/Sinopecnews/20201126/news_20201126_589177412540.shtml (the date of access: April 2, 2021).

[1338] Climate Council. What does net zero emissions mean? URL: https://www.climatecouncil.org.au/resources/what-does-net-zero-emissions-mean/ (the date of access: April 2, 2021).

[1339] Sinopec. Low Carbon Development.

[1340] BP. BP sets ambition for net zero by 2050, fundamentally changing organisation to deliver.

[1341] Shell. Our Climate Target.

[1342] ExxonMobil. 2021 Energy & Carbon Summary.

[1343] Saudi Aramco. Addressing the climate challenge. URL: https://www.aramco.com/en/making-a-difference/planet/oil-and-gas-climate-initiative (the date of access: April 2, 2021).

[1344] Sinopec. Sinopec kickstarts extensive research on CO2 emissions peak and carbon neutral.

and energy consumption to build an energy system featuring cleanliness, low carbon emission, safety and high efficiency".[1345]

778. All the companies reviewed (except Saudi Aramco) express their support for the UN SDGs and explain in their policy documents or sustainability reports how they actively contribute to the achievement of those goals.

779. Most of the companies also directly link their targets with the Paris Agreement goals:

- "We have set out 10 aims, which together set out a path that is consistent with the Paris goals"[1346] (BP);

- ".. in step with society's progress in achieving the goal of the UN Paris Agreement on climate change"[1347]; "Shell's climate target is designed to be consistent with the Paris Agreement goal" [1348] (Shell);

- "...announced greenhouse gas plans are projected to be consistent with the goals of the Paris Agreement"[1349] (ExxonMobil).

780. The Companies do not discuss in their climate strategies the legal nature of Paris Agreement goals and the relationship between the legal obligations taken by the sovereign nations and the companies' participation in the fulfillment of those obligations. This issue is though briefly touched upon in ExxonMobil's 2021 Climate & Carbon Summary. The company notes that its Outlook *for Energy* "aligns in aggregate with the Nationally Determined Contributions submitted by Paris Agreement signatories, which outline each country's plans to reduce its emissions".[1350] Even more, the company "offers to assist policymakers addressing the gaps between the policies called for under current Nationally Determined Contributions and the ultimate goals of the Paris Agreement as part of the 26th United Nations Climate Change Conference in 2021".[1351]

781. Therefore, there are no grounds to say that the companies take voluntary obligations under the Paris Agreement or are bound by the countries to take part in fulfilling their NDCs. However, the companies' statements and climate strategies do indicate that the companies form their GHG targets with due consideration of the Agreement and, in certain instances, the NDCs of specific countries. Also, the target years chosen by some companies are similar to those set by the countries in their NDCs. For example, BP and Shell set targets for 2030 and 2050. The same years appear in the EU's NDC.[1352]

[1345] Sinopec. Low Carbon Development.

[1346] BP. Our role in the energy transition. URL: https://www.bp.com/en/global/corporate/sustainability/climate-change/our-role-in-the-energy-transition.html (the date of access: April 2, 2021).

[1347] Shell. Our Climate Target.

[1348] Shell. Our Climate Target: Frequently Asked Questions: "Is Shell's climate target in line with the emissions reduction needed by the Paris Agreement?".

[1349] ExxonMobil. 2021 Energy & Carbon Summary. P. 44.

[1350] Ibid. P. 44.

[1351] Ibid. P. 30.

[1352] NDC Registry. Submission by Germany and the European Commission on behalf of the European Union and its member states. P. 2. URL: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/EU_NDC_Submission_December%202020.pdf (the date of access: April 2, 2021).

782. Additionally, as commonly referred to by the companies, the motivation for setting carbon reduction targets is "the right thing for [company's] shareholders and for society more broadly".[1353]

783. None of the companies under consideration, however, signed the Paris Pledge for Action.[1354] The Pledge was open for non-Party stakeholders of the Paris Agreement for the purposes of demonstrating that such actors are ready to play their part to support the objectives of the Agreement and are explicitly committed to limiting global warming to under 2 degrees.[1355]

2.4. GHG Emissions Reduction Measures

784. Regardless of whether the considered companies set specific emissions reduction targets or not, all of them declare straightforward measures they are willing to implement and invest into:

- **reduction of emissions from the operation**. All five companies are unanimous in setting the goal of reducing emissions from what is in their direct control. This covers a range of actions: efforts to reduce methane leakage and flaring; reductions in flaring, venting, and fugitive emissions; improvements in energy efficiency; carbon capture, use, and storage;

- another set of actions affects **supply and upstream business**: lowering the fugitive and combustion emissions during the transportation and use of gas; improving overall transport efficiency;

- **products**. A set of actions that enable customers to reduce their carbon footprint: developing low carbon fuels, lubricants, and petrochemicals;

- **investment** into renewables, new fuels, and petrochemicals:

  - solar energy, hydrogen, bioenergy (Sinopec[1356]);

  - charging for electric vehicles, hydrogen, and electricity generated by solar and wind power (Shell[1357]);

  - onshore and offshore wind, solar energy, biogas[1358], hydrogen; LNG; more efficient and low carbon fuels, lubricants, and petrochemicals (BP[1359]);

[1353] BP. BP sets ambition for net zero by 2050, fundamentally changing organisation to deliver. P. 3.

[1354] Among the world Top-10 oil&gas companies only the French Total signed the Pledge.

[1355] COP21. L'Appel de Paris (the Paris Pledge for Action). URL: http://www.parispledgeforaction.org/about/ (the date of access: April 2, 2021).

[1356] Sinopec. Low Carbon Development.

[1357] Shell. A Customer-Led Integrated Energy offering. URL: https://www.shell.com/energy-and-innovation/new-energies/_jcr_content/par/relatedtopics_1815495512.stream/1612811266675/69df859d0b6366ac88933645499d20b2c81ebd33/ne-map-08-feb.pdf (the date of access: April 2, 2021).

[1358] Gas from food and agricultural waste.

[1359] BP is planning to invest in and build renewable energy capacity of 20 gigawatts by 2025 and 50 gigawatts by 2030. See BP. Gas & low carbon energy. URL: https://www.bp.com/en/global/corporate/what-we-do/gas-and-low-carbon-energy.html#tab_#hydrogen-and-ccus (the date of access: April 2, 2021).

- LNG, natural gas, biofuels, hydrogen, advanced fuels and lubricants (ExxonMobil[1360]);

- innovative fuel formulations (Saudi Aramco[1361]).

785. The shift to renewables is already tangible, as certain companies exit from crude projects. For example, in October 2020 BP abandoned three oil projects in Kazakhstan, in line with its plans to shrink its hydrocarbon business by 40% over the coming decade.[1362]

786. At the same time, the shift by European oil majors away from oil and, partially, gas to renewables does not necessarily represent a unanimous approach throughout the sector. Worth noting that certain companies in the sector, though not under examination in this study, view the transition to renewables as an "existential threat" for future oil supply and price volatility.[1363] Even among the companies under consideration, only BP and Shell declare decisive plans of shifting to renewables. ExxonMobil is less optimistic about solar and wind energy for its emissions reduction strategy;[1364] while Saudi Aramco mentions renewable energy only in the context of supplying its operation.[1365]

787. Along with the adoption of their own climate action plans, the companies of the sector actively advocate for policies that support net-zero emissions, including carbon pricing. BP advocates for economy-wide (across all sectors) single (to replace all existing overlapping regulations) carbon pricing policy that could also prevent carbon leakage (the shifting of emissions and jobs from one country or subnational jurisdiction to another).[1366] ExxonMobil openly encourages the US Congress to adopt this market-based, national policy solution. In Exxon's view, "an explicit price on carbon would be transparent, incentivize behavior to reduce emissions, allow the market to function efficiently, and stimulate the cross-sector opportunities needed to uncover the largest emission reduction opportunities at the lowest cost".[1367] Shell is also supportive of the idea of carbon pricing: "In addition to the promotion of new energy technologies such as wind and solar, the critical policy shift required for the coming decades is to place a cost on carbon dioxide emissions". Such "systems could shift the energy mix in favour of lower emitting sources and

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[1360] ExxonMobil, R&D Investment. URL: https://corporate.exxonmobil.com/Sustainability/Energy-and-Carbon-Summary (the date of access: April 2, 2021); ExxonMobil – a global LNG leader. URL: https://www.exxonmobillng.com/ExxonMobil-LNG (the date of access: April 2, 2021).

[1361] Saudi Aramco. Addressing the climate challenge. URL: https://www.aramco.com/en/making-a-difference/planet/oil-and-gas-climate-initiative (the date of access: April 2, 2021).

[1362] *Gizitdinov N.* BP Exited Kazakh Oil Projects to Focus on Renewables Strategy. URL: https://www.bloomberg.com/news/articles/2021-03-10/bp-exited-kazakh-oil-projects-to-focus-on-renewables-strategy (the date of access: April 2, 2021).

[1363] Rosneft's first vice president Didier Casimiro, see ExxonMobil focused on core oil and gas as renewable returns too weak: official. URL: https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/093020-exxonmobil-focused-on-core-oil-and-gas-as-renewable-returns-too-weak-official (the date of access: April 2, 2021).

[1364] Shell. Our Climate Target: Frequently Asked Questions: "Why isn't ExxonMobil investing in existing renewable energy sources like wind and solar?"

[1365] SaudiAramco. Using renewables to power unconventional gas wells in Wa'ad Al-Shamal. URL: https://www.aramco.com/en/news-media/news/2019/renewables-powering-gas-wells-waad-al-shamal (the date of access: April 2, 2021).

[1366] BP. Carbon pricing principles. URL: https://www.bp.com/en/global/corporate/sustainability/getting-to-net-zero/carbon-pricing-principles.html (the date of access: April 2, 2021).

[1367] ExxonMobil. Why ExxonMobil supports carbon pricing. URL: https://energyfactor.exxonmobil.com/perspectives/supports-carbon-pricing/ (the date of access: April 2, 2021).

encourage the use of critical emissions management technology". The company, however, notes that "the societal and political challenge of doing so remains".[1368]

3. Power (Generation and Network)

3.1. Companies Under Consideration

- Enel;
- Électricité de France (EDF);
- E.ON;
- Iberdrola;
- Exelon.

3.2. GHG Emissions Reduction Targets

788. The minority of the companies under consideration (two out of five) set their **short-term** emissions reduction targets. Iberdrola, a multinational electric utility company based in Spain, confines its commitments to the reduction of the intensity (**para. 770 of the Analytical Note**) of its CO_2 emissions (to 70g/kWh by 2025), while not promising specific absolute reductions of total emissions.[1369]

789. The US-based Exelon commits to reduce its operations-driven emissions by 15% by 2022.[1370] However, this is the only specific target the company has ever made a clear statement about. It appears that the company finds it difficult to set specific long-term targets as the "durable trends under different climate-change-related conditions" may evolve.[1371] It is worth noting though that the company generates nearly all of its electricity with nuclear power and thus already produces relatively low Scope 1 and 2 emissions.[1372]

[1368] Shell. Could carbon pricing deliver the goals of the Paris Agreement? URL: https://www.shell.com/energy-and-innovation/the-energy-future/scenarios/shell-scenario-sky/could-society-reach-the-goals-of-the-paris-agreement/carbon-pricing.html (the date of access: April 2, 2021).

[1369] Iberdrola. Commitment to an ambitious and urgent climate action. URL: https://www.iberdrola.com/sustainability/against-climate-change/climate-change-policies (the date of access: April 2, 2021).

[1370] Exelon. Exelon Corporation Sustainability Report 2019, Rising to the Challenge of Climate Change. P. 62. URL: https://www.exeloncorp.com/sustainability/Documents/dwnld_Exelon_CSR%20(1).pdf#page=62 (the date of access: April 2, 2021).

[1371] Ibid. See also Summary of Exelon Responses to Stakeholder Feedback, Ceres 2020 Stakeholder Review Meeting, P.3.: "Because future pathways remain unclear, Exelon has not tied itself to planning for any pathway but is actively exploring and piloting many elements common across all scenarios such that we can best support our communities in meeting their climate goals." URL: https://www.exeloncorp.com/sustainability/Documents/Ceres%20Response.pdf (the date of access: April 2, 2021).

[1372] *Gearino D.* Inside Clean Energy: Net Zero by 2050 Has Quickly Become the New Normal for the Largest U.S. Utilities. URL: https://insideclimatenews.org/news/01102020/inside-clean-energy-net-zero-2050-utilities/ (the date of access: April 2, 2021).

790. It is more common among the companies under consideration to set quantitative **mid- and long-term** emissions reduction targets. Four out of five companies aim to achieve "full decarbonization" (Enel[1373]) or carbon neutrality (EDF,[1374] E.ON,[1375] Iberdrola[1376]) by 2050.

791. The targets for 2030 vary. The companies commit to reduce either:

- carbon intensity (Enel: 80% reduction in direct GHG emissions per kWh[1377]), or
- the absolute amount of emissions (EDF: reduction of direct GHG emissions amounting to 25 Mt CO_2[1378]; E.ON: Scope 1 and 2 emissions reduction by 75%, and Scope 3 emissions reduction by 50%[1379]), or
- both (Iberdrola: reducing CO_2 emissions globally by 86 %, up to 50 g/kWh[1380]).

792. Exelon is the only company under consideration that does not set quantitative mid- and long-term emissions reduction targets.

793. Similar to the oil&gas sector, the companies of the power sector do not explain how they select specific base year for setting their GHG reduction targets. Their baselines differ from 2015 to 2019, with 2017 being the most common base year (Enel, EDF, Iberdrola). The named three companies declare that their targets have been recognized as science-based in accordance with the SBTi. The SBTi, however, does not set criteria on base year. According to the SBTi, companies can choose the base year of their preference.[1381]

3.3. Companies' Motivations to Reduce Their GHG Emissions

794. The main motivation for the companies in the sector to switch to low-carbon strategy appears to be their intention to meet customers' demands (and thus be more competitive): "The most important players in tomorrow's energy world are customers. They want sustainable homes, businesses, cars, and

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[1373] Enel. Working with United Nations and building a sustainable business model. URL: https://www.enel.com/company/our-commitment/sdg-onu (the date of access: April 2, 2021).

[1374] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions (the date of access: April 2, 2021).

[1375] E.ON. Climate action: our ambition. URL: https://www.eon.com/content/dam/eon/eon-com/Documents/en/climate-commitment/2020/climate-commitment-2020.pdf (the date of access: April 2, 2021).

[1376] Iberdrola. Commitment to an ambitious and urgent climate action. URL: https://www.iberdrola.com/sustainability/against-climate-change/climate-change-policies (the date of access: April 2, 2021).

[1377] Enel. Working with United Nations and building a sustainable business model. URL: https://www.enel.com/company/our-commitment/sdg-onu (the date of access: April 2, 2021).

[1378] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions (the date of access: April 2, 2021).

[1379] E.ON. Climate action: our ambition. URL: https://www.eon.com/content/dam/eon/eon-com/Documents/en/climate-commitment/2020/climate-commitment-2020.pdf (the date of access: April 2, 2021).

[1380] Iberdrola also aims to become carbon neutral in it Europe operations.

[1381] Science Based Targets. New Resources and Criteria for Setting Science-based Targets. P. 32. URL: https://sciencebasedtargets.org/resources/legacy/2019/04/Asia-SBTi-update-webinar.pdf (the date of access: April 2, 2021).

cities".[1382] The leaders of the sector under consideration may find it difficult not to follow the demand and hence they adopt corresponding energy transition strategies. They also claim that the strategic choice they have made back in the 2010s now allows them "to benefit from the opportunities offered by the expanding value pool associated with the acceleration of this transition".[1383]

795. Compliance with CSR obligations is another commonly referred reason for the power companies to reduce their GHG emissions. For example:

- "Our corporate social responsibility goal: Go beyond the requirements of 2°C trajectory set by COP21 by drastically reducing our CO_2 emissions" (EDF)[1384];
- "...acting with social responsibility and in harmony with natural resources and global climate" (E.ON)[1385];
- "Climate change is one of the most serious global challenges facing society today. Exelon contributes to addressing climate change by reducing our own emissions" (Exelon).[1386]

796. In setting their emissions reduction targets none of the companies under consideration refer to national laws or policies. Most of them, on the other hand, rely upon the Paris Agreement or juxtapose their goals against those of the Agreement:

- "Enel <...> has developed a business model aligned with the objectives of the Paris Agreement and achievement of decarbonisation of its energy mix within 2050"[1387];
- "At the Paris Conference, the international community reiterated the crucial aim of keeping the rise in temperature to below 2°C, and below 1.5°C if possible. EDF, a recognised stakeholder in combatting climate change, has undertaken to produce increasingly low-carbon electricity and achieving carbon neutrality by 2050";[1388]

[1382] E.ON. E.ON 2019 Sustainability report. P. 13. URL: https://www.eon.com/content/dam/eon/eon-com/Documents/en/sustainability-report/2019/eon_2019_sustainability_report.pdf (the date of access: April 2, 2021).

[1383] Enel. Enel 2020–2022 Strategic Plan: Maximising Value Through Sustainability. P. 1. URL: https://www.enel.com/content/dam/enel-common/press/en/2019-November/Enel%20Strategic%20Plan%202020%202022%20ENG.pdf (the date of access: April 2, 2021).

[1384] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions#a-unique-mix-of-nuclear-and-renewable-energy (the date of access: April 2, 2021).

[1385] E.ON. Sustainability. URL: https://www.eon.com/en/about-us/sustainability.html (the date of access: April 2, 2021).

[1386] Exelon. Exelon Corporation Sustainability Report 2019. P. 49. URL: https://www.exeloncorp.com/sustainability/Documents/dwnld_Exelon_CSR%20(1).pdf (the date of access: April 2, 2021).

[1387] Enel. Commitment to the fight against climate change. URL: https://www.enel.com/investors/sustainability/sustainability-topics-and-performances/greenhouse-gas-emission (the date of access: April 2, 2021).

[1388] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions#a-unique-mix-of-nuclear-and-renewable-energy (the date of access: April 2, 2021).

- "The electricity sector plays a key role in fulfilling the goal set by the historic Paris Agreement to keep global temperature rise well below 2 ºC and to tackle the climate emergency" (Iberdrola).[1389]

797. Unlike in the oil&gas sector, the companies of the power sector are more willing to support their reliance on Paris Agreement by signing the Paris Pledge for Action (EDF, E.ON, Iberdrola). All the companies under consideration report on their active contribution to the fulfillment of the UN SDG 13 (Climate action).

3.4. GHG Emissions Reduction Measures

798. The choice of specific measures and tools in implementation of climate goals of the companies under consideration depends on 1) whether the company predominantly generates or distributes electricity, and 2) which particular energy sources the company relies on.

799. The main tool of those companies that generate electricity (e.g. Enel, EDF, Iberdrola) is "the shift from an energy mix based on fossil fuels to one that produces very limited, if not zero, carbon emissions, based on renewable energy sources".[1390] Electric utility service providers (e.g. E.ON), on the other hand, are mainly focused on adapting the networks to the peculiarities of renewable energy sources, making "grids smarter and more flexible to increase the share of clean energy they can carry".[1391]

800. Those companies that still generate power by combusting fossil fuels or using other high emission sources focus their transition on the substitution of those sources with renewable ones. For example:

- Enel's goal is "accelerated deployment of new renewable capacity and the progressive substitution of coal generation. By 2022, the Group is expected to develop 14.1 GW of new renewable capacity (+22% vs. previous plan) and reduce coal capacity and production by 61% and 74%, respectively, vs. 2018";[1392]

- EDF "aims to stop all of its coal-powered electricity generation worldwide by 2030 committed to developing renewable energy, notably wind, solar and hydropower, backed by its nuclear plants as the main source of power. By 2030, the Group wants to double its worldwide production from renewable sources of energy from 28 GW to 50 GW";[1393]

[1389] Iberdrola. Iberdrola group's climate commitment. URL: https://www.iberdrola.com/sustainability/against-climate-change (the date of access: April 2, 2021).

[1390] Enel. The energy transition. URL: https://www.enelgreenpower.com/learning-hub/energy-transition (the date of access: April 2, 2021).

[1391] E.ON. Energy Transition in our Networks. URL: https://www.eon.com/en/about-us/sustainability/energy-transition-networks.html (the date of access: April 2, 2021).

[1392] Enel. Enel 2020–2022 Strategic Plan: Maximising Value Through Sustainability. P. 1. URL: https://www.enel.com/content/dam/enel-common/press/en/2019-November/Enel%20Strategic%20Plan%202020%202022%20ENG.pdf (the date of access: April 2, 2021).

[1393] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions#a-unique-mix-of-nuclear-and-renewable-energy (the date of access: April 2, 2021).

- Exelon: "For our generation company, we work toward retiring higher emitting sources, while also increasing our zero-carbon generation and encouraging customers to specify cleaner generation in their electricity purchases".[1394]

801. Those companies that already divested from coal focus on the reduction of emissions from their natural gas operations and other residual emissions. For example, Exelon is "driving down methane emissions from natural gas distribution systems, reducing losses from other GHG gas-insulated electrical equipment <...>. The company also will increase the energy efficiency of its own buildings and select emissions-free electricity at its facilities".[1395]

802. Also, the companies that have already eliminated coal from their energy mix pledge for considerable enlargement of their renewable generation fleet. For example, Iberdrola plans to double its renewable-energy capacity during the five-year period, reaching 60 GW by 2025. Onshore wind will account for 26GW of this total, while solar, hydropower, and offshore-wind capacities will total 16GW, 14GW, and 4GW respectively. By 2030, it aims to increase its renewable capacity to 95GW.[1396] The company is also targeting 85,000 tonnes of green hydrogen production by the end of the decade.[1397]

803. At the same time, those companies that historically relied on nuclear power highlight the importance of this source of energy in their lowering sector's emission rates and are not willing to substitute nuclear generation:

- "...developing renewable energy, notably wind, solar and hydropower, backed by its nuclear plants as the main source of power" (EDF);[1398]

- "Without the current amount of zero-carbon electricity generation supplied by nuclear generation, new zero-carbon renewables are not enough to lower U.S. electric sector emission rates. This informs our short-term business strategy by increasing the importance of policy advocacy and market reform to prevent pre-mature retirement of nuclear units" (Exelon).[1399]

804. Corporate climate initiatives also trace to capital markets. Green bonds have become the most common financial vessel that allows companies of the sector to implement the most ambitious projects in their energy transition. EDF has been pioneering in green bonds since 2013, raising EUR 4.5 bln and funding almost 25 wind and solar projects around the world, while upgrading many others.[1400] Iberdrola became

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[1394] Exelon. Exelon Corporation Sustainability Report. Rising to the Challenge of Climate Change. P. 49-50. URL: https://www.exeloncorp.com/sustainability/interactive-csr?year=2018&page=134 (the date of access: April 2, 2021).

[1395] Exelon. Exelon Announces Plan To Further Reduce Its Greenhouse Gas Emissions By 15 Percent. URL: https://www.exeloncorp.com/newsroom/exelon-announces-plan-to-further-reduce-its-greenhouse-gas-emissions-by-15-percent (the date of access: April 2, 2021).

[1396] Iberdrola raises clean-energy ambitions with €75bn five-year spending plan. URL: https://www.nsenergybusiness.com/news/company-news/iberdrola-clean-energy-investment/ (the date of access: April 2, 2021).

[1397] Iberdrola and Fertiberia to build green hydrogen plant in Spain. URL: https://www.nsenergybusiness.com/news/iberdrola-fertiberia-green-hydrogen/ (the date of access: April 2, 2021).

[1398] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions#a-unique-mix-of-nuclear-and-renewable-energy (the date of access: April 2, 2021).

[1399] Exelon. Exelon Corporation Sustainability Report. Rising to the Challenge of Climate Change. P. 56. URL: https://www.exeloncorp.com/sustainability/interactive-csr?year=2018&page=134 (the date of access: April 2, 2021).

[1400] EDF. Our six corporate responsibility goals. URL: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/our-six-corporate-responsibility-goals/doing-even-more-to-reduce-co2-emissions#a-unique-mix-of-nuclear-and-renewable-energy (the date of access: April 2, 2021).

the first Spanish company to issue a green bond in 2014. Since then, Iberdrola has become the world's leading issuer of green bonds, having issued over EUR 13 bln-worth of green bonds. In 2021, the company issued its biggest green bond in history, for EUR 2 bln, which will finance the offshore wind farms in France and Germany.[1401] Enel has issued three green bonds for a total amount of EUR 3.5 bln, since 2017.[1402] E.ON entered the green bond market in 2019, and now "expect to cover more than 50% of [its] annual funding requirements with green bonds going forward".[1403]

805. The reviewed companies unanimously support carbon pricing. Being members of the CEO Alliance,[1404] CEOs of Enel, EON, and Iberdrola are convinced that ambitious decarbonization and cross-sector collaboration require carbon pricing.[1405] Enel's CEO remarks that the world needs a single carbon price (EUR 20-40 per ton of carbon dioxide) to reach climate change targets.[1406] In 2018, EON and EDF (among other companies that are not subject to this review) signed a declaration, in which they "support the introduction of a European or regional carbon price floor in the power sector and the reinforcement of cooperation between governments to introduce a carbon price signal, also in non-ETS sectors (notably transport and buildings)". The named companies advocate for a rising carbon price on fossil fuels.[1407] Iberdrola proposes a price-based intervention, compatible with the existing volume-based market. [1408] Exelon's CEO prefers a market-based climate solution (carbon pricing) to state resource subsidies.[1409]

4. Transportation

4.1. Companies under consideration

- United Parcel Service (UPS);

[1401] Iberdrola. What are green bonds and what are they for? URL: https://www.iberdrola.com/sustainability/investments-green-bonds (the date of access: April 2, 2021).

[1402] Enel. Green Bonds. URL: https://www.enel.com/investors/investing/sustainable-finance/green-bonds (the date of access: April 2, 2021).

[1403] E.ON Chief Financial Officer Marc Spieker. URL: https://www.smart-energy.com/industry-sectors/finance-investment/e-on-publishes-new-green-bond-framework-to-accelerate-green-financing/ (the date of access: April 2, 2021).

[1404] Member companies represent all key industry sectors, over EUR 600 bln in annual revenue. See Enel. European CEO Alliance emphasizes cross-industry collaboration to fight climate change. URL: https://www.enel.com/media/explore/search-press-releases/press/2020/10/european-ceo-alliance-emphasizes-cross-industry-collaboration-to-fight-climate-change (the date of access: April 2, 2021).

[1405] Ibid.

[1406] *Paulsson L., Lacqua F.* Enel CEO Says Global Carbon Price Needed for Net-Zero Targets. URL: https://www.bloombergquint.com/business/enel-ceo-says-global-carbon-price-needed-for-net-zero-targets (the date of access: April 2, 2021).

[1407] EON. Global companies call for more action – to support a strong and predictable carbon pricing. P. 2. URL: https://www.eon.com/content/dam/eon/eon-com/Documents/de/Support%20Statement%20-%20November%202018.pdf (the date of access: April 2, 2021).

[1408] Iberdrola. Price of CO_2. P. 2. URL: https://www.iberdrola.com/wcorp/gc/prod/en_US/conocenos/docs/Precio_Emisiones_CO2.pdf (the date of access: April 2, 2021).

[1409] *Bade G.* Exelon CEO: Carbon price preferable to 'band-aid' nuke subsidies. URL: https://www.utilitydive.com/news/exelon-ceo-carbon-price-preferable-to-band-aid-nuke-subsidies/540370/ (the date of access: April 2, 2021).

- Deutsche Post;
- Delta Airlines;
- Lufthansa;
- A.P. Moller–Maersk.

4.2. GHG Emissions Reduction Targets

806. Among the five reviewed companies only two, which represent the logistics sub-sector, set **short-term** goals for their carbon emissions reduction. UPS is willing to reduce 12% of the absolute GHG emissions of its global ground operations by 2025. By the same year, Deutsche Post is planning to increase its carbon efficiency by 50% — without setting any specific reduction targets.

807. The logistics and postal services have a large fleet of land transport (trucks, delivery vehicles), as well as a vast network of storing and distribution facilities. For all of that, there are technologies available to significantly reduce emissions from their operation (renewable fuels and electric vehicles, renewable energy for facilities). It is very different for airlines and shipping businesses. Currently, there are no such technologies that may allow companies to employ planes and vessels driven by renewable fuels/energy.[1410] Additionally, due to the 20-25-year lifetime of vessels and airplanes, the fleet renewal takes much longer as compared to that in land logistics. As a consequence of both factors, it is not common among airlines and shipping companies to make short-term commitments.

808. Nevertheless, in a **mid-term** perspective, Maersk undertakes to achieve carbon neutrality of its vessels by 2030.[1411] By the same year, Lufthansa aims to halve its carbon footprint[1412], while Delta Airlines considers it possible to mitigate all its emissions and become the "first carbon-neutral airline globally" over the next ten years (starting from 2020)[1413]. Even though Delta is expressing its interest in carbon capture and removal, the "mitigation" may rather mean that the company will offset most of its emissions. Lufthansa also refers to the carbon offsetting scheme as a tool to mitigate carbon emissions in international air traffic.[1414] In aviation, the offsetting mechanism usually implies investments in carbon reduction projects, i.e., paying for the amount of GHGs reduced by other companies elsewhere (emissions trading market).[1415] The system of voluntary carbon offsetting is enabled and endorsed by the International Air Transport Association (IATA). In 2016, to curb the aviation impact on climate change the International Civil Aviation Organization (ICAO) developed and adopted the Carbon Offsetting and Reduction Scheme for

[1410] *Bogaisky J.* The Way Delta Is Going Carbon Neutral Next Month Isn't Good Enough, And CEO Ed Bastian Knows It. URL: https://www.forbes.com/sites/jeremybogaisky/2020/02/15/the-way-delta-is-going-carbon-neutral-next-month-isnt-good-enough-and-ceo-ed-bastian-knows-it/?sh=644941993e4c (the date of access: April 2, 2021).

[1411] Maersk. Towards a zero-carbon future. URL: https://www.maersk.com/news/articles/2019/06/26/towards-a-zero-carbon-future (the date of access: April 2, 2021).

[1412] Lufthansa. Carbon neutral flying. URL: https://www.lufthansagroup.com/en/newsroom/releases/carbon-neutral-flying-lufthansa-compensaid-now-available-to-corporate-customers.html (the date of access: April 14, 2021).

[1413] Delta commits $1 billion to become first carbon neutral airline globally. URL: https://news.delta.com/delta-commits-1-billion-become-first-carbon-neutral-airline-globally (the date of access: April 14, 2021).

[1414] Lufthansa. Fuel consumption and emissions. URL: https://www.lufthansagroup.com/en/responsibility/climate-environment/fuel-consumption-and-emissions.html#cid9416 (the date of access: April 2, 2021).

[1415] IATA. Enabling Voluntary Carbon Offsetting. URL: https://www.iata.org/en/programs/environment/carbon-offset/ (the date of access: April 2, 2021).

International Aviation (CORSIA). CORSIA allows aircraft operators to purchase carbon credits from the carbon market. The scheme is voluntary for all countries and applies since 2021.[1416]

809. As for the **long-term** targets, Lufthansa undertakes to achieve carbon neutrality by 2050[1417]. Two companies under consideration aim to reduce their emissions to net-zero: from operations — Maersk, and all logistics-related — Deutsche Post.

810. None of the companies under consideration explain how they selected the base year for setting their GHG emissions reduction targets.

4.3. Companies' Motivations to Reduce Their GHG Emissions

811. All the companies under consideration view their emissions reduction initiatives as a part of their CSR. Deutsche Post and Maersk additionally consider their targets as a contribution to reaching the Paris Agreement's goal. All the companies (except UPS) address in their climate plans how they actively support and contribute to the fulfillment of the UN SDG 13 (Climate action). None of the companies in setting their climate targets referred to any national laws or policies.

4.4. GHG Emissions Reduction Measures

812. It is common for all the companies under consideration to invest in lower-emission vehicles and renewable fuels. The companies with a network of ground facilities also invest in solar deployments. E.g., UPS completed a 10MW deployment of rooftop solar arrays.[1418] With only 4 percent of the total electricity needs being generated from renewable sources,[1419] the company has huge room for the reduction of its operation emissions by switching to renewables.

813. Fleet modernization is an important step towards net-zero emissions. However, this tool is not fully available, as the current state of technologies does not provide electric/hybrid alternatives comparable to the planes and vessel that use conventional fuels. Emissions trading becomes an additional tool that allows airlines to buy emission offsets. This option, however, is not directly discussed in the companies' climate plans.

814. It is not common among the companies of the sector to advocate for carbon pricing.

5. Steel

5.1. Companies Under Consideration

- China Baowu Group;
- ArcelorMittal;

[1416] ICAO. What is CORSIA and how does it work? URL: https://www.icao.int/environmental-protection/pages/a39_corsia_faq2.aspx (the date of access: April 2, 2021).

[1417] Lufthansa. Carbon neutral flying. Important to note that the target adopted by the IATA is the reduction in net aviation CO_2 emissions of 50% by 2050, compared to 2005 levels. See IATA. Working Towards Ambitious Targets. URL: https://www.iata.org/en/programs/environment/climate-change/ (the date of access: April 2, 2021).

[1418] UPS. UPS Progress Toward Sustainability Goals. URL: https://sustainability.ups.com/progress-report/goals-and-progress/ (the date of access: April 2, 2021).

[1419] Ibid.

- POSCO;
- Nippon Steel Corp;
- Thyssenkrupp Group.

5.2. GHG Emissions Reduction Targets

815. The most ambitious among the considered five steelmakers is Korean POSCO, which sets targets for short-, mid-, and long-term perspectives, though its short-term target is due by 2030, which is considered by many other companies under this review to be a rather mid-term goal. POSCO is committed to have a 20% reduction of its CO_2 emissions by 2030 as compared to the baseline of its average emissions in 2017–2019; 50% — by 2040; and to become carbon neutral by 2050.[1420]

816. No steel companies under consideration undertake to reach reduction goals during the 2020s. Instead, Chinese Baowu Steel foresees its emissions to peak in 2023,[1421] after which it is aiming to reduce its emissions by 30% by 2035. These plans were announced by the company's Chairman; however, a detailed company's strategy is yet to be published.[1422]

817. Thyssenkrupp sets the most specific targets for 2030: 30% reduction of Scope 1 (direct) and 2 (from purchased energy) emissions compared with the base year 2018; 16% reduction of Scope 3 emissions (produced by value chain) compared with the base year 2017.[1423] By the same year, ArcelorMittal commits to reduce its European CO_2 intensity by 30% (against the 2018 baseline).[1424] ArcelorMittal, similarly to previously mentioned POSCO, however, do not unambiguously explain in their policy documents what those reduction plans would actually cover: how exactly "intensity" is understood, which scopes of emissions are included.

818. All of the companies under consideration aim to become carbon neutral by 2050. Thyssenkrupp specifies that such target would cover all three Scopes of emissions; while ArcelorMittal and Nippon Steel limit their targets only to their European and Japanese operations correspondently.

819. None of the companies under consideration explain how they selected the base year for setting their GHG emissions reduction targets.

[1420] POSCO. Climate Action Report. URL: https://www.posco.co.kr/homepage/docs/eng6/jsp/irinfo/irdata/s91b6000032l.jsp (the date of access: April 2, 2021).

[1421] China aims to peak its carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060. See Xi Jinping's speech at Climate Ambition Summit 2020. URL: https://news.cgtn.com/news/2020-12-12/Full-text-Xi-Jinping-s-speech-at-Climate-Ambition-Summit-2020-WaztGQcuBO/index.html (the date of access: April 2, 2021).

[1422] China's top steelmaker Baowu Group vows to achieve carbon neutrality by 2050. URL: https://www.reuters.com/article/us-china-climatechange-baowu-idINKBN29Q0G1 (the date of access: April 2, 2021).

[1423] Thyssenkrupp. Climate strategy and targets. URL: https://www.thyssenkrupp.com/en/company/sustainability/climate-strategy-and-targets (the date of access: April 2, 2021).

[1424] ArcelorMittal. Climate Action in Europe. URL: https://corporate-media.arcelormittal.com/media/b4wh4cd0/climate-action-in-europe.pdf (the date of access: April 2, 2021).

5.3. Companies' Motivations to Reduce Their GHG Emissions

820. Besides the common idea of CSR, certain companies of the sector state that their climate strategy is determined by the "rising demand for goods and services in a resource-efficient way".[1425] In this sense, the steel sector may follow the trends that are crystalizing in another energy-intense sector — aluminum production (though not part of this overview). In the aluminum sector, the pressure from the consumer goods industry, and correspondently consumers, is even more tangible. For example, due to Apple's strive for the production of low-carbon products, its suppliers Alcoa and Rio Tinto developed a "breakthrough carbon-free aluminum smelting method".[1426] The inert anode technology that fully excludes coal from the production process and emits oxygen instead of CO_2[1427] is expected to revolutionize the whole industry.[1428] This case illustrates how the demand shapes corporate actions and, ultimately, concurs with governmental efforts: the Government of Canada and the Government of Quebec supported the project, and each invested CAD 60 million.[1429]

821. In the steel sector, unlike in other sectors, the majority of companies under consideration do directly refer to the goals and policies adopted by the respective countries of their incorporation/operation:

- "...in response to the country's climate goals" (Baowu Steel);[1430]
- "...to contribute to the European Commission's Green Deal" (ArcelorMittal);[1431]
- "... in line with Japan's commitment to realize carbon-neutral society by 2050" (Nippon Steel).[1432]

822. While only Thyssenkrupp signed the Paris Pledge, most of the companies align their targets with the Paris Agreement goal and the UN SDGs (ArcelorMittal, POSCO, Nippon Steel, Thyssenkrupp).

[1425] Thyssenkrupp. Environment and energy. URL: https://www.thyssenkrupp.com/en/company/sustainability/environment/energy (the date of access: April 2, 2021).

[1426] Apple. Apple paves the way for breakthrough carbon-free aluminum smelting method. URL: https://www.apple.com/newsroom/2018/05/apple-paves-the-way-for-breakthrough-carbon-free-aluminum-smelting-method/ (the date of access: April 21, 2021).

[1427] ELYSIS. ELYSIS selects Alma smelter for commercial size 450 kA inert anode prototype cells. URL: https://www.elysis.com/en/elysis-selects-alma-smelter-for-commercial-size-450-ka-inert-anode-prototype-cells (the date of access: April 21, 2021).

[1428] Alcoa's major competitor Rusal is successfully developing its own inert anode technology at Rusal's Krasnoyarsk (KrAZ) aluminum smelter — to produce "world's lowest carbon aluminum footprint — less than 0.01 tonnes of CO_2eq per tonne of aluminum". See Light Metal Age. Rusal Produces Low Carbon Aluminum Using Inert Anode Technology. URL: https://www.lightmetalage.com/news/industry-news/smelting/rusal-produces-low-carbon-aluminum-using-inert-anode-technology/ (the date of access: April 21, 2021).

[1429] ELYSIS. Rio Tinto and Alcoa announce world's first carbon-free aluminium smelting process. URL: https://www.elysis.com/en/rio-tinto-and-alcoa-announce-worlds-first-carbon-free-aluminium-smelting-process (the date of access: April 21, 2021).

[1430] China's top steelmaker Baowu Group vows to achieve carbon neutrality by 2050. URL: https://www.reuters.com/article/us-china-climatechange-baowu-idINKBN29Q0G1 (the date of access: April 2, 2021).

[1431] ArcelorMittal. Our Commitment. URL: https://europe.arcelormittal.com/newsandmedia/europenews/4983/EU_GreenDeal (the date of access: April 2, 2021).

[1432] Nippon Steel Corporation, Rio Tinto. Nippon Steel Corporation and Rio Tinto sign climate MOU. P. 1. URL: https://www.nipponsteel.com/common/secure/en/news/20201216_100.pdf (the date of access: April 2, 2021).

823. The SDGs and the Paris Agreement are aimed at national governments. However, some companies explain that they are willing to "work with policymakers, as well as customers and investors and relevant initiatives <...> to establish what mechanisms are needed to facilitate the low-emissions transition for the steel industry, in line with [SDG 13] target".[1433]

5.4. GHG Emissions Reduction Measures

824. All the companies under consideration explore hydrogen steelmaking as their main tool for achieving low-carbon targets. For example, Baowu Steel is planning a fast-track transition to hydrogen to commercialize the production of carbon-free steel within 15 years.[1434]

825. This move, however, will require transformation of steel production (using hydrogen as a reducing agent instead of heating iron ore and coking coal in blast furnaces), as well as the creation of a new infrastructure for transporting and storing liquefied hydrogen. It is estimated that the world would need about 1600-1650 GW of extra wind turbines to produce the hydrogen required to make all the world's 'new', i.e. hydrogen-based steel at today's production level.[1435] The costs of new fuel production will thus make steel considerably more expensive compared to fossil-based steel. Hence, the long-term success of the initiative will most likely be contingent upon support measures from national governments. This may, in part, explain why the companies of the steel sector often highlight in their strategies that the efforts they make will contribute to the implementation of national climate strategies.

826. Besides, the companies refer to their energy efficiency programs and CCUS. As for the utilization of gases produced during steel production, the idea is to process them for later use, for instance, by converting those gases into base chemicals to be later used to make fertilizers, plastics, or fuels.[1436]

827. None of the companies under consideration discuss the policy of carbon pricing.

[1433] ArcelorMittal. UN Sustainable Development Goals. URL: https://corporate.arcelormittal.com/sustainability/un-sustainable-development-goals (the date of access: April 2, 2021).

[1434] *Ker P.* China's biggest steel maker explores hydrogen substitute. URL: https://www.afr.com/companies/mining/china-s-biggest-steel-maker-explores-hydrogen-substitute-20200304-p546t7 (the date of access: April 2, 2021).

[1435] How much hydrogen will be needed to replace coal in making steel? URL: https://www.carboncommentary.com/blog/2020/11/4/how-much-hydrogen-will-be-needed-to-replace-coal-in-making-steel (the date of access: April 2, 2021).

[1436] Thyssenkrupp. With hydrogen to climate-neutral steel production. URL: https://www.thyssenkrupp-steel.com/en/company/sustainability/climate-strategy/ (the date of access: April 2, 2021).

Appendix 1.

Sector	**Oil&Gas**					**Power**					**Transportation (logistics, air transport, shipping)**					**Steel**				
Total Scope 1&2 + Scope 3 emissions by the selected companies, mmt CO_2-e	483 + 1503.3 (at least) – potentially up to 2500 (with Sinope & Aramco)					145.9 + 470.1					127.6 + 76.3					374.7 (at least) – potentially up to 500 (with Baowu Steel) + 45.5 (at least) – potentially up to 75 (with Baowu Steel & Thyssenkrupp)				
Company (country)	**Sinopec** (CH)	**Shell** (NL-UK)	**Saudi Aramco** (SB)	**BP** (UK)	**Exxon Mobil** (US)	**Enel** (IT)	**Electricite de France** (FR)	**E.ON** (DE)	**Iberdrola** (ES)	**Exelon** (US)	**UPS** (US)	**Deutsche Post** (DE)	**Delta Airlines** (US)	**Lufthansa** (DE)	**Moller–Maersk** (DK)	**China Baowu Group** (CH)	**Arcelor Mittal** (LU)	**POSCO** (KR)	**Nippon Steel Corp** (JP)	**Thyssenkrupp Group** (DE)
Revenue, USD, bn[i] 2020 2019	407.0 414.6	352.1 396.5	329.7 355.9	282.6 303.7	264.9 290.2	89.8 89.3	80.2 81.4	46.8 35.7	40.7 41.3	34.4 35.9	74.0 71.8	70.8 75.0	47.0 44.4	40.7 42.3	39.1 41.2	79.9 66.3	53.3[ii] 70.6[iii]	48.9[iv] 55.1	54.4 55.7	47.3 50.8
Reported emissions, mmt CO_2-e (2019)[v]: Scope 1 Scope 2 Scope 3	125.7[vi] 45 -	70[vii] 10 576[viii]	44.7[ix] 13.2 -	49.2[x] 5.2 357.3	111[xi] 9 570[xii]	69.9[xiii] 5.3 56.9	33.1[xiv] 0.3 119.4	4.9[xv] 2.7 59.6	13.4[xvi] 2.1 54.2	9.3[xvii] 4.9 180	14.2[xviii] 0.7 21	6.4[xix] 0.2 22.3	38.1[xx] 0.3 3.5	33.3[xxi] 0.2 10.5	36.2[xxii] 0.2 19[xxiii]		(2018) 167[xxiv] 12 15	80[xxv] - 13	84[xxvi] 9 17.5[xxvii]	21.3[xxviii] 1.4 -
Declared intention to reduce GHG emissions	Yes[xxix]	Yes [xxx]	Yes[xxxi]	Yes[xxxii]	Yes[xxxiii]	Yes[xxxiv]	Yes[xxxv]	Yes[xxxvi]	Yes[xxxvii]	Yes	Yes[xxxix]	Yes[xl]	Yes[xli]	Yes[xlii]	Yes[xliii]	Yes[xliv]	Yes[xlv]	Yes[xlvi]	Yes[xlvii]	Yes[xlviii]
SBTi-approved targets	No	No	No	No	No	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	Yes
Baseline	2017	2016	-	2019	2016	2017	2017	2019	2017	2015	2015	2007	2020	2019	2008	-	2018	2017–19	-	2017–18
Short-term carbon-reduction targets	12.6 mmt CO_2-e reduction	- 3-4% carbon intensity (CI) reduction - 6-8% CI reduction		20% reduction (Scope 1&2) + 20% reduction (Scope 3[xlix])	~30% reduction in absolute GHG emissions (Upstream)				Reduce the intensity of CO_2 emissions to 70g/kWh	Reduce operations-driven emissions by 15 %	12% reduction in absolute GHG emissions (global ground operations)	Increase carbon efficiency by 50%				Emission peak		Reduction of CO_2 by 20%		

-by when?	2023	- End of 2022 - 2023	-	2025	2025	-	-	-	End of 2025	2022	2025	2025	-	-	-	2023	-	2030[l]	-	-
Mid-term carbon-reduction targets		- 20% CI reduction - 45% CI reduction		30-35% reduction (Scope 1&2) + 30-40% reduction (Scope 3)	"Industry-leading greenhouse gas performance"	80% reduction in direct GHG per kWh emissions	Reduce direct GHG emissions amounting to 25 Mt CO_2	- Reduce Scope 1 and 2 emissions by 75%; - Scope 3 emissions by 50%	Reducing CO_2 emissions globally by 86 %, up to 50 g/kWh +carbon neutral in Europe				Carbon neutrality (mitigate all emissions from March 2020 forward)	Reducing carbon footprint by half	Carbon-neutral vessels	Cutting emissions by 30%	Reduce European CO_2 intensity by 30%	Reduction of CO_2 by 50%	Pending[li]	30 % reduction of Scope 1 and 2 emissions; 16% reduction - scope 3.
- by when?	-	- 2030 - 2035	-	2030	2030	2030	2030	2030	2030	-	-	-	2030	2030	2030	2035	2030	2040	2030	2030
Long term full carbon neutrality	No[lii]	Net-zero emissions energy business	No	A net-zero company (Scope 1&2)[liii] + net zero in upstream O&G production + 50% reduction in carbon intensity of products	No	"Full decarbonization"	Carbon neutrality	Carbon-neutrality; reduce Scope 1 and 2 emissions by 100%; reduce Scope 3 emissions by 100%	Global carbon neutrality	No	No	Reduce all logistics-related emissions to net-zero	- (Carbon neutrality is targeted in 2030)	Carbon neutrality	Net-zero CO_2 emissions from operations	Carbon neutral	Carbon neutral in Europe	Net-zero emissions	Carbon neutrality across the country (plan is not published yet)[liv]	Climate neutrality (Scope 1, 2, 3)
- by when?	-	2050	-	2050 or sooner	-	2050	2050	- 2040 - 2050	2050	-	-	2050	-	2050	2050	2050	2050	2050	2050	2050
Why (Motivation)	"Following China's action plan"	CSR, "in step with society"; "contribute to a net-zero world"	"Meeting global emissions reduction targets"	CSR, "to help the world get to net zero"	CSR, "consistent with these global efforts"	"Urgency of protecting the planet from the greatest threat"	CSR	CSR	CSR; company's leadership in renewable energy	CSR	CSR	CSR; "special responsibility to our employees, to society and the environment"	CSR	CSR	CSR; contributing to reach the Paris Agreement's goal	"In response to the country's climate goals"	CSR; to contribute to the European Commission's Green Deal	CSR	CSR; meeting Japan's commitment to realize carbon-neutral society by 2050	CSR: to help meet the rising demand for "green" products and services
Paris Agreement orientation	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes

Paris Pledge	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes
UN SDG 13 support & contribution	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
How (core decarbonization actions)	Energy conservation	Reducing emissions from operations and products	Low carbon intensity of products	Reducing operational emission. Renewables.	Reducing emissions from operations and products	Renewables	Mix of nuclear and renewable energy	Smart grids, renewables	Renewables, smart grids	Reducing emissions from the operation	Use of renewable energy across the fleet and facilities	Reducing energy consumption, using green energy sources and fuels	Fleet modernization, new fuels; carbon offsetting	Investing into low-emissions fleet; fuel efficiency	Investing in new fuels and vessel technologies	Hydrogen-based steelmaking[iv]	Hydrogen-based steelmaking; CCUS	Hydrogen-based steelmaking; CCUS	Hydrogen-based steelmaking; CCUS; Efficient energy use	Hydrogen-based steelmaking; CCUS

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