STUDY

Requested by the ENVI Committee

European Parliament

Issues at stake at the COP29 UN Climate Change Conference in Baku

Scaling up climate action and support

Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
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PE 754.220 - October 2024

EN

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Abstract

This study provides an overview of the status of international climate negotiations and issues at stake at the COP29 climate change conference. It also addresses the current implementation of the Paris Agreement, the climate policies of key Parties and the stakeholders in the negotiations.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on the Environment, Public Health and Food Safety (ENVI).

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Manuscript completed: October 2024
Date of publication: October 2024

This document is available on the internet at:
http://www.europarl.europa.eu/supporting-analyses

For citation purposes, the study should be referenced as: Moosmann, L., Fallasch, F., Jung, H., Lauer, S., Wissner, N., Urrutia, C., Schneider, L., Oppelt, D., von Heinemann, S., Sharma, N., McCarthy, A., Kohler, B., *Issues at stake at the COP29 UN Climate Change Conference in Baku - Scaling up climate action and support*, Study for the Committee on the Environment, Public Health and Food Safety (ENVI), Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2024.

CONTENTS

LIST OF BOXES

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ABU	Group of Argentina, Brazil and Uruguay
ACE	Action for Climate Empowerment
ADCOM	Adaptation Communication
AEF	Agreed Electronic Format
AILAC	Independent Alliance of Latin America and the Caribbean (Asociación Independiente de Latinoamérica y el Caribe)
AGN	African Group of Negotiators
ALBA	Bolivarian Alliance for the Peoples of our America (Alianza Bolivariana para los Pueblos de Nuestra América)
AOSIS	Alliance of Small Island States
AR6	Sixth Assessment Report (of the Intergovernmental Panel on Climate Change)
AR7	Seventh Assessment Report
AUD	Australian Dollar
BAU	Business-As-Usual
BINGO	Business and Industry NGOs
bn	Billion
BTR	Biennial Transparency Report
CAD	Canadian Dollar
CAEP	Committee on Aviation Environmental Protection
CAN	Climate Action Network
CAPACITY	Capacity Award Programme to Advance Capabilities and Institutional Training in one Year
CAT	Climate Action Tracker

CBDR/RC-NC	Common but Differentiated Responsibilities and Respective Capabilities, in the light of different national circumstances
CBIT	Capacity Building Initiative for Transparency
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CH_4	Methane
CII	Carbon Intensity Indicator
CIPP	Comprehensive Investment and Policy Plan
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
COVID-19	Coronavirus Disease 2019
COY	Conference of the Youth
CPLC	Carbon Pricing Leadership Coalition
CTCN	Climate Technology Centre and Network
DKK	Danish Krone
ECHA	European Chemicals Agency
ECOS	Education, Communication and Outreach Stakeholders

EEDI	Energy Efficiency Design Index
EEXI	Energy Efficiency Existing Ship Index
EIG	Environmental Integrity Group
ENGO	Environmental NGOs
EPA	Environmental Protection Agency
ERI	Exponential Roadmap Initiative
ETF	Enhanced Transparency Framework
ETS	Emissions Trading System
EU	European Union
EUR	Euro
F-gas	Fluorinated Gas
FAO	Food and Agriculture Organization
FBOs	Faith Based Organisations
FLD	Fund for responding to Loss and Damage
FMC	First Movers Coalition
FMCP	Facilitative, Multilateral Consideration of Progress
FWG	Facilitative Working Group
G7	Group of Seven
G20	Group of Twenty
G-77	Group of 77 at the United Nations
GBP	British Pound
GCF	Green Climate Fund
GCoM	Global Covenant of Mayors for Energy and Climate Change
GEF	Global Environment Facility

GGA	Global Goal on Adaptation
GHG	Greenhouse Gas
GMP	Global Methane Pledge
GST	Global Stocktake
Gt	Gigaton
GW	Gigawatt
GWP	Global Warming Potential
H_2	Hydrogen
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
ICAO	International Civil Aviation Organization
ICC	International Chamber of Commerce
ICLEI	International Council for Local Environmental Initiatives
IDDI	Industrial Deep Decarbonisation Initiative
IEA	International Energy Agency
IGO	Intergovernmental Organisation
IMO	International Maritime Organization
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IPO	Indigenous Peoples' Organisations
IPPU	Industrial Processes and Product Use
IRA	Inflation Reduction Act
ITMO	Internationally Transferred Mitigation Outcome
ITUC	International Trade Union Confederation

JETP	Just Energy Transition Partnership
JI	Joint Implementation
KCI	Katowice Committee of Experts on the Impacts of the Implementation of Response Measures
LCIPP	Local Communities and Indigenous Peoples Platform
LEG	Least Developed Countries Expert Group
LDC	Least Developed Countries
LDCF	Least Developed Countries Fund
LGMA	Local Government and Municipal Authorities
LMDC	Like-Minded Developing Countries
LNG	Liquid Natural Gas
LOW-Methane	Lowering Organic Waste Methane
LRM	Lifecycle Refrigerant Management
LTAG	Long-Term Aspirational Goal
LTS	Long-Term Strategy
LULUCF	Land Use, Land Use Change and Forestry
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Marine Environmental Protection Committee
Mha	Million hectares
MLF	Multilateral Fund
MOP	Meeting of the Parties (to the Montreal Protocol)
MPGs	Modalities, Procedures and Guidelines (for the transparency framework for action and support)
MP	Montreal Protocol

MRV	Monitoring, Reporting and Verification
Mt	Megaton
NACAG	Nitric Acid Climate Action Group
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NCQG	New Collective Quantified Goal (on climate finance)
NDA	National Designated Authority
NDC	Nationally Determined Contribution
NDE	National Designated Entity
NEP	National Electricity Plan
NGO	Non-Governmental Organisation
NH_3	Ammonia
NMVOC	Non-Methane Volatile Organic Compounds
NOAA	National Oceanic and Atmospheric Administration
N_2O	Nitrous Oxide
NREP	National Renewable Energy Program
OECD	Organisation for Economic Co-operation and Development
OEWG	Open-Ended Working Group
OGCI	Oil and Gas Climate Initiative
OMGE	Overall Mitigation in Global Emissions
PCCB	Paris Committee on Capacity-Building
PFAS	Polyfluoroalkyl substances
$PM_{2.5}$	Fine particulate matter
ppb	parts per billion

RINGO	Research and Independent Non-Governmental Organizations
SAF	Sustainable Aviation Fuel
SB	Subsidiary Body
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBTi	Science Based Targets initiative
SCF	Standing Committee on Finance
SDG	Sustainable Development Goal
SEEMP	Ship Energy Efficiency Management Plan
SEEP	Saudi Energy Efficiency Program
SIDS	Small Island Developing States
SLCF	Short-Lived Climate Forcer
SMEs	Small and Medium-sized Enterprises
SO_2	Sulphur dioxide
TEAP	Technology and Economic Assessment Panel
TEC	Technology Executive Committee
TF	Technology Framework
TIP	Technology Implementation Programme
TFI	Task Force on National Greenhouse Gas Inventories
TM	Technology Mechanism
TUNGO	Trade Union Non-Governmental Organizations
UAE	United Arab Emirates
UNFCCC	United Nations Framework Convention on Climate Change
UN	United Nations

UK	United Kingdom
US	United States
USD	United States Dollar
WBCSD	World Business Council for Sustainable Development
WGC	Women and Gender Constituency
WIM	Warsaw International Mechanism (for loss and damage)
YOUNGO	Youth Non-Governmental Organisations

EXECUTIVE SUMMARY

The Conference of the Parties (COP) under the United Nations Framework Convention on Climate Change (UNFCCC) meets for its 29th session from 11 to 22 November 2024 in Baku (Azerbaijan). While the provision of financial support to developing countries is a key topic at every COP, the conference in Baku is of particular importance because it will have the task of defining a new collective goal for providing financial support. At the same time, countries are in the process of developing new climate commitments under the Paris Agreement which have to be communicated in early 2025.

The international framework for addressing climate change

The international response to climate change is governed by the United Nations Framework Convention on Climate Change (UNFCCC), which entered into force in 1994. After the Kyoto Protocol led to only limited climate change mitigation i.e. the reduction of GHG emissions and the enhancement of GHG sinks, and greenhouse gas emissions continued to increase in many parts of the world, the Paris Agreement was adopted in 2015.

The Paris Agreement requires its Parties to engage in ambitious climate action. Mitigation ambition is laid out in Nationally Determined Contributions (NDCs), which have to represent a progression over time. These NDCs aim at contributing to the Paris Agreement's goal of holding the increase in the global average temperature to well below 2 °C compared to pre-industrial levels and pursuing efforts to limit this increase to 1.5 °C.

In addition, the Paris Agreement stipulates the goal of increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience, and the goal of making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Outside the UNFCCC, the greenhouse gas emissions of international aviation and international maritime transport are addressed by specialised organisations of the United Nations, and the emissions of hydrofluorocarbons, a group of fluorinated greenhouse gases, are regulated by the Kigali Amendment to the Montreal Protocol. For the reduction of methane and nitrous oxide emissions, additional international initiatives have been put in place.

Implementation of the Paris Agreement

At the annual climate change conferences, the implementation of the Paris Agreement is reviewed and the rules for its implementation are refined. Negotiations cover a range of topics and sub-topics under mitigation, adaptation, loss and damage, support, transparency and compliance.

At the upcoming COP in Baku, Parties need to agree on a new collective quantified goal on climate finance, as stipulated by the COP decision on the Paris Agreement. Such a new goal will be critical for broadening the support to developing countries in their response to climate change, and for building trust among Parties.

Article 6 of the Paris Agreement introduced a framework for countries to engage in international emissions trading and a carbon crediting mechanism. Additional rules for these carbon market activities will be discussed at the upcoming COP.

In the area of climate change adaptation, Parties will, inter alia, exchange knowledge and develop the terms of reference for the review of the United Arab Emirates Framework for Global Climate Resilience. In addition, a work programme is underway to identify and develop indicators for measuring progress towards adaptation-related targets.

After a fund for responding to climate-change related loss and damage has been established at the previous conference, this year's COP will focus, inter alia, on the activities of the Warsaw International Mechanism on loss and damage.

Climate policies of main Parties

In the response to climate change, the members of the Group of Twenty (G20) play a pivotal role as they are responsible for approx. 80% of global greenhouse gas emissions. The focus of their climate policies varies and depends on national circumstances. While many G20 members have decreased the use of coal in electricity generation in recent years, coal is still widely used, in particular in emerging economies. Across all countries, there is a range of policies in place to promote renewable energy. The increase of renewable energy capacity and the phase-down of coal power are among the 'global efforts' which Parties agreed in the decision on the Global Stocktake at the previous climate change conference in Dubai in 2023.

Stakeholders in the negotiations

During the climate negotiations, Parties coordinate in groups along similar national circumstances and interests. These include the 'Group of 77 (G-77) and China,' an association of developing countries, and the Umbrella Group, which comprises many developed countries. The European Union and its Member States speak as one group during the negotiations.

Civil society plays a key role in the response to climate change. Representatives of civil society, local and regional governments and international organisations attend the climate negotiations alongside Party representatives, proposing solutions and raising awareness for the multitude of issues relating to climate change.

Outlook

Based on the outcome of the Global Stocktake, which was concluded at the previous COP, Parties need to develop and communicate their new NDCs by February 2025. In order to keep the temperature goal of the Paris Agreement within reach, all Parties need to commit to a strong increase in ambition. The COP29 in Baku will play a key role in generating momentum for the development of more ambitious NDCs.

Following an agreement on additional rules under Article 6 of the Paris Agreement, it can be expected that many Parties will proceed with engaging in cooperative approaches and in the Paris Agreement's crediting mechanism. Biennial Transparency Reports, which are due by the end of 2024, will provide insights into the Parties' climate action and support and their progress towards the goals of the Paris Agreement.

Finally, COP30 will be hosted in November 2025 in Belém in the Amazon Basin. It can be expected that this conference will highlight the critical role of rainforests in a changing climate and the urgent need for biodiversity protection alongside ambitious climate action.

1. INTRODUCTION

The year 2023 was the hottest on record by a clear margin (WMO 2024), and ever more people are affected by the impacts of extreme weather across the globe. With insufficient efforts to mitigate climate change, temperature increases are projected to exceed agreed climate goals, and a transformation towards low greenhouse gas emissions is hampered by economic and institutional challenges (UNEP 2023).

Against this backdrop, the Conference of the Parties (COP) under the United Nations Framework Convention on Climate Change (UNFCCC) convenes annually to find ways to scale up mitigation efforts globally, to adapt to a changing climate and to increase support to developing countries. Taking place in Baku (Azerbaijan) from 11 to 22 November 2024, the 29th COP will have the key task of defining a new goal for climate finance, and it occurs at a time when countries are in the process of developing new climate commitments under the Paris Agreement, which are due in 2025.

This study provides an overview of the international framework for addressing climate change and of the key topics that will be discussed at COP29. The study is intended for the European Parliament's delegation to the COP, but also for a wider audience interested in the negotiations on climate change.

Chapter 2 of this study introduces the main building blocks of the international response to climate change, namely the UNFCCC, the Paris Agreement and other sectoral agreements. Recent and ongoing developments in the implementation of the Paris Agreement are presented in detail in chapter 3. These include the main topics which will be negotiated at the COP in Baku.

The climate policies of the main Parties to the Paris Agreement are summarised in chapter 4, followed by an overview of the stakeholders in the negotiations in chapter 5. Finally, an outlook on the challenges beyond COP29 is provided in chapter 6.

Chapters 2.1, 2.2 and 5 constitute an update of chapters 2.1 to 2.3 and 5 of the study 'International Climate Negotiations – Issues at stake in view of the COP28 UN Climate Change Conference in Dubai and beyond' (Healy et al. 2023).

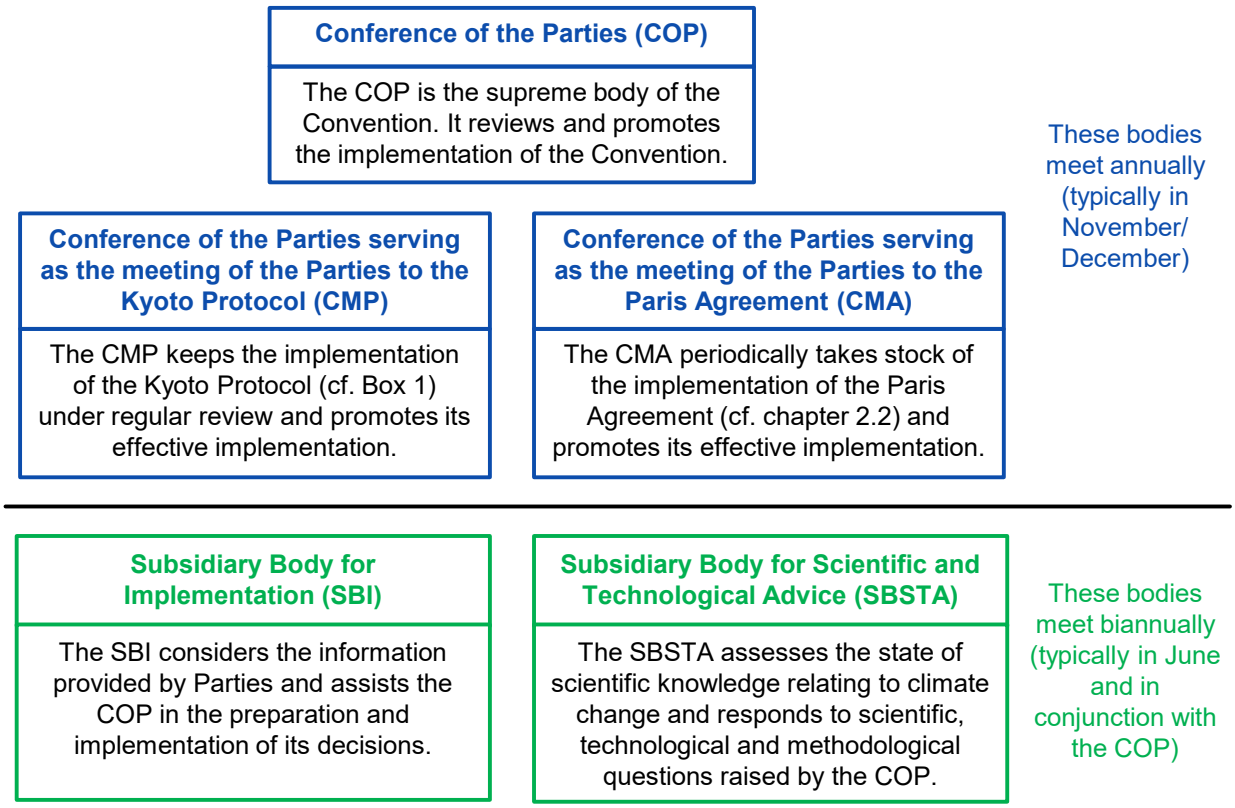
2. THE INTERNATIONAL FRAMEWORK FOR ADDRESSING CLIMATE CHANGE

2.1. The United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC 1992) was adopted at the UN Conference on Environment and Development in Rio de Janeiro in 1992. Its objective is to stabilise the concentrations of greenhouse gases (GHG) in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Parties to the Convention commit to implementing measures to mitigate climate change and to facilitating adequate adaptation to its effects.

Following the 1992 Rio conference, most countries signed and ratified the Convention. Currently it has 198 Parties (United Nations 2024a). After the entry into force of the Convention in 1994, its first Conference of the Parties (COP) convened in 1995. From 1995 onwards, climate change conferences have taken place annually, with the exception of 2020 when the conference was postponed due to the Coronavirus Disease 2019 (COVID-19) pandemic. Besides the COP, there are other bodies under the Convention, as shown in Figure 1.

Figure 1: The Conference of the Parties and related bodies



Source: UNFCCC (1992), UNFCCC (1998), UNFCCC (2015b), authors' own diagram.

Box 1: The Kyoto Protocol

In order to support the achievement of its objectives, the UNFCCC provides for the adoption of protocols. Following the entry into force of the Convention, the Kyoto Protocol was adopted by the Conference of the Parties in Kyoto in 1997. The Kyoto Protocol required developed country Parties to limit or reduce their GHG emissions. The reductions or limitations agreed for the first commitment period (2008-2012) were slightly below the emissions levels of 1990 in most cases, and for some countries they constituted an increase compared to that year. The largest emitter at the time of the adoption of the Kyoto Protocol, the United States of America, did not ratify the protocol, and another important emitter, Canada, withdrew from it in 2011. The remaining Parties to the Kyoto Protocol fulfilled their obligations in the Protocol's first commitment period.

At the climate change conference in Doha in 2012, Parties agreed to a second commitment period of the Kyoto Protocol. The Doha Amendment to the Kyoto Protocol committed a restricted number of developed country Parties to limiting or reducing their GHG emissions in the period from 2013 to 2020. Given the low overall ambition under the second commitment period, all participating Parties were able to fulfil their obligations and a large surplus of units from the Kyoto Protocol mechanisms remained.

Countries were allowed to achieve their emission reductions or limitations using the following carbon market mechanisms:

- Under the Clean Development Mechanism (CDM), developed countries were able to use certified emission reductions from mitigation projects in developing countries to achieve their commitments.
- Under Joint Implementation (JI), developed countries were able to acquire emission reduction units resulting from projects in other developed countries.
- Developed countries were also able to transfer parts of their assigned emission budgets to other developed countries.

Source: UNFCCC (1998), UNFCCC (2012)

2.2. The Paris Agreement

2.2.1. Adoption, ratification and entry into force

As the mitigation commitments under the Kyoto Protocol concerned a limited number of developed countries only, the international community prepared a successor to the Kyoto Protocol, which would include commitments by all countries. The negotiations on this agreement were concluded in 2015, the same year that the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction were adopted. The decisive conference, COP21 in Paris in December of that year, was preceded by announcements by many countries on their contributions to climate change mitigation – the Intended Nationally Determined Contributions (INDCs).

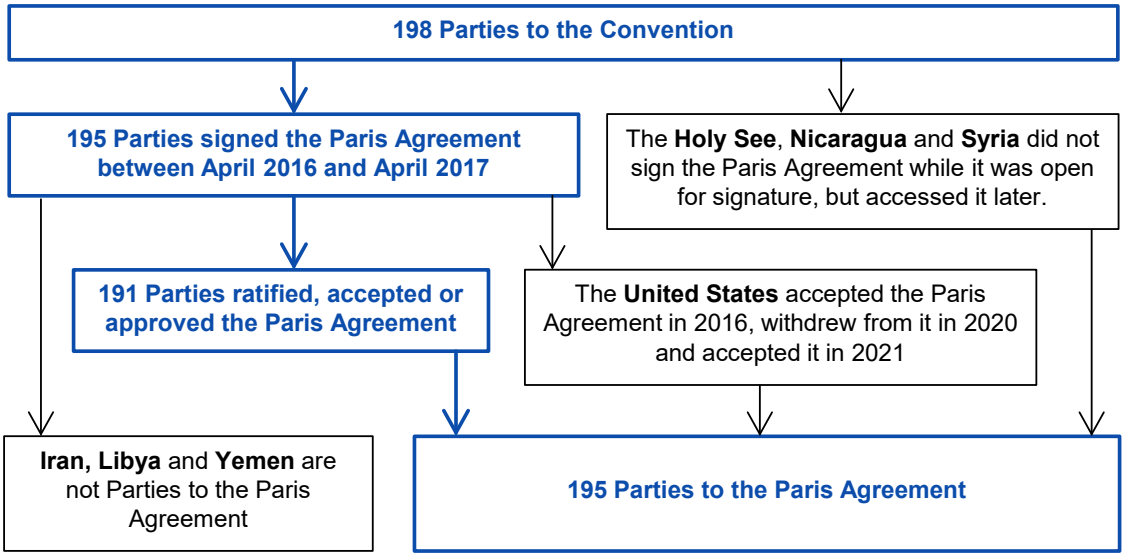
On 12 December 2015, Parties adopted the Paris Agreement. This was the first global agreement with the same climate change mitigation and adaptation requirements for all Parties (UNFCCC 2015b). While each Party determines the extent of its action (the bottom-up approach of the nationally determined contributions), the Paris Agreement also contains universal legal obligations that apply to all Parties, thus establishing a shared, rules-based system (top-down approach).

The Paris Agreement is included in the annex to COP decision 1/CP.21 (UNFCCC 2015a). This decision adopted the Paris Agreement and laid out additional details, including technical work to be completed in order to make the Paris Agreement fully operational. This technical work, the 'Paris Agreement Work Programme,' constituted the main focus of climate negotiations from 2016 to 2018. Its outcome is often referred to as the 'Paris Agreement rulebook'.

After its adoption, the Paris Agreement was open for signature for one year, starting in April 2016. 195 of the then 197 Parties to the Convention signed the Paris Agreement during that period. What is more important than the signing is the actual ratification, which legally binds Parties to the agreement. In this step, countries deposit instruments of ratification with the UN Secretary-General. Depending on their legislative procedures, some countries deposit instruments of acceptance or approval rather than ratification, and Parties that did not sign the agreement while it was open for signature always have the possibility of accessing it.

In October 2016, the conditions for entry into force specified in the Paris Agreement were met, namely that over 55 Parties, which accounted for more than 55 % of global GHG emissions, ratified the agreement. It entered into force on 4 November 2016. Figure 2 provides an overview of the status of signature and ratification of the Paris Agreement. At the time of writing this study, there are three Parties which have signed the agreement but not ratified it (United Nations 2024b).

Figure 2: Status of signature and ratification of the Paris Agreement



Source: United Nations (2024b), authors' own diagram.

2.2.2. The goals of the Paris Agreement

The Paris Agreement is guided by three goals, which are laid out in Article 2 of the agreement (Figure 3). The temperature goal aims to hold the increase in the global average temperature to well below 2 °C compared to pre-industrial levels and to pursue efforts to limit this increase to 1.5 °C. The adaptation goal aims to increase the ability to adapt to the adverse impacts of climate change and to foster climate resilience and low greenhouse gas emissions development. Finally, the 'finance flows' goal aims to make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Figure 3: Goals of the Paris Agreement

Temperature goal	Adaptation goal	Finance flows goal
Article 2.1(a)	**Article 2.1(b)**	**Article 2.1(c)**
Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.	Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production.	Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Source: UNFCCC (2015b)

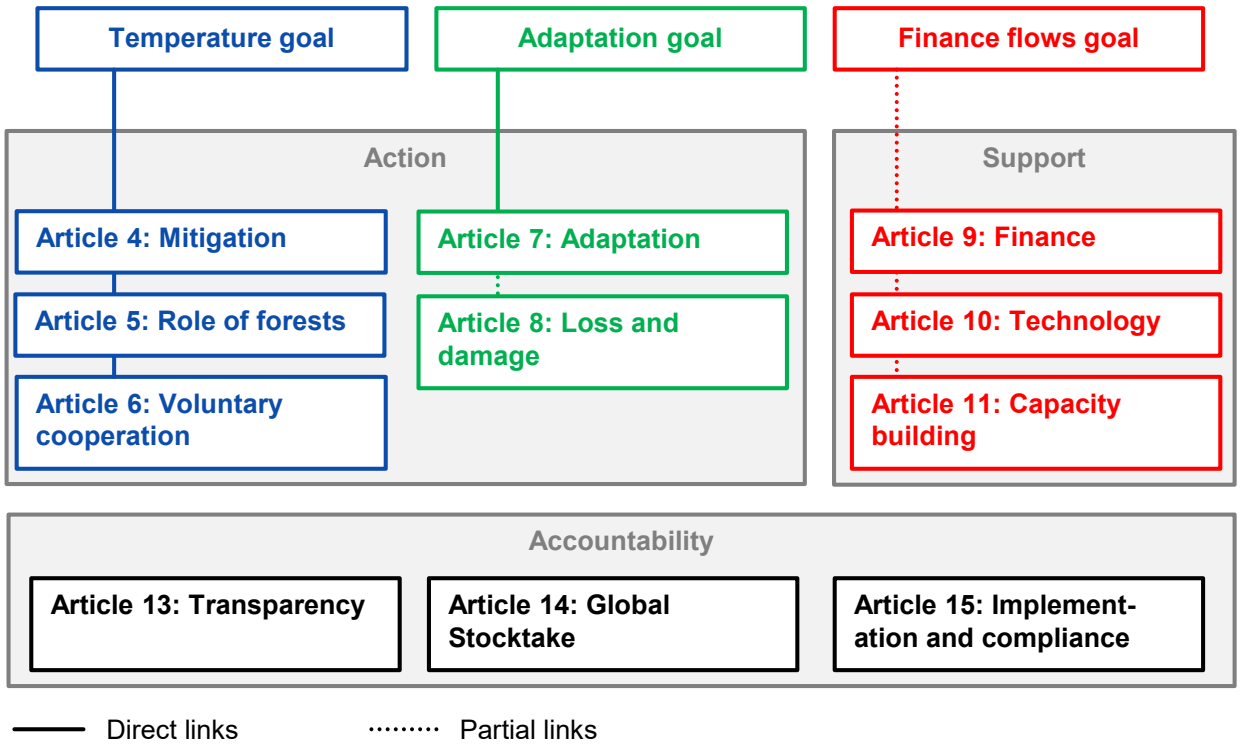
The 'finance flows' goal needs to be distinguished from the '100 billion dollar' goal, a commitment by developed country Parties, first made at the COP in Copenhagen in 2009, to mobilise climate finance amounting to United States Dollar (USD) 100 billion per year by 2020, from public and private sources. The '100 billion dollar' goal was reiterated in the decision on the Paris Agreement (UNFCCC 2015a), and it was decided that it shall apply from 2020 to 2025 and a new global goal shall be set from a floor of USD 100 billion per year, which is to apply thereafter.

It should also be noted that the 'finance flows' goal is broader than the concept of financial support addressed in Article 9 of the Paris Agreement. While Article 9 addresses financial support to developing countries, the 'finance flows' goal aims also to address finance flows within countries, such as the distribution of subsidies or private investments.

2.2.3. Overview of the main topics of the Paris Agreement

The Paris Agreement addresses a wide range of topics, from mitigation to adaptation and support, as shown in Figure 4. The following sections provide an overview of the topics of the Paris Agreement.

Figure 4: Topics addressed by the Paris Agreement



Source: UNFCCC (2015b); figure based on Moosmann et al. (2016) and UNFCCC (2022c).

a. Mitigation

Mitigation, i.e. the reduction of GHG emissions and the enhancement of GHG sinks, is a cornerstone of the response to climate change. The Paris Agreement, in Article 4, sets out the emissions goal, according to which Parties aim to reach global peaking of GHG emissions as soon as possible, and to achieve a balance between anthropogenic emissions by sources and removals by sinks[1] of GHGs in the second half of this century. The main instrument for reaching the emissions goal is the NDC, which each Party has to communicate every five years; successive NDCs represent a progression beyond the Parties' current NDCs. Developed countries should establish economy-wide absolute emission reduction targets in their NDCs. Developing countries may also establish other forms of targets (e.g. for renewable energy or for some sectors only) but are encouraged to move, over time, towards economy-wide emission reduction or limitation targets.

In addition to their NDCs, Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies. Decision 1/CP.21 invited Parties to communicate such strategies with a mid-century time horizon by 2020.

Besides the reduction of emissions, the uptake of carbon dioxide from the atmosphere will have to play an important role in achieving the temperature goal of the Paris Agreement (IPCC 2022b). Article 5 of

[1] A sink is any process, activity or mechanism which removes a greenhouse gas from the atmosphere (IPCC 2006).

the Paris Agreement states that Parties should take action to conserve and enhance sinks and reservoirs of greenhouse gases, including forests.

As Parties may choose to cooperate in their mitigation actions, including through international carbon markets, the Paris Agreement addresses such voluntary cooperation with a similar approach as that taken in the Kyoto Protocol. Article 6 provides a framework for using mitigation outcomes achieved in other countries to meet a Party's NDC target. This article also establishes a new carbon crediting mechanism under international oversight and a framework for countries to engage in non-market approaches.

b. Adaptation

As human-caused climate change is already affecting many weather and climate extremes in every region across the globe (IPCC 2023), adaptation is needed as a key component of the response to climate change. It has become more urgent with the passing of time and the failure of the international community to adequately address the mitigation of GHG emissions. Article 7 of the Paris Agreement establishes a global goal on adaptation; its pillars are the enhancement of adaptive capacity, the strengthening of resilience and the reduction of vulnerability to climate change.

Adaptation to climate change is a central political and practical priority for developing countries since they are more vulnerable than developed countries and possess fewer adaptive capacities. In this regard, the Paris Agreement recognises the importance of providing support, of international cooperation and of taking into account the needs of developing countries.

The Paris Agreement requires each Party to engage, as appropriate, in an adaptation planning process and in the implementation of adaptation actions. Each Party should report on these actions in an adaptation communication, which is to be submitted and updated periodically.

c. Loss and damage

Despite adaptation efforts, the adverse impacts of climate change cause loss and damage, such as the loss of low-lying land as a result of sea level rise or the damage to property and infrastructure as a result of extreme weather events. Like adaptation, this topic is of special importance to developing countries, particularly Small Island Developing States (SIDS) and Least Developed Countries (LDC) whose capacity to avert, minimise or address loss and damage is limited.

Article 8 of the Paris Agreement addresses loss and damage. It lists areas of cooperation, inter alia on early warning systems, emergency preparedness, risk assessment and management, and resilience of communities, livelihoods and ecosystems. The Warsaw International Mechanism (WIM) for Loss and Damage, established by the COP in Warsaw in 2013, is subject to the authority and guidance of the CMA.

d. Support (finance, technology and capacity building)

Climate action requires, among other things, financial resources, technologies and skills. As was already the case under the Convention, the Paris Agreement requires developed country Parties to provide financial, technology and capacity building support to developing countries.

The Paris Agreement extends the group of countries providing financial support: While the Convention, in its Annex II, lists a limited number of developed country Parties that are required to provide financial support, the Paris Agreement, under Article 9, requires all developed country Parties and encourages others (e.g. emerging countries) to do so. For the distribution of funds to developing countries, the Financial Mechanism was established under the Convention, and this mechanism also serves under the

Paris Agreement. The main entities operating under the Financial Mechanism are the Global Environment Facility (GEF) and the Green Climate Fund (GCF).

Besides providing financial resources, developing country Parties should continue to take the lead in mobilising climate finance from a wide variety of sources. As decided at the COP in Paris, developed country Parties intend to continue their existing goal of mobilising USD 100 billion annually from 2020 to 2025 and to set a new collective quantified goal for the time period after 2025, from the floor of USD 100 billion per year.

Besides financial support, the Paris Agreement notes the importance of the development and transfer of mitigation and adaptation technologies. Under Article 10, it establishes the Technology Framework (TF). This framework should facilitate, inter alia, technology needs assessments, the provision of enhanced financial and technical support, the assessment of technologies that are ready for transfer, and the enhancement of enabling environments for technology development and transfer.

These activities are supported by the Technology Mechanism (TM), which was established under the Convention. This mechanism consists of the Technology Executive Committee (TEC), which analyses policy issues and provides recommendations, and the Climate Technology Centre and Network (CTCN), which provides technical assistance, creates access to knowledge and fosters collaboration.

As another aspect of support, Article 11 of the Paris Agreement addresses capacity building. It aims to enhance the capacity and ability of developing countries to take effective climate action. The COP in Paris established the Paris Committee on Capacity-building (PCCB), with the aim of addressing capacity building gaps and needs and enhancing capacity-building efforts.

e. Transparency, implementation and compliance

In order to be able to track the overall progress towards the goals of the Paris Agreement, the Parties' efforts need to be transparent. Article 13 of the Paris Agreement establishes an Enhanced Transparency Framework (ETF) for action and support. For each Party, this framework comprises biennial reporting, and a technical expert review and a Facilitative, Multilateral Consideration of progress (FMCP) of reported information.

According to Article 13 of the Paris Agreement, each Party shall regularly provide a national inventory of anthropogenic GHG emissions and removals and information necessary to track progress made in implementing and achieving its NDC. Each Party should also provide information related to climate change impacts and adaptation.

The information to be provided on support differs between developed and developing countries: Developed country Parties shall provide information on financial, technology transfer and capacity-building support provided. Other Parties (e.g. emerging countries) that provide support should provide such information. Finally, developing country Parties should provide information on support needed and received.

The Parties' implementation of and compliance with the provisions of the Paris Agreement is examined by a committee. Article 15 of the Paris Agreement established this committee, which is expert-based and facilitative in nature and shall pay particular attention to the respective national capabilities and circumstances of Parties.

f. The ambition cycle and the Global Stocktake

As Parties are only at the beginning of their path towards achieving the goals of the Paris Agreement, the ambition cycle constitutes a critical overarching feature of the agreement. The ambition cycle is

not explicitly stated or defined in the Paris Agreement; it refers to the overall architecture and functioning of the Paris Agreement that results from the interplay of the different individual and collective obligations it contains. Its key elements are the NDCs and the Global Stocktake (GST).

Each Party is required to undertake ambitious efforts to strengthen the global response to climate change. These efforts are communicated in the Parties' NDCs. As these NDCs vary in their scope and ambition, the Paris Agreement stipulates that Parties' contributions have to represent a progression over time, and it introduces a mechanism of taking stock and increasing ambition. In the GST, the CMA assesses the collective progress towards achieving the goals of the agreement. The aim of the Global Stocktake is to inform Parties as they update and enhance their NDCs. The first GST was concluded during the climate change conference in Dubai in December 2023.

The GST consists of three phases: information collection, technical assessment of collective progress, and consideration of outputs. Now that the first Global Stocktake has concluded, Parties need to communicate their new NDCs by 2025. Both the Global Stocktake and the communication of NDCs take place every five years, with the aim of increasing climate ambition and action over time.

2.3. Sectoral agreements outside the UNFCCC

The Paris Agreement covers emissions of GHGs at national level. GHG emissions from international aviation and international maritime transport are typically not included in NDCs.[2] Instead, these emissions are addressed under two United Nations specialised agencies: the **International Civil Aviation Organization (ICAO)** and the **International Maritime Organization (IMO)**. Recent developments in international aviation and shipping are presented in the following two sub-sections.

Fluorinated gases (F-gases) are an important group of GHG, with globally rising emissions. Their emissions are reported under the UNFCCC and included in the NDCs of many countries. Besides the UNFCCC and Paris Agreement, F-gas emissions are also addressed under the Montreal Protocol (see section 2.3.3).

Methane (CH_4) and nitrous oxide (N_2O) are two important GHGs which are covered by most NDCs. In addition, they are addressed by international initiatives, as explained in sections 2.3.4 and 2.3.5. Finally, black carbon is an aerosol which contributes to short-term warming. Initiatives to address its emissions are presented in section 2.3.6.

2.3.1. International aviation

The aviation sector, like maritime transport, contributes significantly to global greenhouse gas emissions: approx. 2.4% of annual global CO_2 emissions in recent years stem from aviation (Lee et al. 2021). In the last three decades, CO_2 emissions from the sector have increased by approx. 140% (OECD 2023). The actual contribution of aviation to global warming is much higher (roughly three times) if non-CO_2 effects are considered as well.

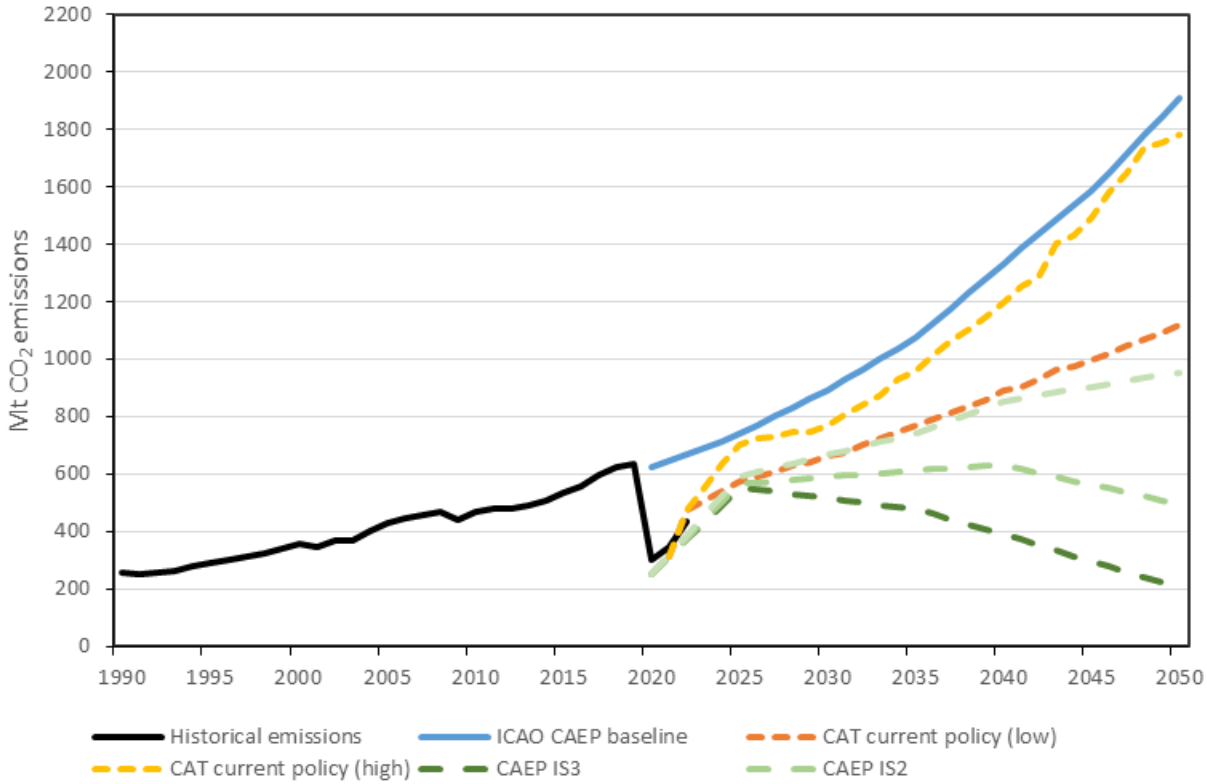
Before the COVID-19 pandemic, about two thirds of global CO_2 emissions from aviation were caused by international flights. In 2022, international aviation made up more than half of global aviation emissions with 437 Mt (megatons) CO_2 (IEA 2023).

Figure 5 shows how CO_2 emissions from international aviation developed from 1990 to 2022 (IEA 2023; OECD 2023). After the emissions drop in 2020 due to the COVID-19 pandemic, emissions from international aviation are projected to increase considerably up to 2050 if no further policy and technical

[2] The European Union is an exception as its NDC and its mitigation policies, including the EU ETS, cover some emissions from international aviation and shipping.

measures are introduced. This is shown in the figure below, which draws on the business-as-usual scenario of the Committee on Aviation Environmental Protection (CAEP) and projections by CAT (2022) based on current policies. Figure 5 also includes emission reduction scenarios modelled by CAEP for ICAO's Long-Term Aspirational Goal.

Figure 5: Historical and future development of CO_2 emissions from international aviation

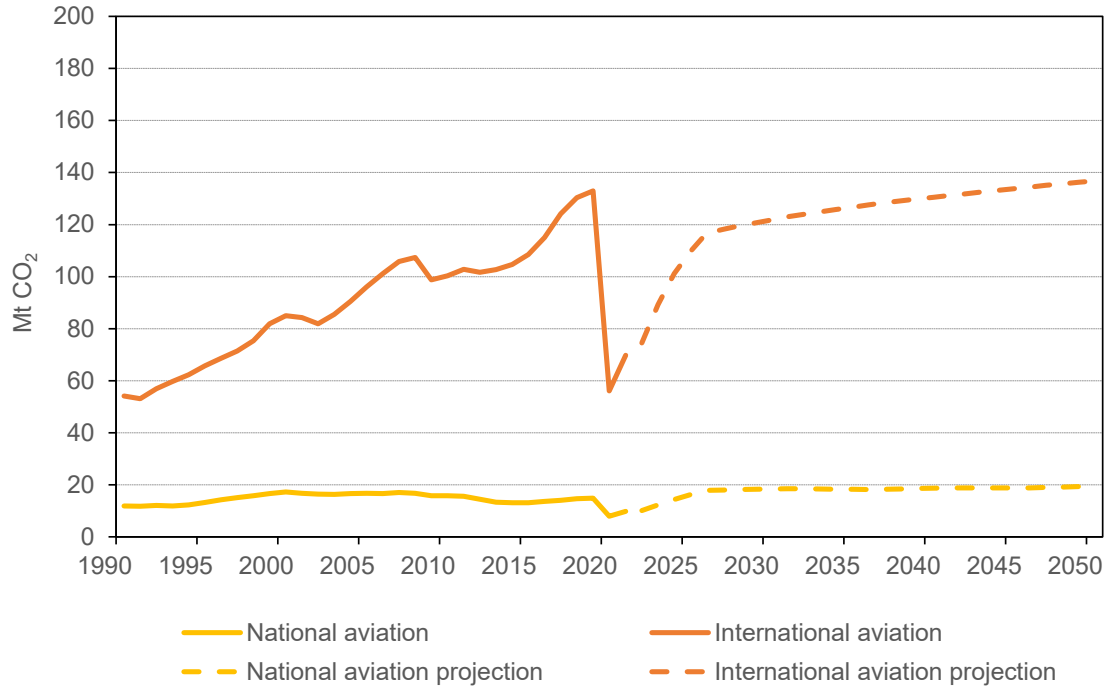


Source: Authors' own compilation based on ICAO (2019), CAT (2022), ICAO (2022a), OECD (2023), IEA (2023).

Note: The blue line shows a business-as-usual (BAU) scenario from ICAO. The other lines show projections for international aviation considering the impact of the COVID-19 pandemic.

In the EU, emissions from international flights, including flights between Member States, make up a particularly large share in overall aviation emissions (Figure 6). Emissions from international flights departing in the EU have increased substantially since 1990 as well. Projections based on existing policies do not foresee a significant decline in EU-related emissions; while the emissions of international aviation increase, the emissions of national aviation are expected to remain stable.

Figure 6: Historical and future development of EU-related aviation



Source: EEA (2023), projections only include existing measures (business-as-usual).

In the face of the projected increase in emissions, further operational and technical measures are needed to reduce emissions, e.g. energy efficiency gains, the use of sustainable aviation fuels (SAF) and alternative propulsion technologies (like electric aircrafts).

Policy instruments to mitigate emissions from international aviation

As a key development at the international level, the ICAO member states agreed on the **Long-Term Aspirational Goal (LTAG) of net zero emissions in 2050** at the 41st ICAO assembly in 2022 (ICAO 2022b). In 2023, ICAO additionally agreed to **reduce CO_2 emissions in international aviation by 5% to 8% by 2030** through the use of Sustainable Aviation Fuel (SAF), low-carbon aviation fuels and other aviation technologies like hydrogen (ICAO 2023).

ICAO foresees a basket of measures to achieve the LTAG by reducing emissions through technical and operational measures to increase fuel efficiency, the use of SAF, and the purchase of carbon offsets. The latter is currently implemented through the **Carbon Offset and Reduction Scheme for International Aviation (CORSIA)** which aims to compensate for any CO_2 emissions above a baseline to achieve the medium-term goal of carbon-neutral growth after 2020. Airlines can use carbon credits to fulfil their offset requirements and they can reduce their offset requirements by using SAF. CORSIA is currently set to run until 2035. The scheme only covers flights on international routes between participating countries. Currently, 126 states have agreed to participate in the voluntary phase from 2024 onwards.

At **EU level**, there are two main policies addressing (international) aviation emissions: the **EU Emissions Trading System (EU ETS)** and **ReFuelEU Aviation**. Compared to CORSIA, the EU ETS has a different geographical scope (only flights within the EU and European Economic Area and flights to the United Kingdom and Switzerland), a much higher carbon price, a longer timeline and a different definition of SAF.

Flights to or from other countries participating in CORSIA are currently exempted from the EU ETS as they are subject to CORSIA offsetting requirements. All flights to or from countries not participating in CORSIA will be subject to the EU ETS from 2027 onwards. Another difference is that operators under the EU ETS must surrender allowances for all their verified emissions whereas operators under CORSIA only offset part of their emissions (the increase compared to the baseline).

Further, CORSIA only considers CO_2 emissions whereas the EU ETS will follow a staged approach regarding non-CO_2 effects[3]: a monitoring, reporting and verification (MRV) system will be implemented to cover non-CO_2 emissions from 2025 onwards and an impact assessment in 2028 will evaluate whether the ETS will be expanded to include these effects.

Further details of the revision of the EU ETS Directive[4] (including the eligible fuel support mechanism with 20 million allowances for the uptake of SAF) and details of the ReFuelEU Aviation Regulation (EU 2023c) are still being elaborated by the European Commission.

While current EU policy instruments will not be sufficient to achieve the LTAG, the ReFuelEU Aviation Regulation presents a strong incentive for the uptake of SAF within the EU in the years and decades ahead.

2.3.2. International maritime transport

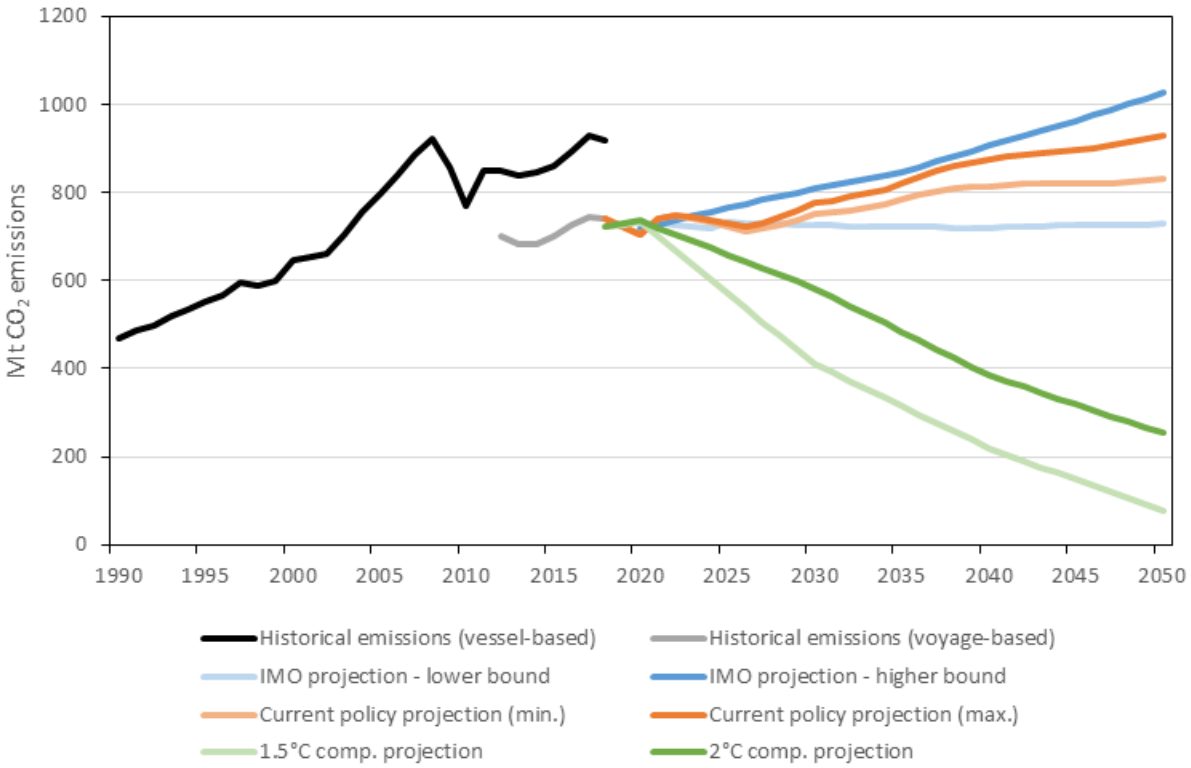
Maritime transport is responsible for a considerable share of global GHG emissions: approx. 2.9% in 2018 (IMO 2020). The vast majority of climate-relevant emissions (> 90%) are CO_2 emissions; there are smaller quantities of methane, nitrous oxide and black carbon emissions (IMO 2020). The major share of these emissions can be attributed to international voyages. Also, cargo transport accounts for the overwhelming majority of maritime emissions (more than three quarters), with passenger transport having only a small share.

Their almost steady increase after 1990 is shown in Figure 7. Compared to international aviation, international maritime transport emissions were less impacted by the COVID-19 pandemic, with passenger traffic being impacted the most (Millefiori et al. 2021; Roland Berger 2023). It can be seen in the figure below that business-as-usual (BAU) scenarios lead to an increase in future emissions compared to today with a wide range of projected emissions in 2050 (represented by the blue and red lines in the figure). For a 1.5 °C or 2 °C compatible pathway, emissions would have to decrease significantly.

[3] The contribution of aviation to global warming is about three times higher if non-CO_2 effects are considered (instead of considering only CO_2 emissions).

[4] Consolidated version of the EU ETS Directive (2003/87/EC), https://eur-lex.europa.eu/eli/dir/2003/87/2024-03-01.

Figure 7: Historical and projected CO_2 emissions from international maritime transport



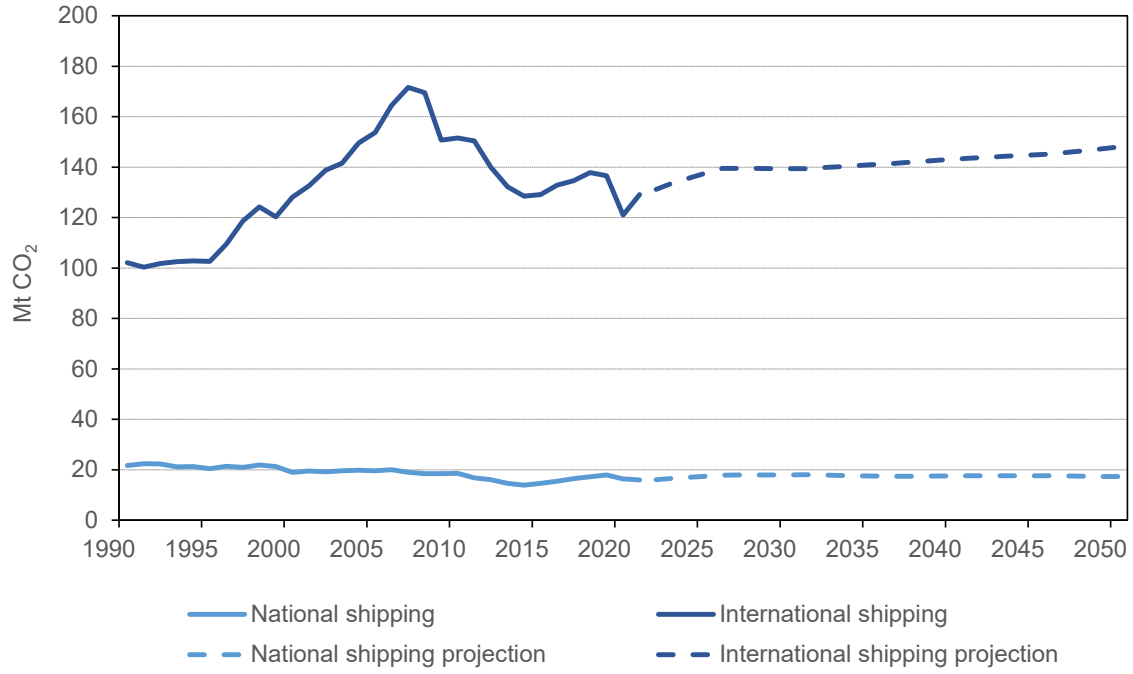
Source: Authors' own compilation based on IMO (2009), IMO (2015), IMO (2020) and CAT (2023)

Note: Historic emissions are based on bottom-up data from the IMO of the activity of the global fleet. The latest IMO greenhouse gas study IMO (2020) refines the methodology by using a voyage-based approach compared to the previous vessel-based approach which decreases the share of international maritime transport of the total maritime transport. Projections are based on business-as-usual data from the IMO and an analysis of emission development based on current policies and 1.5 °C- and 2 °C-compatible pathways from Climate Action Tracker (2023).

International voyages[5] including voyages between Member States also bring about the majority of emissions in EU-related shipping, as shown in Figure 8 below. The figure shows that these emissions are currently approx. 130% above 1990 levels.

5 International voyages are voyages in international waters, so beyond the exclusive economic zone of states (extending 200 nautical miles from the coast).

Figure 8: Historical and future development of EU-related shipping



Source: EEA (2023), projections only include existing measures (business-as-usual)

Note: National shipping includes inland navigation.

However, emissions from national shipping (including inland and national maritime transport) slightly decreased. Within the scope of the EU MRV for shipping (see below), international voyages caused approx. 91 Mt CO_2 (67.4%) of the total 135.5 Mt CO_2 emissions reported for EU-related maritime transport in 2022 (EC 2024).

Policy instruments to mitigate emissions from maritime transport

In 2023, IMO member states adopted a revised **GHG Strategy including a new long-term goal** 'to peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around, i.e. close to 2050' (IMO 2023, p. 6). The strategy also includes indicative checkpoints of reducing the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, and by at least 70%, striving for 80%, by 2040, compared to 2008.

The revised GHG strategy also includes the ambition that 'zero or near-zero GHG emission technologies, fuels and/or energy sources' shall represent at least 5%, striving for 10%, of the energy used by international shipping by 2030. The GHG strategy will be revised every five years. Reduction targets and indicative checkpoints in the revised GHG Strategy take a well-to-wake (or lifecycle) approach for GHG emissions of marine fuels and including not only CO_2 but also other relevant GHG (such as methane and nitrous oxide).

There are several policies (so-called **short-term measures within IMO**) **targeting the energy efficiency of ships** at IMO level: the Energy Efficiency Design Index (EEDI), the Energy Efficiency Index for Existing Ships (EEXI), the Carbon Intensity Indicator (CII), and the Ship Energy Efficiency Management Plan (SEEMP). The EEXI and CII will be revised in 2026 at the latest, also in view of the revised GHG Strategy. Besides energy efficiency improvements and the electrification of short-sea shipping, a switch to post-fossil fuels will be needed to reduce GHG emissions from international maritime transport (DNV

GL 2019). IMO member states agreed on a basket of measures at the 80th Marine Environmental Protection Committee (MEPC) meeting in 2023 that shall consist of a technical element, which shall be a 'goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity, and an economic element to price GHG emissions' (IMO 2023).

Since MEPC 80, several proposals with different designs and policy combinations have been discussed at the meetings, including fuel standards with flexibility mechanisms and GHG levies.

To inform further negotiations, a comprehensive impact analysis on the discussed measures is being prepared. A '**IMO net zero framework**' which sets out the structure for the **future amendment to the International Convention for the Prevention of Pollution from Ships (MARPOL)** regarding the mid-term measures was agreed at MEPC 81 in April 2024. It is planned that the selected policy measures will be adopted at MEPC 83 (spring 2025), and the associated regulations will enter into force in the first half of 2027.

While stringent policy instruments at the international level are still lacking and will take further time to be implemented, the EU has moved ahead with addressing international maritime transport by including it in the European Green Deal. The **EU ETS now covers maritime transport from 2024** onwards under the revised EU ETS Directive in 2023 (EU 2023a). The maritime EU ETS strongly builds on the **EU MRV system for maritime transport** which was established in 2018. Allowances are auctioned and there is a phase-in period lasting until 2026. The EU ETS covers CO_2 emissions from ships with a gross tonnage of 5000 and from voyages within the EU waters (and in ports) but also 50% of emissions from voyages to/from third countries. Further greenhouse gases (methane and nitrous oxide emissions) will be covered from 2026 onwards. These have already been included in the MRV since the beginning of 2024. Additionally, smaller ship sizes might be included in the EU ETS by 2027 depending on a scheduled review. Offshore ships[6] will be included in the EU ETS from 2027 onwards.

The revised EU ETS Directive stipulates that within 18 months of the adoption of a market-based measure at IMO or by 2028 at the latest, the European Commission must compile a report to examine this IMO measure. The European Commission is tasked with proposing how an IMO carbon pricing measure for EU-related international voyages can be taken into account or, alternatively, extending the current scope of the maritime EU ETS.

The **FuelEU Maritime Regulation** was agreed in 2023 to incentivise the use of low-carbon or post-fossil fuels by setting a limit to the GHG intensity of energy used onboard a ship (EU 2023b). The GHG intensity limit decreases over time from 2% below the reference value in 2025 to 80% below the reference value in 2050.

Further details for implementing both the EU ETS and FuelEU Maritime Regulation are still in the process of being clarified. Additionally, any interaction of overlap of future IMO policies with EU policies remains uncertain before IMO negotiations are completed.

2.3.3. Addressing fluorinated gases under the Montreal Protocol

The Montreal Protocol, renowned for its success in phasing out ozone-depleting substances[7], has also become a crucial instrument in mitigating climate change. This is primarily due to it being expanded

6 Offshore ships are neither defined in the Emission Trading Directive nor in the EU MRV Regulation. According to the 'S&P shipcode' system, offshore ships are work vessels which encompass, amongst others, tug and supply vessels for offshore platforms for oil and gas or wind farms, supply vessels to transport crews/supplies, drilling and construction vessels, pipe construction/support vessels, https://cdn.ihs.com/www/pdf/Statcode-Shiptype-Coding-System.pdf.

7 Recent International Developments under the Montreal Protocol, https://www.epa.gov/ozone-layer-protection/recent-international-developments-under-montreal-protocol.

to include hydrofluorocarbons (HFCs) – potent greenhouse gases that contribute significantly to global warming. **The Kigali Amendment**, adopted in 2016, is a landmark addition to the Montreal Protocol that specifically targets the phase-down of HFCs (UNEP 2016).

Recent developments in the implementation of the Montreal Protocol have shown considerable progress. In October 2023, the 35th Meeting of the Parties (MOP) convened,[8] with additional smaller meetings occurring throughout the year, e.g. the Open-ended Working Group (OEWG) in July 2024.[9] These meetings brought forth several key developments regarding F-Gases.

Replenishment: A breakthrough was the triennial replenishment of the **Multilateral Fund (MLF)** for the 2024-2026 period, which reached an unprecedented high of USD 965 million to support developing countries in phasing out harmful substances.[10] This amount – nearly double the size of previous replenishments – reflects the parallel implementation of two commitment regimes (hydrochlorofluorocarbons: HCFCs and HFC replacements). With approx. USD 429 million carried forward from the 2021-2023 period and the expected interest, the new funding totals approx. USD 526 million, marking a positive landmark for future activities. Additionally, a new funding window of USD 100 million was adopted for a three-year trial period, with a focus on incentives in the manufacturing of domestic and commercial refrigeration and air conditioning. This initiative aims to provide incentives of up to 30% of the additional costs, based on the ambition level of the target energy efficiency. The eligibility criteria for refrigerants are restricted to low Global Warming Potential (GWP) substances in refrigeration, while in the air conditioning sectors, the selected alternative needs to provide a path towards compliance with the Kigali Amendment.

Lifecycle Refrigerant Management (LRM) emerged as another crucial topic, focusing on reducing emissions from refrigerants through leak prevention, recovery, recycling, reclamation, and destruction. The report of the Technology and Economic Assessment Panel (TEAP) highlighted the importance of LRM in achieving significant reductions in refrigerant emissions beyond compliance with the Kigali Amendment.[11] Challenges, including policy, economic, and accessibility barriers, especially in Article 5 countries, (i.e. developing nations recognised under the Montreal Protocol[12]), were identified. A dedicated workshop on LRM is planned before MOP 36 at the end of October 2024 to continue solution-finding efforts.[13] The **revised European Union F-gas Regulation** (EU) 2024/573[14], which entered into force in March 2024, demonstrates that the European Union has increased its ambition with an F-gas phase-out by 2050. At this point, no F-gases covered by the regulation will no longer be allowed to be produced or traded in the EU. The revised F-gas Regulation also tightens the original phase-down plan with a quota system on F-gases and F-gas equipment. It expanded prohibitions on F-gas equipment, products, and usage, and included additional measures for reducing leakages and facilitating monitoring. Production within the EU will be capped, starting in 2025 at 60% of previous production in 2011-2013 and decreasing to 16% by 2036. [15]

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8 35th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP35), https://enb.iisd.org/montreal-protocol-meeting-parties-ozone-mop35.

9 46th meeting of the Open-ended Working Group of the Parties, https://ozone.unep.org/meetings/46th-meeting-open-ended-working-group-parties.

10 Assessment of the funding requirement for the replenishment of the multilateral fund for the period 2024-2026, https://ozone.unep.org/system/files/documents/TEAP-DecisionXXXIV2-replenishment-TF-report-May2023-RTF-report.pdf.

11 Refrigerant Management, https://drawdown.org/solutions/refrigerant-management.

12 Article 5: Special situation of developing countries, https://ozone.unep.org/treaties/montreal-protocol/articles/article-5-special-situation-developing-countries.

13 Life Cycle Refrigerant Management, https://ozone.unep.org/system/files/documents/TEAP-May2024-DecXXXV-11-TF-Report.pdf.

14 Regulation (EU) 2024/573 on fluorinated greenhouse gases, https://eur-lex.europa.eu/eli/reg/2024/573/oj.

15 EU-Rules - Fluorinated Greenhouse Gases, https://climate.ec.europa.eu/eu-action/fluorinated-greenhouse-gases/eu-rules_en.

The European Union F-Gas Regulation aligns with broader efforts to address per- and polyfluoroalkyl substances (**PFAS**), as many F-gases fall under this category of **'forever chemicals'**. Concurrently, European Chemicals Agency (ECHA) is conducting a comprehensive investigation into PFAS, with a restriction proposal for about 10,000 substances under review.[16] This proposal, published in February 2023, underwent public consultation until September 2023 and is now being examined by ECHA's scientific committees. The dual approach to F-gases and PFAS demonstrates the EU's commitment to reducing the environmental and health impacts of these persistent chemicals while promoting safer alternatives.

These developments under the Montreal Protocol and EU regulation show significant progress in addressing the challenges posed by HFCs and other F-gases. The focus on developing and implementing alternatives, improving lifecycle management, and enhancing institutional measures to prevent illegal trade and ensure compliance demonstrates a comprehensive approach to reducing the environmental impact of F-gases. With a clear phase-out, the European Union is showing global leadership. As the Kigali Amendment only targets a phase-down, there will still be significant residual HFC emissions by 2050, with current levels at about 1 gigaton (Gt) CO_2eq, and HFC emissions are expected to peak by around 2035.[17]

2.3.4. Addressing methane emissions

The Global Methane Pledge (GMP) has emerged as a critical initiative in the fight against climate change, addressing one of the most potent greenhouse gases. Despite widespread knowledge of methane's harmful impact on the atmosphere and climate, atmospheric concentrations continue to rise, reaching 1,931 parts per billion (ppb) in April 2024.[18] With a GWP that is more than 80 times higher than CO_2 over a 20-year time frame, the significance of methane in global warming cannot be overstated.[19] Methane concentrations showed notable increases of 15, 18, 13 and 10 ppb each year from 2020 to 2023, respectively. These constituted the second, first, fourth, and fourteenth largest increases since the methane records of the National Oceanic and Atmospheric Administration (NOAA) began in 1983 (Jackson et al. 2024).

Launched at COP26 in 2021, the GMP represents a concerted international effort to tackle this pressing issue. Participating countries commit to **reducing global methane emissions by at least 30% by 2030 compared to 2020 levels, while also improving methane emissions reporting standards**. As of mid-2023, the pledge has gained significant traction, with 158 countries joining, representing over 50% of global anthropogenic methane emissions.[20] This growing commitment is further evidenced by the development of **national methane action plans** in over 50 countries.[21]

To address sector-specific challenges, the GMP established three pathways in 2022: **the Energy Pathway,** targeting emissions from the fossil energy sector; the **Food and Agriculture Pathway**, addressing agricultural emissions while advancing climate and food security goals; and **the Waste Pathway**, focusing on emissions from the solid waste value chain. Recent developments across these sectors

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16 Per- and polyfluoroalkyl substances (PFAS), https://echa.europa.eu/hot-topics/perfluoroalkyl-chemicals-pfas.

17 Projections of hydrofluorocarbon (HFC) emissions and the resulting global warming based on recent trends in observed abundances and current policies, https://acp.copernicus.org/articles/22/6087/2022/acp-22-6087-2022.pdf.

18 Globally-averaged, monthly mean atmospheric methane (CH_4) abundance from 1990 to 2024, https://www.statista.com/statistics/1314344/atmospheric-concentration-of-ch4-historic-monthly/.

19 IPCC Sixth Assessment Report Global Warming Potentials, IPCC Sixth Assessment Report Global Warming Potentials – ERCE.

20 As of March 2024; Homepage | Global Methane Pledge, https://www.globalmethanepledge.org/.

21 Methane emissions, https://energy.ec.europa.eu/topics/carbon-management-and-fossil-fuels/methane-emissions_en#:~:text=Global%20Methane%20Pledge&text=Country%20endorsements%20have%20grown%20from,the%20process%20of%20doing%20so.

have shown initial progress on addressing methane emissions more systematically. In the energy sector, a report by the International Energy Agency emphasised the urgent need for action to cut methane emissions from fossil fuels, even with deep cuts in production and use.[22] The waste sector saw the launch of the **Lowering Organic Waste Methane (LOW-Methane) initiative at COP28**, which aims to reduce 1 Mt of waste-related methane emissions annually by 2030 and unlock over USD 10 billion in investments.[23] In agriculture, the **Dairy Methane Action Alliance** was established, with food and dairy companies committing to emissions accounting and methane action plans.[24]

However, the gap between high-level commitments and detailed implementation plans is visible across the board. Despite increasing policy focus, methane emissions continue to rise.[25] The imbalance between global sources and sinks continues to grow and human activities now fuel two-thirds of global methane emissions. Global anthropogenic methane emissions reached approx. 384 Mt CH_4 per year averaged for the three years from 2018 to 2020. These emissions are 15%–20% higher than for the 2000–2002 period (Jackson et al. 2024).

The largest increases in methane emissions from 2000 to 2020 arise from four regions or countries – China, South Asia, Southeast Asia, and the Middle East – and are mostly attributable to anthropogenic emissions. Almost all major sectors of anthropogenic emissions rose substantially from 2000 to 2020 (Jackson et al. 2024).

The 2023 **Global Methane Pledge Ministerial at COP28**[26] highlighted progress such as **over USD 1 billion in new grant funding mobilised, surpassing previous efforts**. New national commitments from major oil and gas emitters can be recorded. The fossil energy sector is seen as the sector with the largest, fastest, and cheapest methane reduction potential, and shall deliver over half of all reductions by 2030 to achieve the GMP.[27] Advancements in waste and agriculture sectors have been presented, and transformational data tools like the Methane Alert and Response System have been launched. Canada, Micronesia, Germany, Japan, and Nigeria joined the US and the EU as Global Methane Pledge Champions.

The **COP28 Summit on Methane and Non-CO_2 Greenhouse Gases** showcased innovative strategies for mitigating methane and other non-CO_2 greenhouse gases. The summit, convened by the COP28 Presidency, the United States, and China, emphasised the importance of reducing non-CO_2 greenhouse gases to limit near-term global warming and improve public health, agriculture, and development outcomes.[28] The importance of addressing non-CO_2 greenhouse gases was also acknowledged in the decision on the Global Stocktake (UNFCCC 2023a, paragraph 28).

Delivering on the EU Methane Strategy, the **first-ever EU Regulation on methane emissions reduction in the energy sector** was adopted in May 2024 and published in July 2024[29]. It addresses both

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22 Curtailing Methane Emissions from Fossil Fuel Operations, https://www.iea.org/reports/curtailing-methane-emissions-from-fossil-fuel-operations/executive-summary.

23 Subnational Climate Action Leaders' Exchange (SCALE) Launches Transformative Initiative to Scale Up Multi-Level Collaboration on Methane, https://www.bloomberg.org/press/subnational-climate-action-leaders-exchange-scale-launches-transformative-initiative-to-scale-up-multi-level-collaboration-on-methane/.

24 Catalyzing Action on Dairy Methane, https://netzeroaction.org/resource/catalyzing-action-on-dairy-methane/.

25 Tracking pledges, targets and action, https://www.iea.org/reports/global-methane-tracker-2024/tracking-pledges-targets-and-action.

26 Highlights from 2023 Global Methane Pledge Ministerial, https://www.globalmethanepledge.org/news/highlights-2023-global-methane-pledge-ministerial.

27 Ibid.

28 2023 Global Methane Pledge Ministerial: decisive action to curb emissions, https://energy.ec.europa.eu/news/2023-global-methane-pledge-ministerial-decisive-action-curb-emissions-2023-12-04_en.

29 Regulation (EU) 2024/1787 on methane emissions reductions in the energy sector, https://eur-lex.europa.eu/eli/reg/2024/1787/oj.

methane in the EU and in global supply chains. The legislation requires regular reporting from fossil fuel companies on methane emissions, regular surveys of equipment for leakages, bans routine venting and flaring[30] by oil and gas companies and restricts non-routing venting and flaring to unavoidable circumstances, and limits venting from thermal coal mines from 2027. The regulation is an important piece within the EU's broader climate change mitigation efforts; it complements the Global Methane Pledge and helps to limit global warming in the near term.

Commitments to the GMP are increasing with further countries joining, a record high funding mobilised and new national commitments. Meeting the GMP could reduce methane emissions to a level consistent with 1.5 °C pathways while delivering significant benefits for human and ecosystem health, food security and economies. It has the potential to reduce warming by at least 0.2 °C by 2050.[31] The 2030 Baseline Report of the Global Methane Assessment (2022) provides detailed information on global methane emissions developments and future scenarios and highlights the importance of early and targeted methane mitigation action.[32]

2.3.5. Addressing nitrous oxide emissions

Unlike methane, nitrous oxide has a particularly long atmospheric lifetime of over 100 years and its 100-year GWP of 273±130 is roughly an order of magnitude higher compared to methane (IPCC 2021, chapter 7.6.1.5). N_2O makes up approximately 6% of all GHG emissions when applying a 100-year GWP[33]. Almost three quarters of anthropogenic N_2O emissions stem from the agriculture sector due to the use of nitrogen fertilizer and manure.[34] Other sources of N_2O emissions include the chemical industry, combustion processes and wastewater.

N_2O emissions from agriculture can be reduced by improving the delivery, rate and timing of fertiliser applications, by using different fertilizer types and by improving manure application practices. Co-benefits of improved manure management include reduced nitrate leaching to surface and ground water, and reduced ammonia emissions to the air (IPCC 2022a, chapter 7.4.3.6). More generally, lifestyle changes which lead to reduced demand in animal feed for meat production and reduced food waste can also help reduce N_2O emissions from agriculture.

In the chemical industry, N_2O is emitted mainly during the production of nitric and adipic acid. Abatement technologies are available, and N_2O emissions from the chemical industry were incorporated in the European Union's ETS in two phases in 2008 and 2013.[35] Consequently, these technologies were applied widely in the EU and N_2O emissions from the chemical industry decreased by 82% between 2007 and 2013.[36] In several other developed and emerging countries, N_2O emissions from chemical industry are addressed by regulations, ETS or tax schemes, but a large mitigation potential at comparably low cost remains (Jörß et al. 2023).

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30 Venting is the release of gas to the atmosphere during oil and natural gas production and transmission. Flaring is the combustion of gas during oil and natural gas production.

31 Homepage | Global Methane Pledge, https://www.globalmethanepledge.org/.

32 Assessment of Environmental and Societal Benefits of Methane Reductions (web tool), https://www.ccacoalition.org/resources/assessment-environmental-and-societal-benefits-methane-reductions-web-tool.

33 Climate Watch Data, Historical GHG Emission, https://www.climatewatchdata.org/ghg-emissions.

34 Global Nitrous Oxide Budget – Highlights, https://www.globalcarbonproject.org/nitrousoxidebudget/24/hl-compact.htm.

35 Development of EU ETS (2005-2020), https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en.

36 European Union. 2023 Common Reporting Format (CRF) Table 10s3, https://unfccc.int/documents/627830.

The Nitric Acid Climate Action Group (NACAG) was launched by the German government in 2015 to promote N_2O abatement technologies in the chemical industry. Sixteen countries have signed the initiative's declaration, and 10 plants have signed grant agreements for the procurement and installation of N_2O emissions abatement technology.[37]

2.3.6. Black carbon and other short-lived climate forcers

Black carbon is an aerosol that contributes to warming by absorbing solar energy. It is a short-lived climate forcer (SLCF), which means that it has a short lifetime in the atmosphere compared to CO_2. Its warming effect occurs mostly at local scale. As its warming effect depends on local circumstances such as the type of surfaces where black carbon is deposited, there is no global warming potential available for black carbon emissions. Among Parties to the Paris Agreement, only Chile, Colombia and Mexico included emissions reduction targets for black carbon in their NDCs (Malley et al. 2023).

Black carbon emissions are generally reduced when shifting away from fossil fuels such as coal or oil, and the reduction of black carbon emissions increases air quality and provides health benefits. In their NDCs, several Parties identified the reduction of SLCP emissions or air pollution as a co-benefit of climate change mitigation policies (Malley et al. 2023).

In order to improve the methods for quantifying emissions of black carbon and other short-lived climate forcers, the IPCC requested that the Task Force on National Greenhouse Gas Inventories (TFI) produces a methodology report on short-lived climate forcers. At its 61st session in August 2024, the IPCC agreed on the terms of reference, outline and workplan for this methodology report (IPCC 2024). The report will cover the short-lived climate forcers nitrogen oxides (NO_X), carbon monoxide (CO), non-methane volatile organic compounds (NMVOC), sulphur dioxide (SO_2), ammonia (NH_3), black carbon and organic carbon and is scheduled to be adopted by the IPCC in the second half of 2027. The Panel did not find an agreement in its meeting in August 2024 as to whether fine particulate matter ($PM_{2.5}$) and hydrogen (H_2) should also be included in this report (IISD 2024b). The former is an air pollutant with important negative health effects, and the latter is an indirect greenhouse gas whose emissions are projected to increase with its introduction as a main alternative to fossil fuels and feedstocks in the coming years.

[37] The Nitric Acid Climate Action Group, https://www.nitricacidaction.org/wp-content/uploads/2024/08/Flyer_NACAG_2024.pdf.

3. DEVELOPMENTS IN IMPLEMENTATION OF THE PARIS AGREEMENT (COP27-28) AND MAIN ISSUES AT COP29

Under the main topics addressed by the Paris Agreement, several sub-topics are negotiated at each climate change conference. Party representatives negotiate specific rules for implementation (e.g. on voluntary cooperation under Article 6), they discuss reports of constituted bodies (e.g. reports from the Standing Committee on Finance), and they review the progress achieved in specific workstreams (e.g. the Warsaw International Mechanism for Loss and Damage).

In this chapter, the main outcomes achieved in recent negotiations are summarised, and an outlook is given on the main issues at stake at the upcoming COP. A summary and outlook are provided for each of the main topics under the Paris Agreement. Additional topics, such as agriculture and food security or research and systematic observation, are presented in section 3.8.

3.1. Mitigation

Parties' obligations concerning the mitigation action in their **Nationally Determined Contributions (NDCs)** are specified in Article 4 of the Paris Agreement. It includes the key obligation for all Parties to put in place 'domestic mitigation measures' for achieving the objectives of their NDC. In terms of process-related obligations, **Parties must prepare, communicate and maintain successive NDCs every five years**. Also, the ambition in each NDC is expected to progress compared to its predecessor. NDCs are to represent the highest possible ambition. As such, NDCs are the cornerstone of country-level climate action that is expected to drive forward the reduction of GHG emissions and enhanced removal by sinks for achieving the collective objectives of the Paris Agreement. **New NDCs are expected for 2025**. **These will contain targets for 2035 and will be the first NDCs informed by the outcomes of a Global Stocktake**. All current and past NDCs are recorded in the NDC Registry[38]. To assess the aggregate effect of NDCs and help Parties in the assessment of collective ambition, the UNFCCC Secretariat is tasked with annually updating a **synthesis report on the aggregate effect of NDCs**[39].

Article 4 of the Paris Agreement also asks Parties to present long-term low greenhouse gas emission development strategies. **Long-Term Strategies** are a tool that supports Parties to align their NDCs with the long-term goals of the Paris Agreement: the peaking of global GHG emissions as soon as possible and achieving a balance between emissions and removals in the second half of the century. The Long-Term Strategies provide the general direction for successive NDCs and their ambition level. The analyses needed to prepare Long-Term Strategies can, for example, help prioritise regulatory and financial needs for implementing mitigation actions in consideration of the time frame of implementation. They can also help to avoid making investments that could result in stranded assets because they are not aligned with climate neutrality targets. Currently 73 Parties have submitted Long-Term Strategies[40].

Almost all guidance for the implementation of the obligations under Article 4 was completed by COP27/CMA4. Important **NDC guidance** includes:

- guidance for information to facilitate clarity, transparency and understanding of NDCs (decision 4/CMA.1, UNFCCC 2018b);
- guidance for accounting for Parties' NDCs (decision 4/CMA.1, UNFCCC 2018b); and

[38] NDC Registry, https://unfccc.int/NDCREG.

[39] See paragraph 25 of decision 1/CP.21, paragraph 10 of decision 1/CMA.2 and paragraph 30 of decision 1/CMA.3. The latest synthesis report can be accessed here: https://unfccc.int/ndc-synthesis-report-2023.

[40] All Long-Term Strategies can be found in a dedicated portal, https://unfccc.int/process/the-paris-agreement/long-term-strategies.

- common time frames of NDCs (decision 6/CMA.3, UNFCCC 2021c).

CMA6, which will be held during the Baku climate change conference, will address one outstanding issue of NDC guidance and continue negotiations on agenda items related to the implementation of mitigation action.

Further guidance on features of NDCs

In the negotiations leading to the Paris Agreement, Parties discussed the features of NDCs, i.e. the characteristics which determine an NDC. It was discussed, for example, whether an NDC only encompasses mitigation or also finance and adaptation (also referred to as scope), how long an NDC was to last, its legal nature, or whether there should be any differentiation between developed and developing country Parties. Ultimately, as noted in decision 4/CMA.1, **the features of NDCs 'are outlined in the relevant provisions of the Paris Agreement' and no definition of a feature or a list detailing those features was agreed**. For example, Article 4.4 defines the target type of NDCs of developed countries and indicates that developing Parties should move to the same target over time. Article 4.3 defines the progression in ambition of each successive NDC and states that NDCs will reflect 'common but differentiated responsibilities and respective capabilities, in the light of different national circumstances' (CBDR/RC-NC). Article 4.5 defines that support shall be provided to developing countries for NDC implementation. Article 4.8 determines that NDCs must be communicated with information so that they are clear, transparent and can be understood, and Article 4.9 indicates that NDCs must be informed by the Global Stocktake.

The mandate to develop further guidance on features was part of the Paris Agreement Work Programme, **but Parties could not agree** on substance in addition to what is contained in Article 4 and in 2018 decided to **continue deliberations in 2024**. Since many of the politically relevant issues around the NDCs were resolved in a practical manner with the Paris Agreement, there may be little added value in agreeing on definitions and a specific list of features, but some Parties may consider it valuable to provide guidance that supports further ambition in future NDCs. However, any potential further guidance will have to be in line with the nationally determined nature of NDCs and thus, discussions may face the same political difficulties which they have faced in the past.

Sharm el-Sheikh mitigation ambition and implementation work programme

The mitigation work programme was established by the CMA at its third session in 2021 in Glasgow (decision 1/CMA.3, paragraph 27, UNFCCC 2021a). The **mandate** of the work programme is **to 'urgently scale up mitigation ambition and implementation' until 2030**. The decade ending in 2030 is considered critical by the IPCC for keeping the global average temperature below the limits established by the Paris Agreement and Parties recognised this in the Glasgow Climate Pact. Details on how the work programme would operate were agreed the following year in Sharm el-Sheikh (decision 4/CMA.4, UNFCCC 2022b). The work programme will operate under the authority of the CMA until its eighth session (2026), after which a decision will be taken on whether it continues. It consists of **global dialogues** that provide the opportunity for 'focused exchanges of view, information and ideas'. The dialogues cover all sectors included in GHG inventories and thematic areas covered by the IPCC's working group III contribution to the Sixth Assessment Report. Two dialogues are held each year in conjunction with the negotiation sessions and additional dialogues can be organised, e.g. during regional climate weeks.

The CMA decision is explicit in stating that the **outcomes of the dialogue will be 'non-prescriptive' and will not include 'new targets or goals'**. This wording was used to accommodate the position of some Parties who stressed the nationally determined nature of their mitigation ambition. The SBI and

SBSTA chairs designate two co-chairs of the work programme, who in turn guide the UNFCCC Secretariat in the organisation of the global dialogues and facilitate the negotiations. The co-chairs define the topics of each dialogue based on submissions received from Parties and non-Party stakeholders. The dialogues take place in a hybrid format to facilitate broad participation. The Secretariat is also tasked with producing reports on the dialogues. Additionally, the co-chairs and the Secretariat organise 'investment-focused events' with the aim of channelling funds into areas that will increase mitigation up to 2030.

The two **global dialogues** of 2023 focused on 'Accelerating a just energy transition'. In **2024** the topic is **'Cities: buildings and urban systems'**. The second global dialogue of 2024 took place before the COP on 4 and 5 October of that year. In 2023, the CMA adopted a decision that reflects on the two global dialogues and investment-focused events. The decision also contains procedural elements, e.g. requests to the Secretariat for improving participation in future global dialogues (decision 4/CMA.5, UNFCCC 2023f). **In Baku, CMA6 is expected to adopt a** similar **decision that addresses the 2024 global dialogues and investment-focused events.** Due to the non-prescriptive nature of the dialogue, it is likely that its impact on ambition levels of NDCs will be limited.

United Arab Emirates Just Transition Work Programme

Referring to a just transition is a shorthand for discussions on how to achieve economies compatible with the Paris Agreement in an equitable manner, i.e. how, for example, to avoid creating or exacerbating poverty. Multiple perspectives are relevant for assessing equity in the just transition, e.g. those of affected countries, communities, and workers.[41]

The Just Transition Work Programme was established by the CMA in Sharm el-Sheikh and operationalised in Dubai (decision 3/CMA.5, UNFCCC 2023e). The objective of the work programme is to discuss how to achieve the three goals of the Paris Agreement (Article 2, paragraph 1), under consideration of equity and CBDR/RC-NC, which frame the implementation of the Agreement (Article 2, paragraph 2). The CMA refers to just transition pathways that include multiple dimensions, such as the energy, workforce and socioeconomic dimensions (decision 1/CMA.4, paragraph 51, UNFCCC 2022a). Just transition pathways are expected to address potential impacts of the measures that drive the transition, e.g. through social protection.

It is important to note that although the context of the Just Transition Programme is strongly shaped by the CBDR/CR-NC principle, the CMA explicitly recognises that it is for all countries. The work programme is negotiated as a joint agenda item of the SBI and SBSTA. It includes several elements, such as the above-mentioned dimensions of just transition pathways, which must be based on national development priorities, approaches to enhance adaptation and resilience, the transition of the workforce and creation of decent work, inclusive and participatory approaches to just transitions, and international cooperation. **At least two dialogues under the work programme will be held each year**. As with the mitigation work programme, the format is hybrid. Parties and non-Party stakeholders are asked to make submissions on possible topics for the dialogue and on 'opportunities, best practices, actionable solutions, challenges and barriers' relevant to those topics. **An annual high-level ministerial roundtable on just transition** is also part of the work programme. The UNFCCC Secretariat will produce **summary reports** of the conducted dialogues and the 'efficiency and effectiveness' of the work programme will be reviewed by CMA8 in 2026.

[41] 5 Essential Principles of the Just Transition Work Programme for Climate Action, https://www.wri.org/technical-perspectives/5-essential-principles-just-transition-work-programme-climate-action.

The first ministerial roundtable on just transition took place in 2023. The first dialogue under the work programme took place in June **2024** and addressed **'[j]ust transition pathways to achieving the goals of the Paris Agreement through NDCs, National Adaptation Plans and long-term low greenhouse gas emission development strategies'**. The second dialogue took place in October of the same year on the topic of **'[e]nsuring support for people-centric and equitable just transition pathways with a focus on the whole-of-society approach and the workforce'**.

At the upcoming conference in **Baku** the SBI and SBSTA will negotiate a decision for adoption of the CMA, which will **reflect the discussions** under the dialogues and the ministerial roundtable. Some Parties may assign particular political relevance to this decision, given that the outcomes of the work programme are **expected to inform the second Global Stocktake**.

3.2. Voluntary cooperation under Article 6 of the Paris Agreement

Article 6 of the Paris Agreement governs the **rules for engaging in international carbon markets** under the Paris Agreement. Article 6.2 establishes a **framework for countries** to engage in **international emissions trading**. It includes general principles for such engagement, and specific rules to ensure robust accounting, environmental integrity, transparency, ambition and sustainable development. Article 6.4 establishes **a new international carbon crediting mechanism**. This new mechanism is commonly considered as a successor to the Clean Development Mechanism (CDM) but has more stringent rules. Lastly, Article 6.8 establishes a framework for using non-market-based approaches, an approach requested by Parties that are in general against the use of markets (Healy et al. 2023). The analysis below focuses on Article 6.2 and Article 6.4.

3.2.1. Overview of the current rulebook

After six years of negotiations, the adoption of rules for international carbon markets under Article 6 was a major achievement of COP26 in Glasgow. These rules were an important missing piece in the rulebook for the Paris Agreement. While the decisions taken at COP26 address most major issues, several elements were left open for a work programme. This included both more technical implementation issues and political issues that could not yet be resolved. At COP27 in Sharm El-Sheikh, some of these open issues could already be finalised, while others were left open to be resolved at the conferences in 2023 and 2024 (Healy et al. 2023). **At COP28, Parties could not reach an agreement on further guidance on Article 6.2 and 6.4 and agreed to continue deliberations throughout 2024**. At the SBSTA meeting in Bonn in June 2024, Parties agreed on a negotiation text that is to be considered further at intersessional work and at COP29 in Baku.

a. Article 6.2 – A framework for engaging in international carbon markets and accounting for transfers

The outcomes of COP26 include comprehensive accounting rules for the international transfer of carbon market units under Article 6.2. Under this accounting framework, two countries engaging in the transfer of carbon market units must apply **'corresponding adjustments' to account for 'internationally transferred mitigation outcomes' (ITMOs)**: the country selling ITMOs (i.e. emission reductions or removals achieved in this country) makes an addition to its emission level, and the country acquiring ITMOs makes a subtraction. Both countries then compare the adjusted emissions balance with their target level to assess whether they have achieved their target. This approach ensures that only the buyer country can use transferred emission reductions, and thus **avoids 'double counting'** (Healy et al. 2023).

The framework adopted at COP26 is comprehensive. It requires all countries to account for ITMOs without exemptions and irrespective of whether the emissions are covered by a country's NDC. The rules **also avoid double counting with** the Carbon Offsetting and Reduction Scheme for International Aviation (**CORSIA**): carbon credits used for CORSIA are considered ITMOs and must be reflected in the host country's emissions balance. The rules for Article 6.2 also prescribe that accounting must always be conducted in greenhouse gas emission metrics, expressed in tonnes of CO_2 equivalent. While the rules provide flexibility to also use other metrics, such as hectares of land afforested, countries still need to quantify the impact in a greenhouse gas emissions balance (Healy et al. 2023).

A key challenge for using carbon market approaches is that most countries have targets for one single year only (e.g. 2030), rather than a multi-year year period, while carbon market approaches typically involve multi-year compliance periods. The agreed rules allow countries to apply two different approaches to account for single-year targets: **countries can either adopt multi-year trajectories for accounting purposes or they use 'averaging,'** by accounting in the target year for the average amount of ITMOs sold or acquired over a multi-year period. Both approaches bear risks for environmental integrity. While the **rules require that emissions shall not increase across trading partners**, the approach of averaging can effectively lead to increased emissions, including when the emission reductions are used under CORSIA (Siemons and Schneider 2022).

Finally, the accounting **rules prohibit any carry-over of carbon market units from one NDC period to the next period**. This prevents that countries may generate large amounts of carbon market units which are not backed by actual emission reductions, and then carry them forward to achieve future climate targets, as observed under the Kyoto Protocol (Healy et al. 2023).

The decisions from Glasgow also include **key integrity principles** for engaging in international carbon markets, including in relation to raising ambition, ensuring non-permanence, and adhering to environmental and social safeguards. The decision on Article 6.2 also lays the foundation for tracking ITMOs through registries, comprehensive reporting by countries (including an initial report describing the country's approach towards international carbon markets), annual reports focusing on ITMO transactions, and biennial reports describing in more detail the international cooperation that countries are engaging in and the international expert review of these reports (Healy et al. 2023).

At COP27 in Sharm El-Sheikh, important elements of the Glasgow rulebook were further refined. This includes further specifications of the registry infrastructure, the establishment of a **transparency platform** on which all information reported by countries is stored (which includes a 'centralized accounting and reporting platform' and an 'Article 6 database'), guidelines for the international review of information reported by countries in relation to Article 6, and outlines for the initial reports and for the information to be reported biennially (Healy et al. 2023).

At COP28 in Dubai, Parties could not reach agreement on the missing elements. This was partially due to **different visions about the extent to which international rules should guide the implementation of Article 6.2 and how much flexibility should be left to Parties in implementing cooperative approaches**. This concerned in particular the level of detail of information that must be provided by Parties, e.g. on authorisations. There were also different views **on the implementation of the registry system underlying ITMO transactions**: some Parties favour decentralised systems with units traded in underlying registries and other Parties wish to also enable more centralised registry systems.

At the SBSTA session in Bonn in June 2024, Parties agreed on a negotiation text that is to be considered further at intersessional work and at COP29 in Baku. Parties also managed to conclude a few issues that will no longer need to be considered in Baku, including that the eligibility of 'emissions avoidance' (a concept whose climate benefits are contested) will not be considered until 2028.

b. Article 6.4 – A new international carbon crediting mechanism

At COP26 in Glasgow, comprehensive rules for the new Article 6.4 carbon crediting mechanism under the supervision of a UN body were established. The rules constitute in many ways a paradigm shift in comparison to the CDM. The mechanism establishes **new principles for demonstrating that the mitigation activities are additional**, meaning that they would not be implemented anyway. It also requires the **establishment of more ambitious baselines that are aligned with achieving the Paris Agreement goals**, the application of robust environmental and social safeguards, and the establishment of a grievance mechanism to appeal decisions (Healy et al. 2023).

A further advancement compared to the CDM is that the mechanism does not purely aim to offset emissions in one place by emissions in another place. Rather, the **achieved emission reductions should be shared between the seller country and the buyer country**, next to a small proportion of 2% that accrues to the atmosphere, referred to as overall mitigation in global emissions (OMGE). In addition, 5% of the carbon credits must be transferred to the Adaptation Fund, which was a key demand from many developing countries. The application of such a share of proceeds (SOP) and the implementation of OMGE is mandatory under Article 6.4 and 'strongly encouraged' under Article 6.2. The detailed provisions governing the application of SOP and OMGE were finalised at COP27 in Sharm El-Sheikh (Healy et al. 2023).

Parties also decided in Glasgow, and further specified in Sharm El-Sheikh, that the new Article 6.4 mechanism will generate **two types of carbon market units: 'authorized Article 6.4 emissions reductions'** which can be transferred as ITMOs under Article 6.2 and which are thus subject to the application of corresponding adjustments and avoid double counting with the host country NDC, and **'mitigation contribution Article 6.4 emissions reductions**,' which are **not subject to corresponding adjustments** and could, for example, be used in domestic emissions trading systems. This decision brought an ongoing **debate** about the voluntary carbon market into the negotiations, namely **whether non-authorised carbon credits can be used for offsetting claims in voluntary markets**. However, while the decisions at COP26 and COP27 created two types of units, they do not regulate the use of such units in voluntary carbon markets (Healy et al. 2023).

At **COP26**, countries also agreed on **a transition of the Clean Development Mechanism (CDM) to the Paris Agreement**. Existing CDM projects can only issue certified emission reductions (CERs) under the Kyoto Protocol for emission reductions that occurred by the end of 2020. However, CDM projects can – under certain conditions – be transitioned to the new Article 6.4 mechanism and continue to issue carbon credits for emission reductions occurring from 2021 onwards. In addition, about 300 million CERs could be directly used to achieve NDCs after 2020 (Fearnehough et al. 2021).

This agreement ensures some continuity in UN approaches towards carbon crediting, particularly for existing CDM projects, but also bears risks for environmental integrity. The use of CERs to achieve NDCs could directly undermine climate ambition because these emission reductions were achieved in the past, regardless of the decision to allow their use under the Paris Agreement. Similarly, the transition of CDM projects could pose risks because many of these projects are likely to continue operation, regardless of whether they can transition to the Paris Agreement. Whether these risks materialise will depend on how countries make use of the possibility to transition CDM projects and use CERs to achieve their NDCs (Healy et al. 2023).

At COP28 in Dubai, Parties could not agree on **further guidance on the implementation of the Article 6.4 mechanism**. The main contentious issues were **recommendations on removals**, prepared by the Article 6.4 Supervisory Body, in particular the provisions to address non-permanence of these removals. Parties agreed to **continue deliberations in 2024**. The Supervisory Body started to work on

revised guidance, both on methodologies and on removals, based on feedback from stakeholders and Parties, with the view to making a new recommendation to COP29 in Baku.

c. Phasing out the Clean Development Mechanism

With the adoption of rules for Article 6 and the possibility of a transition of CDM projects to the new Article 6.4 mechanism, Parties also agreed to phase out the CDM. The decisions in Glasgow clarify that no CERs can be issued for emission reductions occurring after 2020. It was also agreed that the CDM would stop handling new requests for registration or issuance of CERs once the new Supervisory Body of the Article 6.4 mechanism has set up the possibility of receiving such requests. This had been put in place by June 2023 (Healy et al. 2023).

At COP28 in Dubai, Parties considered different options to phase out the various ongoing activities under the CDM, including the issuance of CERs, work on methodologies and the CDM accreditation system but could not agree on a timeline. At the SBSTA session in Bonn in June 2024, no substantial progress could be made on this matter.

3.2.2. Issues at stake at COP29 in Baku

At COP29 in Baku, Parties are expected to adopt a package that will take the necessary decisions to fully operationalise Article 6 of the Paris Agreement. After the failure to agree on rules at COP28 in Dubai, the stakes are high to finalise the rules at COP29. While a negotiations text is available from the intersessional work in June 2024 in Bonn, there are still many complex issues that will need to be resolved in Baku. Many issues are quite technical, but some are rather political. Among the list of issues, the following are the most important for finalising the rulebook:

- **Registries:** Parties remained divided on two options for how ITMO registries could be implemented: some Parties, such as the EU, EIG (Environmental Integrity Group), LDCs, and AILAC (Independent Alliance of Latin America and the Caribbean), wish to implement 'transactional' registries that enable the transfer of ITMOs between registries. Other Parties, such as the US, wish to only implement 'non-transactional' ITMO registries. These registries would not enable the direct transfer of ITMOs but would rather compile information on transactions that may occur in underlying registries, such as the voluntary carbon market registries. The UNFCCC Secretariat proposed that the international registry – an alternative for Parties that do not wish to establish their own registry – may enable both options to be implemented. This approach was, however, strongly criticised by the US.
- **Authorisation:** The content, timing, and types of authorisations under Article 6, and any revisions to authorisations, are a particularly contested area in the negotiations. The EU, AILAC, AGN (African Group of Negotiators), and the United Kingdom are of the view that the Glasgow and Sharm El-Sheik decisions provide for three different types of authorisations: authorisation of a cooperative approach, authorisation of ITMOs and authorisation of entities. By contrast, the US considers there to be only one form of authorisation, namely the authorisation of ITMOs. The EU and other Parties also argued for internationally agreed minimum contents that Parties should provide in authorisations, whereas other Parties, such as the US, expressed caution given that the context of authorisations may differ by country. Similarly, with regard to changes to authorisations, some Parties consider these a national prerogative, while others warned that some changes, in particular narrowing the scope, could negatively affect certain carbon market players and potentially undermine the robust accounting for international transfers (Healy et al. 2023).

- **Agreed electronic format (AEF):** The AEF is the central tool for reporting on ITMOs. It is the table whereby countries shall report on all ITMO actions, based on what happened in underlying registries. What is reported in the AEF also forms the basis for determining how many 'corresponding adjustments' countries will apply. A draft version of the AEF had been finalised by COP26 in Glasgow, but Parties are still considering some key choices in the AEF that may also have implications for how the registry system will function. Solving these matters also requires a common understanding on matters beyond the design of the AEF, in particular on authorisation. A new version of the AEF was included in the negotiation document considered at the SBSTA session in Bonn in June 2024.
- **Sequencing and timing of reports and review processes:** Parties also disagree on the sequencing and timing of the submission of the initial report, its review and the submission of the AEF. Some Parties, such as the EU, AILAC, AGN and AOSIS (Alliance of Small Island States), call for the review of the initial report to be completed before the annual information is submitted. Other Parties, such as the US, Japan, LMDC (Like-Minded Developing Countries) and China argue that holding back submissions of the AEF would be detrimental to the information flow and reduce transparency (Healy et al. 2023).
- **Methodologies and removals guidance under the Article 6.4 mechanism:** The Supervisory Body of the Article 6.4 mechanism is expected to recommend revised guidance on methodologies and removals for adoption at COP29. Adopting this guidance is an important prerequisite for making the Article 6.4 mechanism fully operational.
- **Closure of the Clean Development Mechanism (CDM):** With the new Article 6.4 mechanism becoming operational, the CDM will be phased out over time. Parties will continue considering what elements of the CDM will be phased out in what stages, including further methodological work, the issuance of CERs, the CDM accreditation system and the operation of the CDM Executive Board (Healy et al. 2023).

3.3. Adaptation

A key feature of the Paris Agreement is that it does not only include a target for limiting global mean temperature increase to 1.5 °C but also a stand-alone goal on adaptation. This balance between mitigation and adaptation was a key ask by developing countries that are already incurring real economic cost from the adverse effects of climate change.

The **'global goal on adaptation' (GGA)** is enshrined in Article 7.1 of the Paris Agreement in the form of a collective commitment by Parties to enhance adaptive capacities, strengthen resilience and reduce vulnerability to climate change.

Since COP26 in Glasgow in 2021, Parties have engaged in intensified technical work through a two-year work programme to explore options for further defining the GGA. Having a better ability to measure global progress on adaptation has been a key request of many developing countries which wanted to elevate the importance of adaptation under the Paris Agreement to a level that is equal to mitigation. Conceptually, however, monitoring global progress on adaptation is more challenging than for mitigation as there is no common unit of measure such as CO_2 equivalent for GHG emissions. **The two-year work programme on the GGA** therefore **focused on exploring methodologies, indicators, data and metrics that could be suitable for evaluating progress on adaptation**. It further assessed how the goal could be translated into more tangible targets against which progress could be measured in the context of the Global Stocktake.

United Arab Emirates (UAE) Framework for Global Resilience

The work programme culminated in decision 2/CMA.5 (UNFCCC 2023d), adopted at COP28 in Dubai, which established the 'UAE Framework for Global Resilience'. The purpose of this framework is to guide the achievement of the GGA and the review of overall progress in achieving it.

The framework sets out several thematic targets by 2030 and progressively beyond, as shown in Figure 9. Many of these targets overlap with other multilateral frameworks such as the sustainable development goals and the Sendai Framework for Disaster Risk Reduction.

Figure 9: UAE Framework – thematic targets by 2030 and progressively beyond

Water	Significantly reduce climate-induced water scarcity
	Enhance climate resilience to water-related hazards
	Climate-resilient sanitation
	Access to safe and affordable potable water for all
Food security	Attaining climate-resilient food and agricultural production and supply
	Increase sustainable and regenerative production
	Equitable access to adequate food and nutrition for all
Health	Attaining resilience against climate change related health impacts
	Promoting climate-resilient health services and significantly reducing climate-related mobridity and mortality, particularly in the most vulnerable communities
Ecosystems	Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solution, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems
Infrastructure	Increasing the resilience of infrastructure and human settlements to climate change impacts to ensure basic and continuous essential services for all
	Minimising climate-related impacts on infrastructure and human settlements
Poverty	Substantially reduce the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection measures for all
Cultural heritage	Protect cultural heritage from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites and by designing climate-resilient infrastructure, guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems

Source: Authors' own compilation based on decision 2/CMA.5, paragraph 9.

The thematic targets outlined in Figure 9 are complemented by additional targets in relation to the dimensions of the iterative adaptation cycle adopted in decision 3/CMA.4. These contain milestones that Parties aim to achieve in terms of their adaptation planning processes and the set-up of institutional structures, such as early warning systems. These targets are shown in Figure 10. As they relate to concrete planning processes, establishing indicators for these targets might be more straightforward than for the thematic targets.

Figure 10: Targets related to the dimensions of the iterative adaptation cycle

By 2030	•All Parties to conduct up-to-date assessments of climate hazards, climate change impacts and exposure risks.
	•All Parties to have in place country-driven, gender responsive, participatory and fully transparent national adaptation plans, policy instruments, and planning processes or strategies.
	•All Parties to have progressed in implementing their national adaptation plans, policies and strategies.
	All Parties to have designed, established and operationalised a system for monitoring, evaluation, and learning for their national adaptation efforts.
By 2027	All Parties have established multi-hazard early warning systems, climate information services for risk reduction and systematic observation to support improved climate-related data, information and services.

Source: Authors' own compilation based on decision 2/CMA.5, paragraph 10.

While COP28 marked the conclusion of the work programme on the GGA, deliberation by Parties on its further operationalisation is continuing under the umbrella of the SBI and SBSTA. This includes knowledge exchange among Parties on the implementation of the UAE Framework for Global Resilience and the development of terms of reference for its review. The consideration of views on these matters commenced at SB 60 (Subsidiary Body) in June 2024 and will continue at COP29.

UAE-Belém work programme on indicators

At COP28, Parties further agreed to launch the two-year UAE-Belém work programme to identify and where necessary develop indicators, including quantified elements for measuring progress achieved towards the targets outlined in Figure 9 and Figure 10. The work programme is carried out jointly by the SBI and SBSTA with relevant constituted bodies such as the Adaptation Committee, the Consultative Group of Experts and the Least Developed Countries Expert Group mandated to support its implementation.

A first workshop under the work programme was held in Bhutan in May 2024[42] to discuss the organisation of work and substantive options on the indicator development process. Prior to the workshop, Parties had expressed their views and preferences through submissions.[43] In these, nearly all Parties have stressed their preference of using existing indicators where possible and of keeping in mind the feasibility and limited capacities of national statistical offices to provide relevant data. Several Parties also stressed that indicators should build upon the reporting by Parties on adaptation through National Adaptation Plans (NAPs), National Adaptation Programmes of Actions (NAPAs), Adaptation Communications (ADCOMs), NDCs and Biennial Transparency Reports (BTRs). Further, some Parties noted that existing frameworks such as the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction could provide valuable insights in how indicators could be developed.

[42] UNFCCC (2024) Concept note by the Chairs of the subsidiary bodies on the mandated workshops under the UAE-Belém work programme on indicators, https://unfccc.int/sites/default/files/resource/Workshop%20Concept%20Note.pdf.

[43] UNFCCC (2024) Synthesis of submissions on the UAE-Belém work programme on indicators, https://unfccc.int/sites/default/files/resource/Synthesis%20of%20Submissions%20UAE-Belem%20Work%20programme%20Final.pdf.

At the meetings of the Subsidiary Bodies in June 2024, Parties agreed on the organisation of work under the work programme as outlined in Figure 11. They requested that the SBI and SBSTA chairs prepare a compilation and mapping of existing indicators that could be relevant to measuring the targets outlined in the UAE Framework for Global Resilience. Another workshop before COP29 was scheduled to discuss the first version of the mapping to facilitate expert review and its refinement, potentially back-to-back with a meeting of the Adaptation Committee (UNFCCC 2024c). Further, Parties were invited to submit indicators relevant for the mapping by 31 July 2024. In response to this request, the EU submitted an initial list with a selection of indicators currently in use by the EU and by its Member States nationally, in EU-internal reporting and in the 8th Environment Action Programme, which is the EU's overarching legally binding framework for action on EU environmental policy up to 2030. The list was compiled by European national adaptation experts, the European Commission, the European Environment Agency and collected and compiled by the Belgian and Hungarian presidencies of the EU.[44]

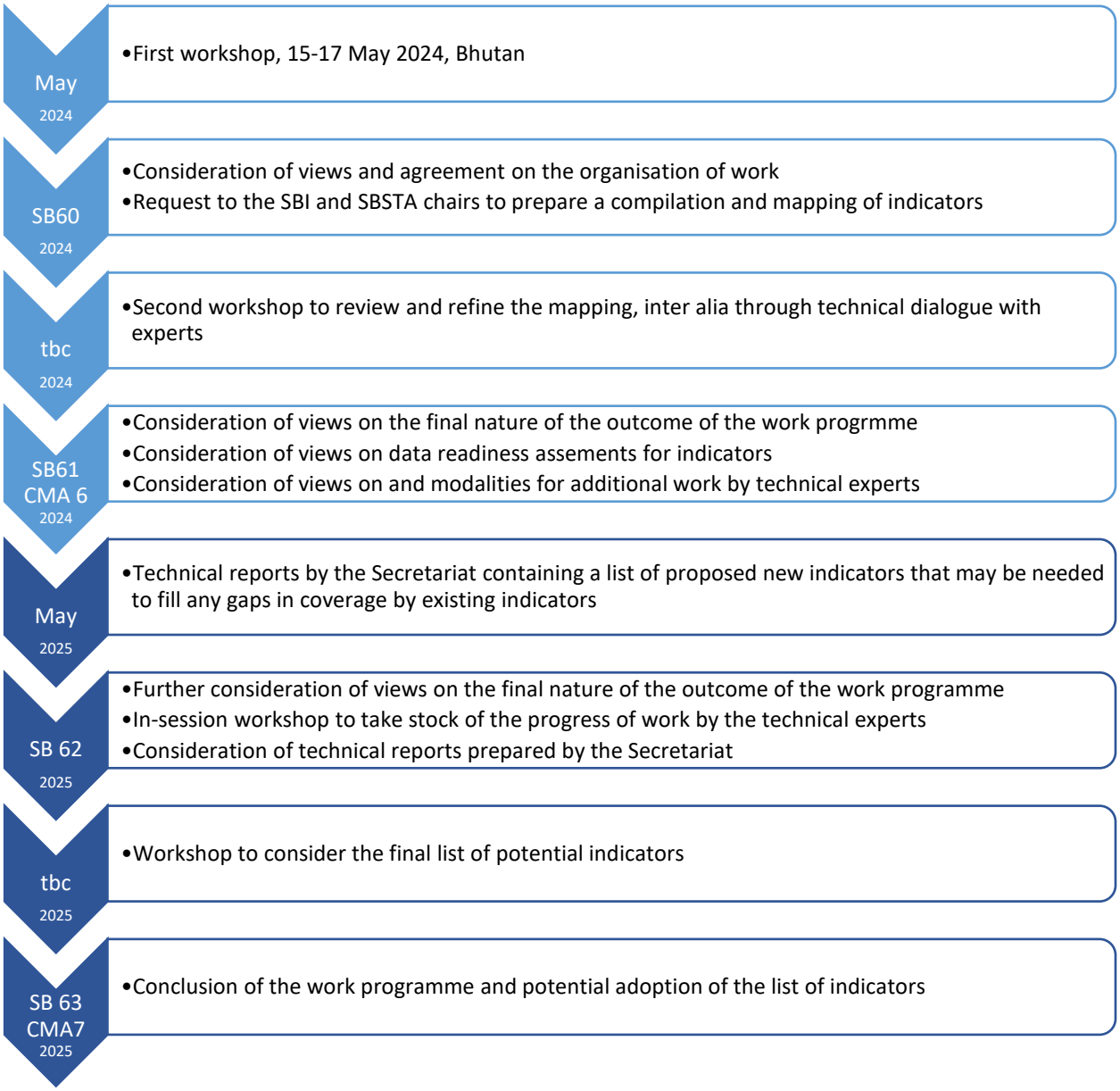
Parties further decided that the work programme should receive inputs from technical experts and agreed on the modalities for this:

- The Adaptation Committee was tasked with identifying information on indicators reported by Parties in their national reports and communications.
- The SBI and SBSTA chairs were asked to convene technical experts serving in an independent capacity to assist the technical work under the work programme. taking into account balanced geographical, and gender representation drawing on experts from United Nations and other international and regional organisations, and research and academic institutions.

At COP29 Parties will take stock of the progress made under the work programme. This will include reflections on the need and potential modalities for further work by experts. A further topic will be a consideration of the degree to which data required for potential indicators is readily available through national statistical offices. Besides the technical discussion, a further point for consideration at COP29 is the final nature of the outcome of the work programme, which the decision at COP28 left open.

[44] The Submission and its respective Annex containing the list of indicators can be accessed through the following two links: https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202407291339---HU-2024-07-29%20EU%20Submission_ADA_UAE-Bel%C3%A9m%20WP%20on%20Indicators.pdf, and https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202407291339---HU-2024-07-29%20ANNEX%20to%20EU%20submission.pdf.

Figure 11: Milestones for the UAE-Belém work programme on indicators



Source : Authors' own compilation based on FCCC/SB/2024/L.6, https://unfccc.int/sites/default/files/resource/sb2024_L06E.pdf?download

Adaptation finance

Besides the further operationalisation of the UAE Framework for Global Resilience, **scaling-up support for developing countries to adapt to the adverse effects of climate change** will be an important aspect of the adaptation negotiations at COP29. The following issues and processes will be considered by Parties in Baku:

- **Doubling adaptation finance by 2025:** Decision 1/CMA.3, adopted at COP26 in Glasgow, urged developed country Parties to at least double their collective provision of climate finance for adaptation to developing country Parties by 2025 compared to 2019 levels. The request needs to be understood in the **context of the ongoing efforts to achieve a better balance between mitigation and adaptation finance**. Historically, more financial resources have been

provided for mitigation projects, while at the same time climate impacts in developing countries have intensified. Doubling adaptation finance should help to mobilise more resources for countries to respond to these impacts. Demonstrating progress on this goal at COP29, which is to focus extensively on climate finance (see chapter 3.5.1), will be important. **At COP28, Parties considered a report prepared by the Standing Committee on Finance (SCF) on doubling adaptation finance**.[45] It contains comprehensive information on current adaptation finance flows as well as challenges and opportunities for mobilising additional resources. Key insights include that the small-scale and context-specific nature of adaptation measures lead to higher transaction costs and that private sector involvement in adaptation finance has been limited to date.

- **New Quantified Collective Goal on finance:** At COP29 Parties are expected to adopt a new goal for climate finance, which will replace the USD 100 billion goal that had guided mobilisation efforts between 2010 and 2025. A **key question will be whether the goal will include a quantitative sub-goal for adaptation finance** (see chapter 3.5.1 for a detailed discussion).

3.4. Loss and damage

The issue of loss and damage has been central in the international climate negotiations at the most recent COPs. Developed and developing countries have tabled divergent views on how to further operationalise the institutional arrangements on loss and damage under the Paris Agreement and how to scale up financial resources for countries that face losses and damages due to climate change. These divergences have been largely bridged at COP28, which completed the institutional architecture on loss and damage by establishing a new dedicated loss and damage fund.

Outcome from Dubai on the fund for responding to loss and damage

A major outcome of COP28 in Dubai was the establishment of a dedicated fund for responding to loss and damage, which has been a long-time request of developing countries in the negotiations. At COP27, Parties reached the consensus that a new fund should be set up and tasked a transitional committee to develop a governing instrument over the course of 2023. Issues such as the composition of its Board and whether the fund should be a stand-alone institution or hosted by another international organisation were resolved at the last meeting of the transitional committee in November 2023.

Following the agreement by the committee, the general expectation was that its recommendations would be further discussed and possibly altered during COP28. However, the COP presidency managed to secure agreement on the text among all Parties before the start of the conference. Hence, it presented the text for adoption on the opening day of the conference, and the COP and CMA adopted the operationalisation of the new fund and funding arrangements at that time. This agreement on a major agenda item on the first day of the conference helped to give the starting phase of the conference a positive momentum.

With decisions 1/CP.28 and 5/CMA.5, Parties adopted the governing instrument and decided to operationalise the fund as a **financial intermediary fund hosted by the World Bank**, which will be serviced by a new dedicated and independent secretariat.

Parties further agreed that the new fund will be governed by an independent Board composed of 26 members with 14 members coming from developing countries.

[45] SCF (2024) Report on the doubling of adaptation finance, https://unfccc.int/sites/default/files/resource/231120%20BLS23393%20UCC%20Adaptation%20Finance%20v04.pdf.

They further designated the fund as an entity entrusted with operating the Financial Mechanism of the Convention, serving the Paris Agreement. This means that the fund will be accountable to, and function under the guidance of, the CMA. Parties tasked the Standing Committee on Finance (SCF) with developing arrangements that operationalise this agreement for consideration and adoption at COP29.

At COP28 many countries announced pledges to the new fund, including a USD 100 million contribution by the COP28 host, the United Arab Emirates. In 2024, additional pledges were made by Austria and the Republic of Korea (see Table 1).

Table 1: Pledges to the Fund for responding to Loss and Damage

Contributor	In currency as announced	In USD
Austria	Euro (EUR) 10 million	10.8 million
Canada	Canadian Dollar (CAD) 16 million	11.6 million
Denmark	Danish Krone (DKK) 175 million	25.5 million
Estonia	EUR 0.5 million	0.5 million
European Commission	EUR 25 million	27.1 million
Finland	EUR 3 million	3.3 million
France	EUR 100 million	108.9 million
Germany	USD 100 million	100.0 million
Iceland	EUR 0.6 million	0.6 million
Ireland	EUR 25 million	27.3 million
Italy	EUR 100 million	108.9 million
Japan	USD 10 million	10.0 million
Netherlands	EUR 15 million	16.3 million
Norway	USD 25 million	25.0 million
Portugal	EUR 5 million	5.5 million
Republic of Korea	USD 7 million	7.0 million
Slovenia	EUR 1.5 million	1.6 million
Spain	EUR 20 million	21.7 million
United Arab Emirates	USD 100 million	100.0 million
United Kingdom	British Pound (GBP) 40 million	50.6 million
United States of America	USD 17.5 million	17.5 million
Total		**679.7 million**

Source: COP28 Climate Funds Pledge Tracker, https://www.nrdc.org/bio/joe-thwaites/cop-28-climate-fund-pledge-tracker, based on pledges announced by Parties and compiled by the UNFCCC Secretariat.

Operationalisation of the fund for responding to loss and damage

Given the increase in frequency and intensity of extreme weather events, developing countries are **expecting a rapid operationalisation of the fund so that the disbursing of resources can begin in 2025**. After a three-month delay to the Board's commencement of operations, caused by developed countries taking longer than anticipated to agree on their representatives on the Board[46], the following key decisions were taken at its first and second meeting:

- **Selection of Co-Chairs:** The Board selected Richard Sherman of South Africa and Jean-Christophe Donnellier of France as Co-Chairs for a term of one year.
- **Name of the fund:** At its second meeting the Board decided that the official name of the Fund will be **'Fund for responding to Loss and Damage' (FLD)**.
- **Host country selection:** Eight countries had submitted offers for hosting the new fund: Antigua and Barbuda, Armenia, Bahamas, Barbados, Eswatini, Kenya, the Philippines and Togo[47]. At its second meeting in July 2024, the Board decided to accept the offer of the **Philippines**. While the administrative staff of the fund's secretariat will be based at the headquarters of the World Bank in Washington D.C., it is expected that Board meetings will take place in the Philippines. The host country will also play an important role in conferring legal personality to the FLD.
- **Selection of the Executive Director:** At its second meeting, the Board agreed on the criteria for the selection of the Executive Director for the FLD. In September 2024 it was announced that Ibrahima Cheikh Diong will serve as Executive Director for a four-year term beginning on 1 November 2024.[48]

A key issue for the further operationalisation of the FLD is an agreement on its **access modalities**. The fund's governing instrument specifies that access modalities may include so-called 'direct access' through developing countries' sub-national, national and regional entities as well as international access via multilateral or bilateral entities. Further, the fund may also provide direct budget support to developing countries' governments. The direct access modality has been successfully piloted by the Adaptation Fund and was also adopted by the GCF. A key challenge in operationalising the provisions of the governing instrument is that the World Bank traditionally does not offer direct access in its operations. In a statement made at its first meeting, the Board underscored that it considers direct access to be a key component for the success of the fund.[49]

Ongoing negotiations on the Santiago Network and the Warsaw International Mechanism

The new loss and damage fund marks an important milestone in the evolution of the institutional arrangements to address loss and damage under the Convention and the Paris Agreement. It complements the **Warsaw International Mechanism for Loss and Damage (WIM)**, established in 2013 and its Santiago Network established in 2019.

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[46] Loss and damage board speeds up work to allow countries direct access to funds, https://www.climatechangenews.com/2024/05/03/loss-and-damage-board-speeds-up-work-to-allow-countries-direct-access-to-funds/.

[47] Selection of the host country of the Board, https://unfccc.int/sites/default/files/resource/Host_country_committee_report_20240708.pdf.

[48] Ibrahima Cheikh Diong Selected as Inaugural Executive Director of the Fund for responding to Loss and Damage, https://unfccc.int/news/ibrahima-cheikh-diong-selected-as-inaugural-executive-director-of-the-fund-for-responding-to-loss.

[49] Statement of the Board on Direct Access to the World Bank, Annex IV to FLD.B1/11 Decisions of the Board –first meeting of the Board, 30 April to 2 May 2024, https://unfccc.int/sites/default/files/resource/Decisions_of_the_Board_at_the_first_meeting_FLD.B.1.11_24May2024.pdf.

The tripartite institutional arrangements need to be understood in the context of the history of the negotiations on loss and damage. Developing countries had asked for dedicated support structures for addressing loss and damage as early as 1991 when Parties negotiated the adoption of the UNFCCC. Respective proposals[50] were not acceptable to developed countries, which is why both the Convention and the Kyoto Protocol did not include a dedicated article on loss and damage. When Parties started negotiations on a new multilateral agreement to replace the Kyoto Protocol in 2007, loss and damage was again part of these negotiations. While no new agreement was reached at the Copenhagen climate change conference in 2009, the following negotiations on establishing an enhanced institutional structure under the Convention resulted in the establishment of the WIM in 2013.

The objectives of the WIM include enhancing knowledge and understanding of comprehensive risk management approaches, strengthening dialogue, coordination, coherence and synergies among stakeholders, and enhancing action and support, including, finance, technology and capacity building. Notably, the **WIM itself does not provide funding** for dedicated loss and damage projects but works as a clearing-house mechanism to mobilise such funding through other institutions. While this helped to create better awareness on funding needs for loss and damage, the **existing climate funds such as the GCF, GEF and Adaptation Fund do not have a mandate to fund loss and damage projects**. Therefore, available support has remained limited. To respond to this, Parties in 2019 established the **Santiago network** – a sub-structure under the WIM dedicated to **facilitating access to finance and technical assistance**. While this will help to mobilise resources from a wide variety of sources, it still did not close the gap in the financial mechanism of the Convention and the Paris Agreement. Therefore, two years later in 2022, Parties agreed that a new dedicated fund will be established under the Paris Agreement to provide financial resources for loss and damage.

Table 2: Evolution of institutional arrangements on loss and damage

	Warsaw International Mechanism for Loss and Damage (WIM)	Santiago Network	Fund for responding to Loss and Damage (FLD)
Established	2013	2019	2022
Governing Body	Executive Committee	Advisory Board	Board
Scope	Technical support, coordination, knowledge sharing	Technical support, facilitation of access to finance	Financial support
Host city and country	n/a	Geneva, Switzerland	Manila, the Philippines

Source: Authors' own compilation.

Sharing different functions between several institutions is not unusual under the Convention. For adaptation, for example, a similar tripartite arrangement exists with an Adaptation Committee that provides coordination functions and advancement on technical work, a special Least Developed Countries Expert Group (LEG) that provides technical support for accessing financial support and four dedicated

[50] See, for example, INC (1991) Vanuatu draft annex relating to Article 23 (Insurance) for inclusion in the revised single text on elements relating to mechanisms Intergovernmental Negotiating Committee for a Framework Convention on Climate Change A/AC.237/WG.II/CRP.8, https://unfccc.int/resource/docs/a/wg2crp08.pdf.

funds that support adaptation projects, namely the Green Climate Fund (GCF), the Adaptation Fund, the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF).

With the institutional arrangements on loss and damage evolving rapidly between 2019 and 2024, it will be **important to ensure coherence and complementarity of the different bodies**. A major agenda item at **COP29** in this context is the **third review of the WIM**. It is a common procedure that all institutional arrangements under the Convention undergo periodic review by the COP to ensure that they remain fit for purpose. At the 60th meeting of the Subsidiary Bodies (SB60) in June 2024, Parties agreed on the terms of reference for the review of the WIM. The overall objective will be 'to assess the performance of and achievements […]; progress in achieving the long-term vision of the WIM; progress in implementing the activities of the WIM Executive Committee and those under the Santiago network.'[51] Parties were invited to submit their views on the review by 30 September 2024.

The review will offer an opportunity to assess the coherence and complementarity of the tripartite institutional arrangements on loss and damage and clarify the respective mandates where needed.

Linkage with New Collective Quantified Goal on Climate Finance

Another key issue in the negotiations on loss and damage is the mobilisation of additional resources for supporting developing countries. This question is closely linked to the negotiations on the establishment of a new quantified goal on climate finance, which is discussed in detail in chapter 3.5.1 below. A key question in this context is whether there will be a dedicated sub-goal on finance for loss and damage and how such a potential goal would be structured.

3.5. Support

Under the UNFCCC and the Paris Agreement, support to developing countries comprises finance, technology development and transfer, and capacity building. In this section, the outcomes of previous COPs and the issues at stake at COP29 are presented separately for these three aspects of support.

3.5.1. Finance

While climate finance is an important agenda item at every COP, several Parties and civil society organisations have dubbed **COP29 a 'Finance COP,'** expressing the expectation that negotiations on climate finance will take centre stage in Baku.[52] The main reason for these expectations is that Parties are scheduled to **adopt a new climate finance goal** that will **replace the USD 100 billion goal**, which has been guiding the mobilisation and provision of climate finance between **2010 and 2024**.

The USD 100 billion goal was adopted at a difficult time for the multilateral negotiations on climate change. In 2009, Parties had met in Copenhagen for COP15 with the intention of adopting a new multilateral agreement to replace the Kyoto Protocol. However, the negotiations failed, leaving the course of the future multilateral architecture on climate change unclear. The collective commitment made by developed countries at COP15 to '**mobilise jointly USD 100 billion per year by 2020 from a wide variety of sources**' was an important signal that, despite the absence of a new multilateral treaty, cooperation in the response to climate change will continue and be scaled up. From the time of its adoption, the USD 100 billion goal therefore was an important cornerstone for building trust among Parties and for the ability of the multilateral system to deliver support to developing countries that face the

[51] Terms of reference for the 2024 review of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, https://unfccc.int/sites/default/files/resource/sb2024_L04E.pdf?download.

[52] See, for example, WRI (2024) 'Key issues to watch at COP29', https://www.wri.org/un-climate-change-conference-resource-hub/key-issues.

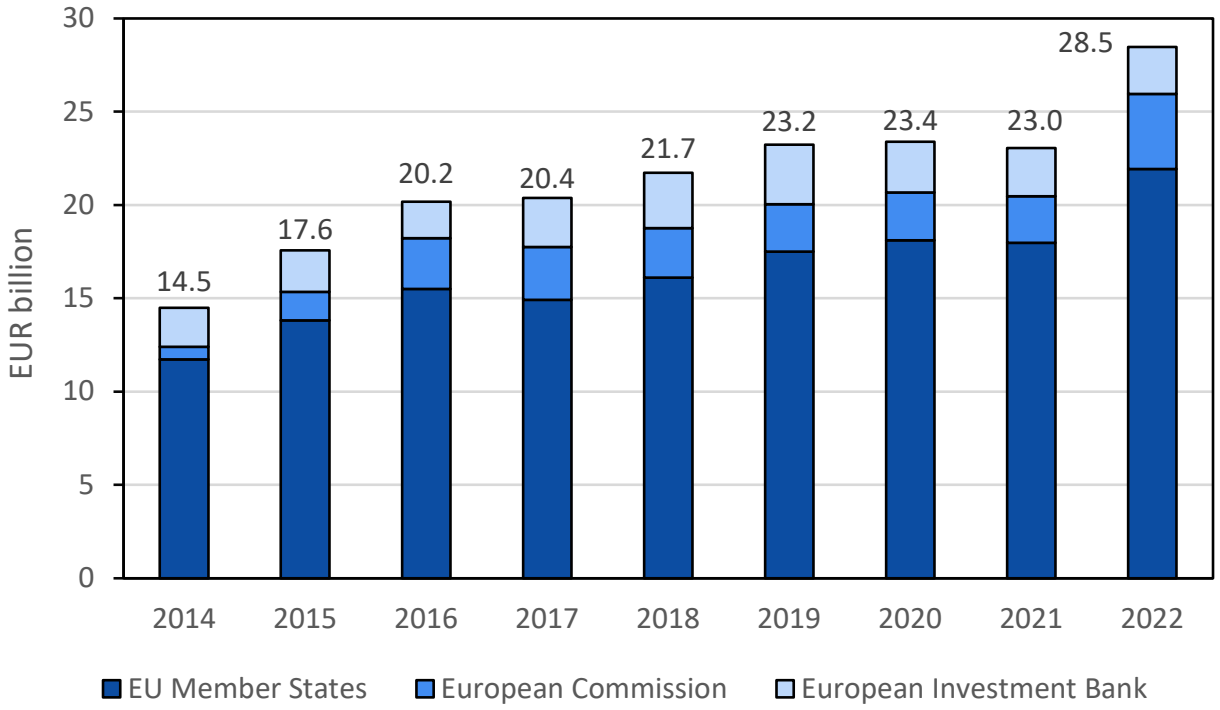
adverse effects of climate change. The scope of the USD 100 billion goal, which **includes flows from the private sector**, facilitated more interest and the engagement of new actors with the UNFCCC and with climate finance more broadly.

To capitalise on the ability of the USD 100 billion goal to build trust among Parties**, demonstrating progress in its delivery has been a key aspect** of every COP since 2009. Measuring different climate finance flows has initially been a challenge as the scope of the goal includes flows previously unmeasured, such as private finance mobilised by public interventions. Over time, however, developed countries, along with institutions such as the Organisation for Economic Co-operation and Development (OECD), have developed methodologies that allow more granular tracking of climate finance flows, increasing the transparency of climate finance.

Besides reporting on support provided in biennial reports under the Convention, the **EU has published annually the amount of climate finance provided by its Member States and EU institutions**. To enable such reporting, respective requirements have been included in the Regulation on the Governance of the Energy Union and Climate Action[53].

In addition to providing EUR 28.5 billion (bn) in public climate finance in 2022 (see Figure 12), the EU and its Member States mobilised EUR 12 bn from other sources in that year, thereby making an important contribution to the overall provision and mobilisation of climate finance.

Figure 12: Public climate finance committed and provided by EU institutions and Member States to developing countries



Source: Authors' own figure based on European Environment Agency, climate finance to developing countries, https://climate-energy.eea.europa.eu/topics/climate-finance/assistance-to-developing-countries/data.

[53] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, Article 19, http://data.europa.eu/eli/reg/2018/1999/oj.

Collectively, with USD 83.3 billion provided and mobilised in 2020, developed countries fell short of meeting the USD 100 billion goal. **According to data by the OECD, the target was met for the first time two years later**, with developing countries providing and mobilising USD 115.9 billion in 2022. Around 80% of this figure (USD 91.6 billion) is bilateral and multilateral public climate finance, while mobilised private finance and climate-related export credits contributed the remainder.[54] The next iteration of the **SCF Biennial Assessment and Overview of Climate Finance Flows report**[55], which is expected to be published ahead of COP29, will provide details on financial support provided and mobilised by developed country Parties under the UNFCCC.

While developed countries likely only achieved their commitment two years later than the original target, the USD 100 billion goal overall can be regarded as **successful in substantially increasing the amount of support that is available to developing countries for climate action**. Beyond the overall flows, the goal also has been instrumental in moving the negotiations under the UNFCCC towards **looking at the importance of finance flows more broadly** as an important lever for the climate transition. This new view on financial flows was also captured in Article 2.1(c) of the Paris Agreement, which establishes the overarching goal of making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

When Parties negotiated the Paris Agreement, they also considered how the USD 100 billion goal should evolve after 2020, considering that significantly more finance needs to be mobilised for developing countries to support them in their climate actions.[56] They decided that initially the USD 100 billion goal should continue to apply until 2025, while an ad-hoc work programme should support the **establishing of a new collective quantified goal (NCQG) that should guide mobilisation efforts after 2025** (UNFCCC 2015a, paragraph 53). The work programme was launched at COP26 in 2021 with a mandate to facilitate technical discussions to **prepare a decision on the NCQG at COP29**.[57, 58]

Between 2022 and 2024, eleven technical expert dialogues were organised that allowed for an in-depth exploration of the different elements of the NCQG. These elements can be clustered around the four elements of scope, structure, quantum, and expected outcomes, as shown in Figure 13.[59]

[54] OECD, Climate finance provided and mobilised by developed countries in 2013-2022, https://www.oecd.org/en/publications/climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2022_19150727-en.html.

[55] The report will be made available on the following website, https://unfccc.int/topics/climate-finance/resources/biennial-assessment-and-overview-of-climate-finance-flows.

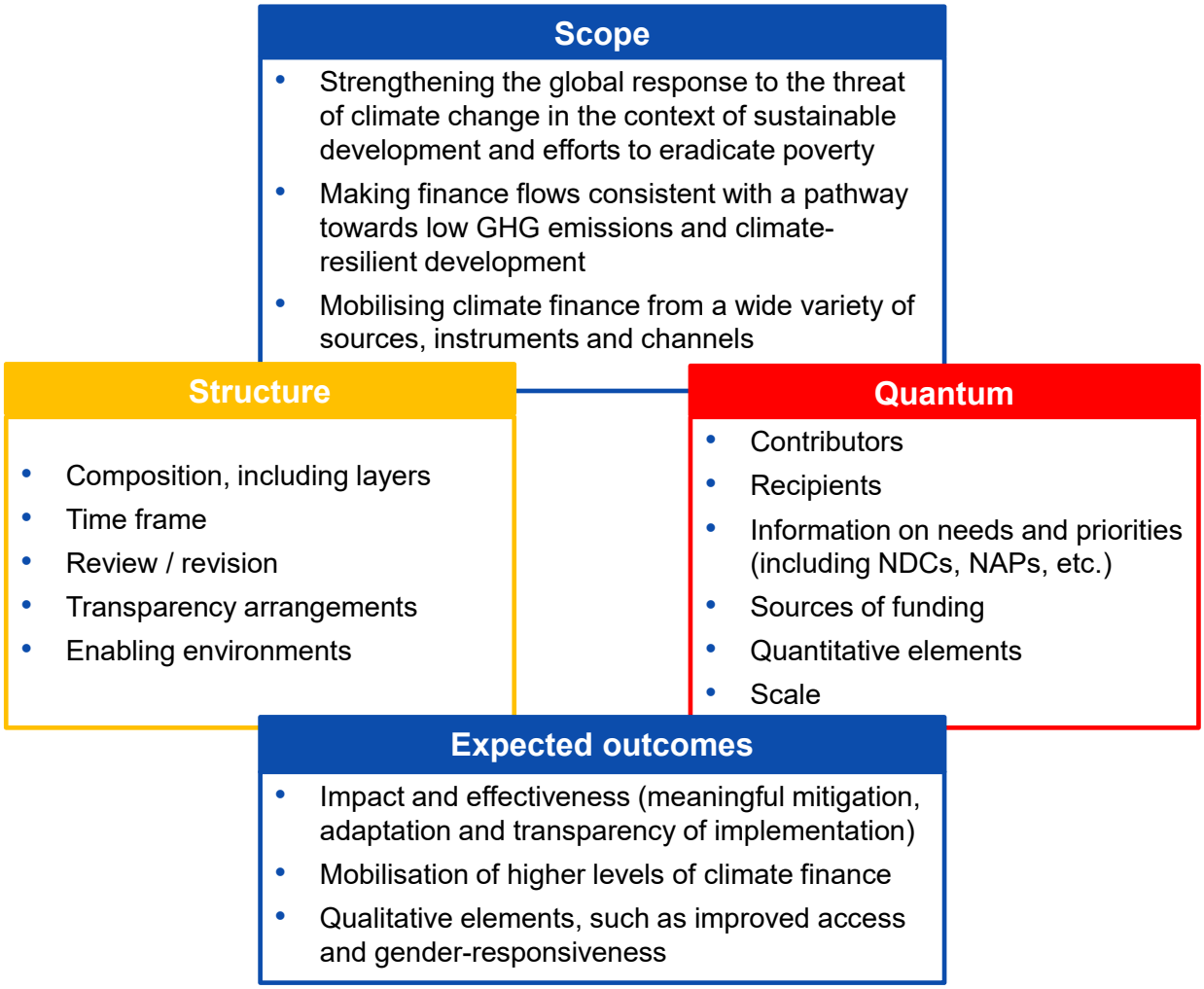
[56] For an overview of the estimated needs on adaptation, mitigation and loss and damage see for example UNCTAD (2023) Considerations for a New Collective Quantified Goal: Bringing accountability, trust and developing country needs to climate finance https://unctad.org/system/files/official-document/gds2023d7_en.pdf, page 13.

[57] See decision 9/CMA.3, https://unfccc.int/sites/default/files/resource/CMA2021_10_Add3_E.pdf .

[58] For a short flyer on the process for establishing the NCQG, see New Collective Quantified Goal On Climate Finance, https://unfccc.int/sites/default/files/resource/UNFCCC_NCQG2023_flyer_web.pdf.

[59] Submission by Belgium and the European Commission on behalf of the European Union and its Member States: EU's views on the 2024 work plan for the New Collective Quantified Goal on climate finance, https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202401301702---BE-2024-01-30%20EU%20submission%20on%20the%20NCQG%20workplan%20for%202024.pdf.

Figure 13: Elements of the NCQG



Source: Authors' diagram based on: Submission by Belgium and the European Commission on behalf of the European Union and its Member States, https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202401301702---BE-2024-01-30%20EU%20submission%20on%20the%20NCQG%20workplan%20for%202024.pdf.

Many of these elements touch on highly political issues, such as the **question of whether the new commitment should only apply to developed countries or whether other Parties 'in a position to do so' (such as emerging countries) should contribute** to the target as well. Other open questions include **whether the goal should have different layers (i.e. separate sub-goals for mitigation and adaptation finance)**.

Until the SB60 in June 2024, Parties had made little progress in translating the outcomes of the technical dialogues into elements for a negotiation text in Baku. However, a **high-level ministerial meeting mandated to take place before COP29** is expected to facilitate the reaching of an agreement on some of the political issues of the goal.

In August 2024, the **EU made a submission** to the UNFCCC that contains a **potential decision text for COP29** along the headings of scope, quantitative and qualitative elements, access, and transparency arrangements. For the quantitative elements, the **EU proposes setting an overarching goal for global investment flows** (USD XX trillion) **by 2035 which is underpinned by a goal for mobilising and providing support for developing countries** (USD XX billion). The draft decision text would also **ask all Parties with high GHG emissions and economic capabilities to join the effort**. Flows for

specific themes such as adaptation are addressed under the qualitative elements. The submission further proposes using the Modalities, Procedures and Guidelines (MPGs) of the Enhanced Transparency Framework (ETF) to report on the financial support provided and received.[60]

While the NCQG will dominate the **climate finance negotiations** at COP29, there are **other important elements** that will also be on the agenda. These include the following:

- **Operationalisation of Article 2.1(c) of the Paris Agreement:** Through decision 1/CMA.4, Parties decided to launch the 'Sharm el-Sheikh dialogue between Parties, relevant organizations and stakeholders to exchange views on and enhance understanding of the scope of Article 2, paragraph 1(c), of the Paris Agreement and its complementarity with Article 9 of the Paris Agreement'. It had been a priority of the European Union, among others, to put more emphasis on the finance flows goal, alongside the temperature goal and the adaptation goal of the Paris Agreement.
- **Support for developing countries in assessing their needs and priorities for climate finance:** At COP23 in 2017, Parties requested that the UNFCCC Secretariat, 'in collaboration with the operating entities of the Financial Mechanism, United Nations agencies and bilateral, regional and other multilateral channels, […] explore ways and means to assist developing country Parties in assessing their needs and priorities, in a country-driven manner, including technological and capacity-building needs, and in translating climate finance needs into action' (UNFCCC 2017, paragraph 10). In response, the UNFCCC Secretariat established the so-called 'Needs-based Finance Project' which facilitates the collaboration with partners to support the access and mobilisation of climate finance. The project supported several countries in developing climate finance access and mobilisation strategies as well as their implementation. At COP28, Parties requested that the UNFCCC Secretariat prepare a report to be made available at COP29. Assessing finance needs has been a priority issue for developing countries in the climate finance negotiations, and the country-driven approach of the 'Needs-based Finance Project' was welcomed. COP29 will provide an opportunity to reflect on the outcomes of the project and consider potentially extending the mandate of the Secretariat.
- **Guidance on the funds of the financial mechanism of the Convention:** As a standing agenda item at every COP, Parties will have the opportunity to provide guidance to the operating entities of the financial mechanism, namely the Global Environment Facility, the Green Climate Fund, the Adaptation Fund and, for the first time, the new Fund for Responding to Loss and Damage.

3.5.2. Technology development and transfer

Technology holds the key to unlocking transformative change in the fight against climate change. It is an essential enabler of both climate change mitigation and adaptation, allowing for rapid decarbonisation of economies while building resilience to the increasingly severe impacts of a warming world. Recognising this fundamental truth, **the Global Stocktake at COP28 underscored the crucial role of technology development and transfer** in achieving the Paris Agreement goals.

[60] Submission by Belgium and the European Commission on behalf of the European Union and its Member States: Eleventh Technical Expert Dialogue (TED11) and third Meeting under the Ad Hoc Work Programme (MAHWP3) on the New Collective Quantified Goal on Climate Finance (NCQG), 13 August 2024, https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202408131609---HU-2024-08-13%20EU%20submission%20on%20NCQG.pdf.

The Technology Mechanism, comprising the TEC and the CTCN, plays an important role in facilitating this technological transformation. The TEC provides policy guidance and recommendations to countries on climate technology development and transfer, while the CTCN offers technical assistance, capacity building, and knowledge sharing to developing countries for implementing these technologies.

COP28 witnessed significant discussions and decisions concerning the Technology Mechanism, reflecting the growing recognition of its vital role. The conference **called for stronger collaboration between the Technology Mechanism and the Financial Mechanism to increase access to finance and support the scaling-up of climate technologies**, with a particular emphasis on supporting developing countries, particularly LDCs and SIDS, in accessing, developing, and deploying climate technologies.

Advancing this crucial conversation, the session of the Subsidiary Bodies in June 2024 held an in-session workshop dedicated to exploring ways to strengthen linkages between the Technology Mechanism and the Financial Mechanism, and identifying best practices, challenges, and opportunities for enhancing national and international cooperation.[61] The workshop highlighted the need for improved coordination between National Designated Entities (NDEs) for technology and National Designated Authorities (NDAs) for finance, greater engagement with stakeholders, and the importance of aligning technology priorities with financial resources. A summary report capturing these findings will be published before COP29.

In parallel, informal consultations initiated by the incoming COP29 Presidency focused on **shaping the structure and modalities of the new Technology Implementation Programme (TIP) established by the Global Stocktake** (see section 3.7). The purpose of the TIP is defined in paragraph 110 of the Global Stocktake decision as 'to strengthen support for the implementation of technology priorities identified by developing countries, and to address the challenges identified in the first periodic assessment of the Technology Mechanism' (UNFCCC 2023a).

Several key activities and initiatives are underway to advance the work of the Technology Mechanism. At COP28, the '**Artificial Intelligence (AI) Innovation Grand Challenge'** was launched under the #AI4ClimateAction initiative. This challenge aims to foster the development of artificial intelligence-powered climate solutions in developing countries, with the winning solution to be showcased at COP29. This initiative highlights the potential of AI to drive transformative change and support developing countries in addressing climate challenges.[62]

Additionally, the TEC and CTCN continue to prioritise support for **enhancing National Systems of Innovation (NSI)** in developing countries and for promoting transformative and innovative solutions in key sectors such as water-energy-food systems, buildings and infrastructure, and transformative industries. At COP28, a high-level event showcased the achievements of the Joint Work Programme, sharing insights into the success stories of joint actions. The negotiations focused on the Joint Annual Report, including the common workstreams: NSI, Technology Needs Assessments (TNAs) and NDCs, and collaboration under UNFCCC and other UN agencies.[63]

The conference resulted in decisions by both the COP and the CMA that call for the TEC and CTCN to strengthen cooperation, particularly in securing long-term financing of the Technology Mechanism

[61] In-session workshop on linkages between the Technology Mechanism and the Financial Mechanism, Summary report by the Technology Executive Committee, https://unfccc.int/documents/640968.

[62] Challenge Launched at COP28 to Harness Artificial Intelligence for Climate Action in Developing Countries, https://unfccc.int/news/challenge-launched-at-cop28-to-harness-artificial-intelligence-for-climate-action-in-developing.

[63] Technology Executive Committee, https://unfccc.int/ttclear/tec.

(UNFCCC 2023b). This includes enhancing linkages with the Financial Mechanism, which comprises the GCF and the GEF, to facilitate access to finance for technology development and transfer projects.

Looking ahead to **COP29**, negotiations under the Technology Mechanism and Framework will encompass several **key areas**. These include reviewing the **Joint Annual Report of the TEC and CTCN**, further exploring the **linkages between the Technology Mechanism and the Financial Mechanism**, discussing the '**Poznan Strategic Programme' on technology transfer**, and operationalising the **Technology Implementation Programme**. The Technology Mechanism will contribute to several **events** at COP29 including those on science, technology, and innovation, with a focus on digitalisation, transformative industries, and the agriculture-energy-food nexus.

3.5.3. Capacity building

Capacity building is a vital component of the Paris Agreement, as outlined in its Article 11. Many developing nations, particularly the LDCs and SIDS, face significant capacity gaps that hinder their ability to enhance their climate capabilities.[64] To address these gaps, Parties have committed to regularly communicating their climate-related capacity-building actions and measures. **The Paris Committee on Capacity Building (PCCB)**, established at COP21 in 2015, plays a crucial role in supporting developing countries in building their capacity to implement the Paris Agreement.[65]

NDC implementation support through Capacity Building: NDCs are a central element of the Paris Agreement, and the majority of LDCs and other developing countries have identified capacity building as a priority and condition for their implementation. The PCCB focuses on building the capacity of LDCs to implement NDCs, integrate climate considerations into national planning and budgeting, and address institutional capacity gaps essential for implementing the Paris Agreement. A knowledge-sharing workshop held during the SB60 meeting in Bonn in June 2024 aimed to enhance capacities for NDC preparation and implementation.[66]

PCCB's Capacity-Building Portal and Focus Area support on financing for National Adaptation Plan (NAPs): The PCCB participates in global capacity building forums such as the Durban Forum and the Capacity Building Hub. The latest meeting of the **Durban Forum**, organised under the auspices of the SBI during the SB60 meeting in Bonn in June 2024, focused on capacity building for addressing gaps and needs in terms of accessing finance for NAPs. The Capacity Building Hub, established during COP24, facilitates cooperation and the exchange of knowledge and experiences among various stakeholders involved in climate change mitigation and adaptation. The **6th Capacity-Building Hub at COP29** aims to enhance climate action through capacity-building, focusing on thematic areas such as adaptation, private sector capacity, innovative tools and methodologies, climate innovation, and synergies between the Rio Conventions. The event will feature interactive sessions, including roundtable dialogues, workshops, and networking sessions, to foster knowledge co-creation and shared learning among participants.[67]

Capacity Building Initiative for Transparency (CBIT): The CBIT was established at the request of Parties to strengthen the institutional and technical capacities of developing countries. Its goal is to help developing countries meet the enhanced transparency requirements outlined in Article 13 of the Paris

64 Capacity-building, https://unfccc.int/topics/capacity-building.

65 Paris Committee on Capacity-building (PCCB), https://unfccc.int/pccb.

66 Capacity-building Portal, https://unfccc.int/cbportal.

67 6th Capacity-Building Hub COP29, Nov-Dec 2024, Baku, https://unfccc.int/sites/default/files/resource/6th%20CB%20Hub_Concept%20Note.pdf.

Agreement. The CBIT provides countries with tools and training to prepare their BTRs, which are due by December 2024.[68]

Additional Capacity Building Initiatives: The UNFCCC Secretariat launched the 'Capacity-building Talks' public event series in 2020 to disseminate information, share best practices, and foster dialogue among relevant stakeholders. The Capacity Award Programme to Advance Capabilities and Institutional Training in one Year (CAPACITY) Fellowship Programme builds local professional expertise in addressing climate change in SIDS and LDCs. Mid-career professionals from these regions work and receive training at the UNFCCC Secretariat in Bonn for one year, with the possibility of extension. Supported by the Italian government, a new round of the CAPACITY Fellowship Programme began in November 2023.[69] The Youth4Capacity programme, supported by the UNFCCC and the Italian Ministry of Environment and Energy Security, provides a platform for youth from the global north and south to exchange experiences and knowledge on capacity building.[70]

At the SB60, negotiations on the PCCB focused on three key areas: developing terms of reference for the fifth review of capacity-building implementation, conducting the second review of the PCCB, and annual monitoring of the capacity-building framework. The discussions were notably cordial, with Parties exhibiting collaborative engagement. The terms of reference for the PCCB's second review were agreed by the SBI and forwarded for adoption by the COP and CMA at the upcoming conference in Baku.

3.6. Transparency and compliance

The focus in 2024 for most experts in the area of transparency lies on the preparation of the **first Biennial Transparency Reports (BTRs)** under the Paris Agreement, which are due by 31 December 2024. As of 1 October 2024, three Parties have submitted their first BTR.[71] Some Parties announced that they would submit their reports ahead of the COP in Baku. However, it can be expected that most reports will be submitted close to the December reporting deadline. This is because the reports require a large amount of up-to-date information to be compiled, and the tools for the electronic reporting of information in tabular formats have been provided by the UNFCCC Secretariat relatively recently, in June 2024.[72] Figure 14 provides an overview of the information to be included in BTRs.

[68] The Capacity-Building Initiative for Transparency (CBIT), https://www.thegef.org/sites/default/files/documents/2022-11/GEF_CBIT_2022_11.pdf.

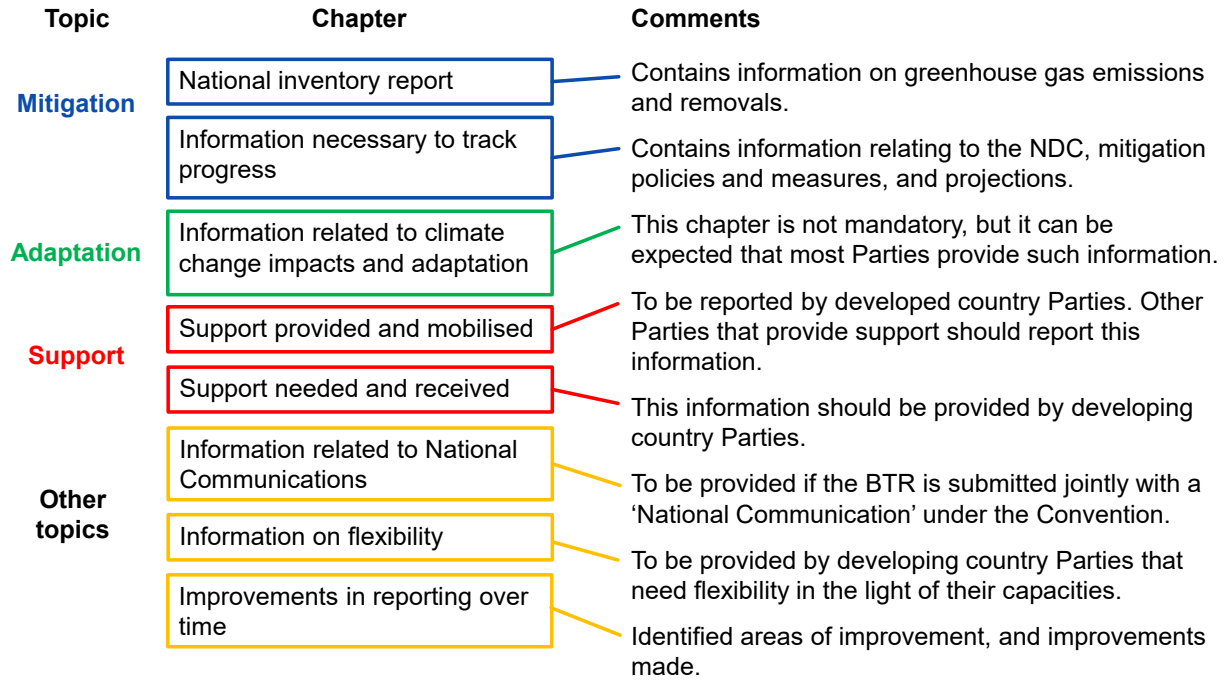
[69] Announcement for fellowship, https://unfccc.int/secretariat/employment/UserManagement/FileStorage/GB3WIJAR1Y07QKNH8Z52LT96VEPSO4.

[70] The Capacity Award Programme to Advance Capabilities and Institutional Training in one Year (CAPACITY) Fellowship Programme, https://unfccc.int/CAPACITY%20Fellowship.

[71] First Biennial Transparency Reports, https://unfccc.int/first-biennial-transparency-reports. Note that reports marked as 'NID' are 'national inventory documents,' which are part of the BTR submission, but do not constitute a complete BTR.

[72] Launch of New Climate Reporting Tools for Enhanced Transparency, https://unfccc.int/news/launch-of-new-climate-reporting-tools-for-enhanced-transparency.

Figure 14: Information to be reported in Biennial Transparency Reports



Source: Decision 18/CMA.1: Modalities, procedures and guidelines (MPGs) for the transparency framework (UNFCCC 2018a), Annex IV to decision 5/CMA.3: Outline of the biennial transparency report (UNFCCC 2021b), authors' own compilation.

At the COP **in Baku, Parties will negotiate several agenda items on reporting and review** under the Convention. This is because Parties still have to fulfil their reporting obligations under the Convention, and the UNFCCC Secretariat provides summary reports on the status of the related submissions and reviews.

At the COP, Parties will likely not agree on substantive conclusions, but rather take note of the reports of the UNFCCC Secretariat. It will be difficult to find a consensus among all Parties on substantive statements, such as on topics included and the timeliness of submissions, because every Party or group has its own priority topics, and Parties that submitted late would not want to be singled out in SBI conclusions. Nevertheless, all reports submitted by Parties and the reports of the UNFCCC Secretariat are readily available on the UNFCCC website.[73]

In case of late submissions of BTRs, the committee established under Article 15 of the Paris Agreement will intervene. However, the Paris Agreement does not foresee sanctioning mechanisms and the purpose of the committee is only to facilitate the implementation of the agreement. Following late submissions of an NDC and a communication under Article 9 of the Paris Agreement, the Committee engaged with the Parties in question in 2023, and these documents have been submitted in the meantime.[74]

[73] Reporting and review, https://unfccc.int/reporting-and-review#MRV.

[74] Annual report of the Paris Agreement Implementation and Compliance Committee to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, https://unfccc.int/documents/631846.

3.7. The Global Stocktake

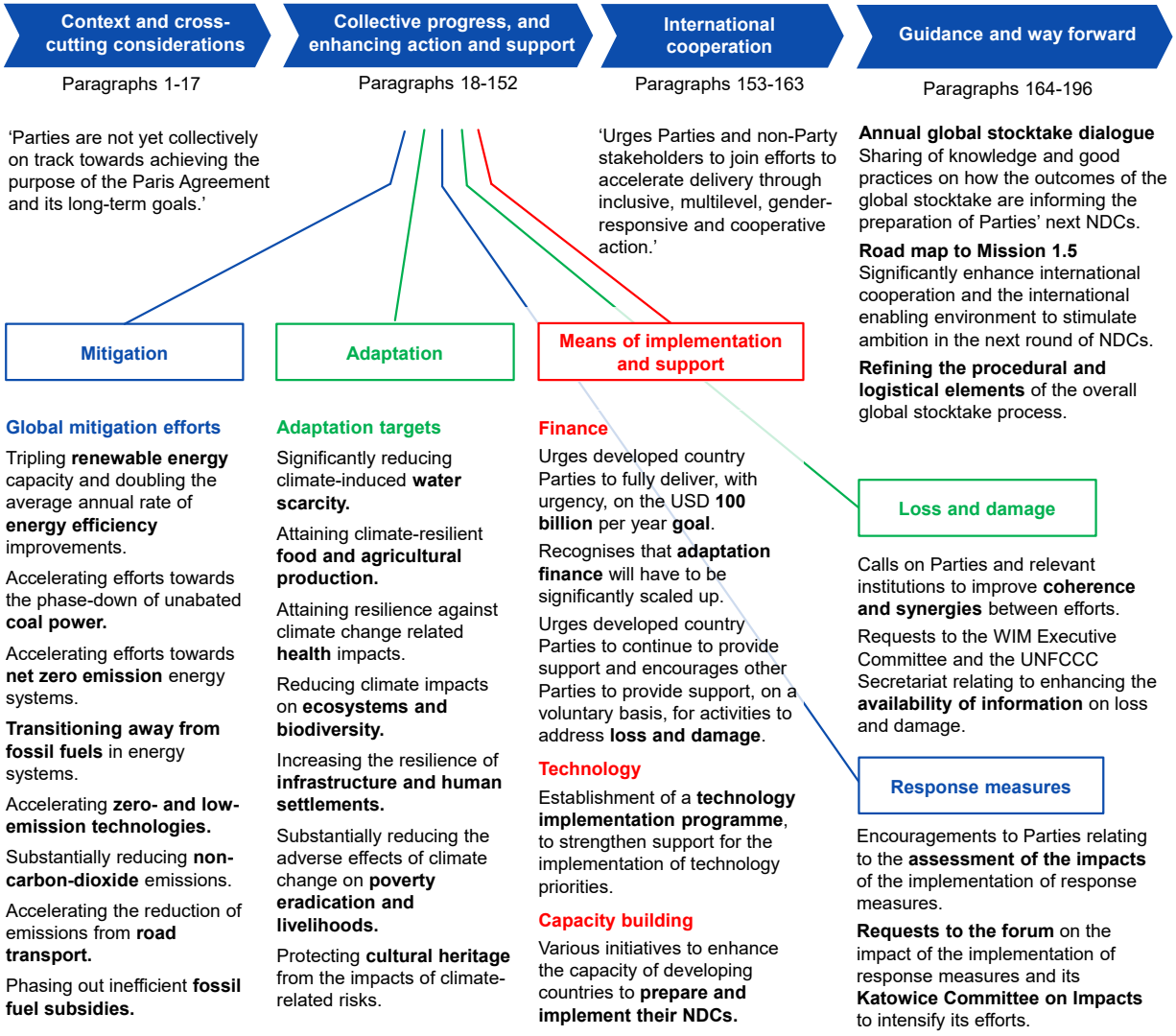
The first Global Stocktake was the main focus of the previous COP in Dubai in December 2023. Following a series of technical dialogues held in 2022 and 2023, the Global Stocktake culminated in a 'consideration of outputs' phase during COP28. In the first week of the conference, heads of state and government, ministers and representatives of UN organisations and NGOs discussed the main topics to be included in the Global Stocktake outcome, namely the scaling-up of mitigation, adaptation, and means of implementation and support (UNFCCC 2023g). In parallel, a draft text for a CMA decision was negotiated by Parties.

In the second week of the conference, the ministers Dan Jørgensen (Denmark) and Barbara Creecy (South Africa) conducted further consultations, and COP President Sultan Ahmed Al Jaber met with ministers and heads of delegations to discuss possible landing grounds. Shortly before the planned closing date of the Conference, the Presidency shared a draft text which was met with widespread criticism for its lack in ambition, particularly in the way it addressed fossil fuels (IISD 2023). As a consequence, negotiations overran, and an agreement was reached on 13 December 2023, when the closing plenary of COP28 adopted a CMA decision on the 'outcome of the first global stocktake' (UNFCCC 2023a).

The structure and key elements of this CMA decision are presented in Figure 15. The decision contains four main sections, on 'context and cross-cutting considerations,' 'collective progress, and enhancing action and support,' 'international cooperation' and 'guidance and way forward'. Under the second section, the main thematic areas of the Global Stocktake are addressed in detail, including:

- global mitigation efforts, to which Parties are called to contribute;
- thematic adaptation targets, which had been agreed under the UAE Framework for Global Climate Resilience (see section 3.3);
- statements relating to means of implementation and support (finance, technology and capacity building);
- calls and requests relating to averting, minimising and addressing loss and damage; and
- encouragements and requests relating to the impacts of the implementation of response measures (see also section 3.8).

Figure 15: Overview and selected elements of the decision on the first Global Stocktake



Source: Decision 1/CMA.5: Outcome of the first global stocktake, https://unfccc.int/documents/637073, authors' own compilation.

Note: This overview presents selected elements only. The decision on the global stocktake contains a wide range of additional elements under each heading.

It should be noted that the text in the decision on the Global Stocktake comprises a consensus among all Parties, and that many Parties and stakeholders had called for a more ambitious outcome. As an example, many Parties argued for a complete phase-out of fossil fuels, but the decision on the Global Stocktake speaks of a 'transition away from fossil fuels' only. Nevertheless, there was broad agreement that the outcome of the Global Stocktake constitutes an important step forward. How the outcome of the Global Stocktake will inform the Parties' development of their subsequent NDCs – whether they will contain the necessary advances in ambition on mitigation, adaption, and means of implementation and support – will be of crucial importance.

As shown in Figure 15 under 'Guidance and way forward,' the CMA decision introduced **various follow-up processes to the first Global Stocktake**. An '**Annual Global Stocktake Dialogue'** was established to discuss how the outcomes of the Global Stocktake inform the preparation of NDCs. The first such dialogue took place during the Subsidiary Bodies session in Bonn in June 2024. During this dialogue,

country representatives presented their experiences with updating NDCs, and discussed the role of domestic arrangements and options for advancing international cooperation.[75]

At the SBI session in June 2024, delegates also discussed the modalities for the '**dialogue to implement the Global Stocktake outcome'**. This separate dialogue had been mandated in the section on means of implementation and support in the Global Stocktake decision. There were diverging views on the topics to be addressed under this dialogue, and the SBI will continue its deliberations during COP28 in November 2024. The SBI will also continue its discussions on how to refine the procedural and logistical elements of the Global Stocktake, as mandated in the section on 'Guidance and way forward'.

Finally, the decision on the Global Stocktake launched a **'Road map to Mission 1.5'** to enhance international cooperation and to stimulate ambition in the next round of NDCs. Under this road map, the presidencies of COP28, COP29 and COP30 (United Arab Emirates, Azerbaijan and Brazil) aim at supporting Parties' ambition and priorities through a support platform for NDC development and through high-level events to assess key barriers to NDC development.[76]

3.8. Other topics in the negotiations

The negotiations under the COP, the CMA, the CMP and the subsidiary bodies address a wide range of additional topics which are related to the response to climate change. In the following, the status of these negotiations is summarised.

3.8.1. Research and systematic observation

The decision on the first Global Stocktake points out the importance of building on the best available science in climate change mitigation and adaptation. At each climate change conference, the topic of research and systematic observation is on the SBSTA agenda. In recent years, after the reports under the IPCC's Sixth Assessment cycle were published, the SBSTA noted the significant advances in scientific understanding, but also noted gaps in the global observation system.

In its conclusions at COP28, the SBSTA expressed alarm and utmost concern that 2023 was on track to become the warmest individual year on record (UNFCCC 2023i). At the upcoming COP29, delegates will again discuss the latest findings on a changing climate. The final wording chosen in the SBSTA conclusions will be the result of negotiations between Parties with different positions and may not necessarily reflect the urgency which follows from the available scientific information.

Research and systematic observation will also be a focus of the **'Earth Information Day'**, which will be organised under the SBSTA during the Baku climate change conference. The contents and format of the upcoming session are still open, but it can be expected that it will consist of panel discussions and discussions in a world café setting.

3.8.2. Agriculture and food security

Recent extreme weather events around the globe have shown the vulnerability of agriculture to the impacts of climate change. At the same time, methane and nitrous oxide emissions from agriculture are important contributors to climate change (see sections 2.3.4 and 2.3.5).

Issues relating to agriculture have been addressed for many years under the subsidiary bodies of the Convention. The **'Sharm el-Sheikh joint work on implementation of climate action on agriculture**

[75] More information on the 2024 Global Stocktake dialogue, including presentations, can be found at Annual Global Stocktake Dialogue, https://unfccc.int/event/annual-global-stocktake-dialogue.

[76] Presidencies troika letter to Parties, https://www.cop28.com/en/Presidencies-Troika-Letter-To-Parties.

and food security' is a four-year initiative with the objectives of, inter alia, promoting a holistic approach to addressing issues related to agriculture and food security, promoting synergies and strengthening engagements, providing support and technical advice, and sharing information and knowledge.

After the adoption of the joint work at COP27, Parties discussed its specific elements during COP28, but progress was very slow despite the chairs of the subsidiary bodies, the co-facilitators and civil society strongly urging for progress (IISD 2023). At the subsidiary bodies meeting (SB60) in Bonn in June 2024, the SBI and SBSTA finalised the roadmap for the joint work. The road map includes a workshop on systemic and holistic approaches to the implementation of climate action on agriculture, food systems and food security in June 2025, and a workshop on identifying needs and accessing means of implementation in 2026 (UNFCCC 2024c). Related work will also be undertaken by entities under the Convention, such as the Climate Technology Centre and Network (CTCN, see section 3.5.2), and by international organisations, such as the Food and Agriculture Organization (FAO).

Parties and observers are invited to submit information on climate projects, initiatives and policies related to agriculture and food security for publication on the 'Sharm el-Sheikh online portal'.[77] The final portal will be presented by the UNFCCC Secretariat during COP29.

3.8.3. The Local Communities and Indigenous Peoples' Platform

Many indigenous peoples are particularly vulnerable to climate change, and the involvement of local communities is critical for climate change mitigation and adaptation. The Local Communities and Indigenous Peoples' Platform (LCIPP) aims at enhancing the knowledge of local communities and indigenous peoples related to climate change, to facilitate the exchange of experience and to enhance their engagement in the UNFCCC process. The platform organises training workshops for indigenous peoples and relevant stakeholders, and it meets annually in conjunction with the COP. The LCIPP is supported by the Facilitative Working Group (FWG), which proposes the workplan for the platform and contributes to its implementation.

At the SBSTA session in Bonn in June 2024, delegates reviewed the activities under the FWG and the LCIPP. They recommended a draft decision for adoption by COP29.[78] This decision welcomes the progress made and defines the arrangements for the work of the LCIPP and FWG in the coming years. It can be expected that this decision will be adopted by the COP in Baku, and the platform will continue its work. Its activities, as outlined in the Draft 2025-2027 Workplan (UNFCCC 2024b), will continue to promote knowledge, capacity for engagement, and climate change policies and actions among local communities and indigenous peoples.

At the COP in Baku, the LCIPP will host an 'Annual Gathering of Knowledge Holders,' an 'Annual Youth Round Table,' an 'Indigenous Curricula and Materials Round Table Dialogue,' and a 'Multi Stakeholder Dialogue'.[79]

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77 Sharm el-Sheikh online portal, https://unfccc.int/topics/land-use/workstreams/agriculture/sharm-el-sheikh-online-portal.

78 Local Communities and Indigenous Peoples Platform. Draft decision -/CP.29. Recommendation of the Subsidiary Body for Scientific and Technological Advice, https://unfccc.int/documents/638840.

79 Mandated LCIPP events at COP29, https://lcipp.unfccc.int/events/mandated-lcipp-events-cop-29.

3.8.4. The Gender Action Plan

In many countries, women are particularly affected by the impacts of climate change, while they face barriers to being actively involved in climate action. Under the 'Enhanced Lima Work Programme on Gender and its Gender Action Plan,' capacity-building events, dialogues and exchanges are held, and information is shared in the following priority areas (UNFCCC 2023h):

- capacity-building, knowledge management and communication;
- gender balance, participation and women's leadership;
- coherence in the work of constituted and subsidiary bodies;
- gender-responsive implementation and means of implementation; and
- monitoring and reporting.

The Enhanced Lima Work Programme ends in 2024. The implementation of this work programme and the Gender Action Plan was reviewed at the SBI session in Bonn in June 2024. The SBI is expected to complete this review during COP29 and to propose a draft COP decision, which will extend the work programme and the Gender Action Plan and provide further guidance on its implementation. Information on gender-related events during the COP can be found on the UNFCCC website.[80]

3.8.5. Action for Climate Empowerment

In order to empower people worldwide to engage in climate action, they need to be educated and trained, and awareness and participation needs to be raised among the public. In the UNFCCC process, the following elements are subsumed under 'Action for Climate Empowerment' (ACE):

- education;
- public awareness;
- training;
- public participation;
- public access to information; and
- international cooperation.

The 'Glasgow Work Programme on Action for Climate Empowerment,' which was adopted in 2021, comprises activities in the priority areas 'policy coherence,' 'coordinated action,' 'tools and support,' and 'monitoring, evaluation and reporting'. Activities under this work programme include an annual ACE Dialogue[81] and are summarised in annual progress reports on the UNFCCC website.[82]

At the climate change conference in Baku, the SBI will continue its deliberations on matters relating to Action for Climate Empowerment. It can be expected that it will provide further guidance to the UNFCCC Secretariat and to Parties relating to the implementation of ACE and the Glasgow work programme.

[80] Gender & Women at COP29, https://unfccc.int/gender/cop29#Info-session-gender-cop29.

[81] Dialogues on Action for Climate Empowerment, https://unfccc.int/ace-dialogues.

[82] ACE Documents, https://unfccc.int/topics/education-youth/ace-negotiations/ace-documents.

3.8.6. Impacts of the implementation of response measures

In order to keep the temperature goal of the Paris Agreement within reach, transformative mitigation actions need to be implemented. Every transformative change affects communities and the workforce, and the related impacts need to be minimised. As an example, the transition towards renewable energy systems leads to the loss of employment in sectors that focus on fossil fuel production or use. Such a transition needs to be pursued in a just way that minimises negative social and economic impacts.

The social and economic impacts of the implementation of mitigation measures (also known as response measures) have been on the agenda of climate change conferences for many years. This topic is particularly relevant for developing and emerging countries with fossil fuel production or industries based on fossil fuels and feedstocks.

The related issues are addressed by the forum on the impact of the implementation of response measures, which meets at every session of the Subsidiary Bodies under a joint agenda item of the SBSTA and SBI. The forum is supported by the Katowice Committee of Experts on the Impacts of the Implementation of Response Measures (KCI), which consists of members from various groups of countries and from intergovernmental organisations.

At COP28 in Dubai, delegates adopted an updated work programme and modalities for the forum and the KCI. At the upcoming COP29, they will discuss a more specific five-year workplan, which will cover the following main topics listed in the work programme agreed in Dubai (UNFCCC 2023c):

- economic diversification and transformation;
- just transition of the workforce and the creation of decent work and quality jobs;
- assessing and analysing the impacts of the implementation of response measures; and
- facilitating and building capacity on the identification, development, customisation and use of tools and methodologies to assess the impacts of the implementation of response measures.

3.8.7. International aviation and maritime transport

As explained in section 2.3, the mitigation of GHG emissions from international aviation and maritime transport is addressed under the UN specialised agencies ICAO and IMO respectively. During climate change conferences, the SBSTA considers reports from these two agencies on the 'emissions from fuel used for international aviation and maritime transport'.

At the SBSTA session in Bonn in June 2024, Parties discussed substantive draft conclusions. Some developing country representatives suggested that ICAO should be invited 'to prepare scientific assessments on the impacts of its proposed goals and measures related to the growth of the international aviation sector, economic impacts on developing countries and means of promoting the transfer of innovative and efficient technologies to developing countries'.[83] Such a specific invitation was not supported by some developed country representatives. The SBSTA thus agreed to continue its considerations at its next session in November 2024 in Baku. At this session, it can be expected that Parties may once again agree on procedural conclusions.

[83] Draft text on SBSTA 60 agenda item 14(b): Methodological issues – Emissions from fuel used for international aviation and maritime transport, https://unfccc.int/documents/639628.

4. CLIMATE POLICIES OF MAIN PARTIES

Progress towards the goals of the Paris Agreement crucially depends on the policies implemented in large economies. The members of the Group of Twenty (G20) are responsible for approximately 80% of global GHG emissions[84], and large developed countries play a key role in supporting developing countries in mitigating and adapting to climate change.

This chapter provides an overview of the climate policies of the G20 Members. Germany, France and Italy are EU Member States, and their policies are not presented separately here. Instead, the overall climate policy of the EU and its Member States is summarised. In addition to the G20, Azerbaijan is presented here because, as the incoming COP presidency, its priorities are central to the dynamics and outcome of COP29.

Table 3 provides an overview of the main Parties. Besides information on GHG emissions, the table presents the Parties' NDC targets and their long-term goals under the Paris Agreement. The NDC targets listed here apply to the period up to 2030. As of 1 October 2024, none of the Parties presented here has communicated an NDC for the time period after 2030. More information on each individual Party can be found in the sub-chapters below.

Table 3: Overview of G20 Members and the COP29 host country

Party	GHG emissions (without LULUCF)		NDC target(s)	Long-term goal under the Paris Agreement
	Total (Mt CO_2eq)	Per capita (t CO_2eq)		
Argentina	356	8.5	Economy-wide emissions cap	Climate neutrality by 2050
Australia	522	**22.3**	Economy-wide emissions reduction target	Net-zero emissions by 2050
Brazil	1 140	5.3	Economy-wide emissions reduction target	No Long-Term Strategy communicated under the Paris Agreement
Canada	687	**17.7**	Economy-wide emissions reduction target	Net-zero emissions by 2050
China	**14 400**	9.5	CO_2 emissions peaking target; economy-wide CO_2 emissions intensity target; specific targets for non-fossil energy share, forest stock volume and installed wind and solar power capacity.	Carbon neutrality before 2060 (not all GHGs covered)
European Union	**3 430**	7.4	Economy-wide emissions reduction target	Climate neutrality by 2050
India	**3 520**	2.5	Emissions intensity target; target for installed capacity of non-fossil fuel based power generation; increase of carbon sink	Net-zero emissions by 2070

[84] Climate Watch Data, https://www.climatewatchdata.org/ghg-emissions.

Party	GHG emissions (without LULUCF)		NDC target(s)	Long-term goal under the Paris Agreement
	Total (Mt CO_2eq)	Per capita (t CO_2eq)		
Indonesia	1 160	3.7	Economy-wide emissions target compared to a business-as-usual scenario	Emissions of 540 Mt CO_2eq by 2050
Japan	1 170	8.8	Economy-wide emissions reduction target	Carbon neutrality by 2050, reducing GHGs to net-zero
Mexico	792	4.8	Economy-wide emissions target compared to a business-as-usual scenario	50% emissions reduction by 2050 compared to 2000
Republic of Korea	670	13.1	Economy-wide emissions reduction target	Carbon neutrality by 2050 (not all GHGs covered)
Russian Federation	**2 030**	**17.5**	Economy-wide emissions reduction target	Balance of emissions and removals no later than 2060
Saudi Arabia	741	**20.7**	Emissions target compared to a business-as-usual scenario; target for the renewable energy share	No Long-Term Strategy communicated under the Paris Agreement
South Africa	528	8.5	Economy-wide emissions reduction target	Emissions of 212 to 428 Mt CO_2eq by 2050
Türkiye	559	6.4	Emissions target compared to a business-as-usual scenario	No Long-Term Strategy communicated under the Paris Agreement
United Kingdom	422	6.2	Economy-wide emissions reduction target	Net-zero emissions by 2050
United States	**6 390**	**17.4**	Economy-wide emissions reduction target	Net-zero emissions by 2050
Azerbaijan	57	5.5	Economy-wide emissions reduction target	No Long-Term Strategy communicated under the Paris Agreement

Sources: Climate Watch Data, https://www.climatewatchdata.org/ghg-emissions; NDC registry, https://unfccc.int/NDCREG; Communication of Long-Term Strategies, https://unfccc.int/process/the-paris-agreement/long-term-strategies

Notes: LULUCF: Land Use, Land-use change and Forestry.
Top 5 total GHG emissions and GHG emissions per capita are marked in bold.
GHG emissions data are without LULUCF and were taken from a global data source (Climate Watch Data) for 2022. Emissions reported by each country in its most recent national GHG inventory may differ, depending on the date of publication.

In order to mitigate climate change, Parties agreed in the decision on the first Global Stocktake (see section 3.7) to contribute to global efforts in areas such as renewable energy or non-CO_2 emissions. There are substantial differences between countries in terms of where they currently stand regarding these efforts. Table 4 presents selected indicators which are related to the global efforts. Where the decision on the Global Stocktake speaks of 'renewable energy capacity,' the general understanding is

that mainly *installed electricity generation capacity from renewable energy sources* is meant (e.g. IRENA 2024b).

Table 4: Selected indicators related to the global efforts agreed in the first Global Stocktake

Party	Annual **growth** in installed renewable **electricity** generation **capacity** (2020-2023)		**Share** of renewables in **electricity generation** (2022)		**Share** of coal in **electricity generation**		**Share** of non-CO_2 emissions in total GHG emissions (2022)
Party	Total	Wind and solar	Total	Wind and solar	2022	5-year trend	
Argentina	4.1%	15.2%	29.2%	11.8%	1.8%	↗	**43.5%**
Australia	**12.5%**	15.0%	30.7%	**23.5%**	49.2%	↘	24.9%
Brazil	8.8%	**37.5%**	**87.7%**	16.5%	1.4%	↘	**41.2%**
Canada	2.2%	8.5%	**69.0%**	6.5%	4.0%	↘	20.7%
China	**17.6%**	25.6%	29.7%	13.5%	59.0%	↘	17.4%
European Union	10.1%	14.5%	38.2%	**22.4%**	17.1%	↘	19.5%
India	9.3%	14.7%	19.0%	8.7%	**74.6%**	↘	20.5%
Indonesia	4.8%	22.6%	12.9%	0.1%	**67.2%**	↗	28.6%
Japan	6.1%	7.5%	21.5%	10.0%	30.7%	↘	9.4%
Mexico	4.0%	8.9%	22.2%	11.0%	6.4%	↘	23.1%
Republic of Korea	11.4%	16.2%	7.4%	5.3%	33.7%	↘	26.4%
Russian Federation	0.9%	26.7%	17.9%	0.7%	16.3%	↗	21.2%
Saudi Arabia	**117.5%**	**117.5%**	0.7%	0.7%	0.0%	-	25.9%
South Africa	3.7%	4.2%	5.4%	3.8%	**86.7%**	↘	18.2%
Türkiye	5.9%	14.1%	**42.0%**	15.8%	34.4%	↗	20.0%
United Kingdom	5.5%	6.6%	41.7%	**28.9%**	2.0%	↘	17.3%
United States	9.5%	13.8%	21.3%	13.9%	20.3%	↘	20.5%
Azerbaijan	9.9%	**72.0%**	6.7%	0.5%	0.0%	-	**37.5%**

Source: IRENA's renewable electricity capacity and generation statistics, version of 11 July 2024, https://www.irena.org/Data/Downloads/Tools, Climate Watch Data, https://www.climatewatchdata.org/ghg-emissions.

Notes: Top 3 values in each column are marked in bold.
Annual growth in installed renewable electricity generation capacity: The growth rates were calculated from on-grid electricity installed capacity, expressed in megawatts.

Share of renewables in electricity generation: The share was calculated from on-grid electricity generated from renewable energy sources.
Coal: The share was calculated from on-grid electricity generated from coal and peat, expressed in gigawatt-hours of gross electricity produced. The 5-year trend indicates whether this share has increased or decreased between 2017 and 2022.
Non-CO_2 emissions: The share was calculated from methane, nitrous oxide and fluorinated gas emissions, expressed in CO_2 equivalents using the 100-year global warming potential from the IPCC's Fifth Assessment Report. Emissions data were taken from a global data source (Climate Watch Data) for 2022. Emissions reported by each country in its most recent national GHG inventory may differ, depending on the date of publication.

Table 4 shows that the share of renewables in electricity generation is already relatively high in many countries, and some show important increases in annual installed capacity. Globally, the goal of trebling renewable electricity capacity requires a minimum 16.4% growth rate each year until 2030.[85] It should be noted that most renewable energy sources are available intermittently, and transmission and storage capacities have to be increased to effectively make use of these sources.

Most G20 members have reduced the share of coal in overall electricity generation in recent years. For them, it will be critical to accelerate their phase-down efforts. The three G20 members with the highest share of coal in power generation (India, Indonesia and South Africa) are emerging economies, in which a phase-down of coal power is particularly challenging.

Several countries have a relatively low share of both renewables and coal in their electricity mix. These countries generate important shares of their electricity from gas. Interestingly, this group of countries includes three of the five G20 members with the highest per-capita GHG emissions, namely the Russian Federation, Saudi Arabia and United States. Although a coal phase-down may not be a priority in these countries, there is an urgent need for these countries to reduce GHG emissions, including those from gas-based electricity generation.

The share of non-CO_2 emissions in total GHG emissions varies considerably from country to country. Typically, methane is the dominant non-CO_2 GHG and its share in overall emissions is high in countries with a large agriculture sector or with oil and gas production. Efforts to reduce non-CO_2 emissions are supported by various international initiatives (see section 2.3).

The contributions to the efforts agreed in the first Global Stocktake will be different from country to country, depending on its specific circumstances. In order to keep the goals of the Paris Agreement within reach, it is crucial for each Party to contribute wherever its capabilities allow, and to reflect its highest possible ambition in its next NDC, as mandated by Article 4 of the Paris Agreement.

4.1. Argentina

Argentina is the third largest economy in Latin America as of 2024, after both Brazil and Mexico, and is a major exporter of agricultural-based products (soybean meal, corn and soybean oil, wheat). Moreover, as of 2023, Argentina is the world's fourth largest lithium producer, a mineral critical for the energy transition and whose output has increased by 119% year-on-year[86]. Argentina's total primary energy mix is dominated by natural gas (55%) and oil (33%), with bioenergy contributing 5%, and hydropower and nuclear another 3% each.[87]

[85] IRENA, Tripling Renewables by 2030 Requires a Minimum of 16.4% Annual Growth Rate, https://www.irena.org/News/pressreleases/2024/Jul/Tripling-Renewables-by-2030-Requires-a-Minimum-of-16-point-4-pc-Annual-Growth-Rate.

[86] Mining Technology: Lithium Production Argentina, https://www.mining-technology.com/data-insights/lithium-in-argentina/.

[87] IEA: Argentina Energy Mix: https://www.iea.org/countries/argentina#.

Argentina was the world´s 25th largest GHG emitter in 2022, with emissions consistently increasing in recent decades. In 2022, total emissions (excluding LULUCF) reached a new peak of 356 Mt CO_2eq[88]. Emissions are mainly distributed in two main sectors: energy with 54.5% and agriculture with 33%. The LULUCF sector is a net emission source.[89] Current emissions are higher than NDC targets for 2030 (set at 349 Mt CO_2eq).

In 2015, the Argentine government passed the Renewable Energy Law[90], which mandates a 20% share of renewable electricity consumption by 2025. In October 2021, the Ministry of Economy approved a Resolution[91] which calls for a structural change in energy supply systems to ensure sustainable energy practices. In July 2023, the National Energy Transition Plan to 2030[92] was approved and aims to install 5,000 km of new transmission lines, renewable energy production reaching 57% by 2030. It is important to note that the National Energy Transition Plan also includes a 30% increase in natural gas production by 2030. Moreover, the 2007 Forest Law[93], which aims to prevent deforestation, was approved. However, it has only been partially implemented and only a small portion of the available budget has been allocated[94].

Up to 2023, Argentina has taken some positive steps to mitigate emissions, such as setting renewable energy targets and implementing a carbon tax on some fossil fuels. However, ineffective implementation and lack of ambition have limited progress. Incremental – yet positive – changes have been undermined by the new government of Javier Milei, which issued the Decree of Necessity and Urgency in December 2023 repealing environmental laws such as the protection of rural lands, mining laws and the modification of the Fire Management Law[95]. In addition, the government has proposed substantial budget cuts for science and technology.

Moreover, Argentina is seeking to export Liquefied Natural Gas (LNG), and is currently planning to set up a floating LNG production facility in Bahía Blanca through a Malaysian-Argentinian consortium[96], with the aim of exporting LNG by 2027. It is important to note that the European Commission signed a memorandum of understanding with Argentina in 2023, to, amongst other things, ensure a 'stable and secure' delivery of LNG to Europe[97].

Argentina is expanding its role as a provider of mining products for the global energy transition by increasing extraction of Lithium in northern Argentina, including the recent approval of a 500% expansion to the Argosy Minerals Rincon Lithium Project[98]. In 2023, the Argentine mining industry recorded

88 Global Historical Emissions, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=ARG&source=PIK&start_year=1850.

89 Argentina. Biennial update reports (BUR). BUR5, https://unfccc.int/documents/634953.

90 Climate change laws - Law 27191, https://climate-laws.org/documents/law-27191_656d.

91 Guidelines for an Energy Transition Plan to 2030, https://www.argentina.gob.ar/normativa/nacional/resolución-1036-2021-356100/texto.

92 Plan Nacional De Transición Energética ARG-2030, https://www.energiaestrategica.com/wp-content/uploads/2023/07/Plan-Transicion-Energetica-ARG-2030.pdf.

93 Law 26,331 for the Environmental Protection of Native Forests, https://www.climatepolicydatabase.org/policies/law-26331-environmental-protection-native-forests-argentina-2007.

94 Climate Action Tracker, Argentina, https://climateactiontracker.org/countries/argentina/.

95 Argentina and its new government: what is the situation regarding environmental policies?, https://laudatosimovement.org/news/argentina-and-its-new-government-what-is-the-situation-regarding-environmental-policies/.

96 Argentina looks to floating LNG to lift Vaca Muerta gas, https://www.rivieramm.com/news-content-hub/news-content-hub/argentina-looks-to-floating-lng-to-lift-vaca-muerta-gas-80468.

97 EU-CELAC Summit: EU and Argentina step up cooperation on clean energy transition and energy security, https://ec.europa.eu/commission/presscorner/detail/en/IP_23_3859.

98 Argentina authorities give Argosy Minerals approval for lithium project's vast expansion, https://mugglehead.com/argentina-authorities-give-argosy-minerals-approval-for-lithium-projects-vast-expansion/.

exports worth approx. USD 4 billion, which is expected to reach approx. USD 19 billion by 2030 due primarily to lithium, copper, gold and silver[99].

Argentina's current NDC sets the absolute and unconditional goal of limiting GHG emissions to 349 Mt CO_2eq by 2030. While representing a slight improvement over its previous submission, it falls short of the ambition required to align with the Paris Agreement's goal of limiting global warming to 1.5 °C.[100] To date, the NDC's implementation has failed to reduce high emissions from agriculture, transportation, and fossil fuel production.

In 2022, Argentina submitted its Long-Term Strategy, setting a climate-neutrality target for 2050 and a framework for action.[101]

Argentina's current climate trajectory presents a complex picture, marked by a disconnect between its stated ambitions and recent policy developments. While the country recognises the urgency of climate action, its current NDC and the recent policy shifts under the new government raise questions about its ability to contribute to the global efforts agreed under the Global Stocktake. This creates an opportunity for constructive dialogue and collaboration to support Argentina in aligning its actions with the Paris Agreement's goals and contributing its fair share to the global effort to combat climate change.

4.2. Australia

Australia is currently a major exporter of both fossil fuels and several minerals that are required in many clean energy technologies.[102] As of 2022, coal accounted for 34% of Australia's total energy supply, while renewable energy sources[103] accounted for less than 9%.[104] At the same time, Australia is severely affected by climate change as it has been increasingly exposed to heatwaves, sea level rise, and extreme wildfires (Lawrence et al. 2022), demonstrated most recently by the 2023 biggest bushfire season in over a decade.[105]

In 2022, Australia's GHG emissions amounted to 522 Mt CO_2eq, excluding LULUCF. The energy sector accounts for the large majority of emissions (78%), followed by agriculture (14%), industrial processes and product use (6%), and waste (2%). The LULUCF sector is a sink, reducing net emission by 17% to 434 Mt CO_2eq.[106] Net emissions decreased by 21% between 2012 and 2022.

Australia's national policies focus on reducing emissions from large industrial facilities. In 2023-2024, Australia reformed its Safeguard Mechanism to meet national GHG emission reduction goals through capping direct emissions or offsetting emissions to meet binding decreasing emission baselines (Australian Government 2024).[107]

Furthermore, Australia set a nationwide 82% renewable electricity target by 2030. To approach this target, the government launched the National Energy Transformation Partnership in 2022 to negotiate

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99 Milei's investment regime proposal divides Argentine mining players, https://www.bnamericas.com/en/analysis/mileis-investment-regime-proposal-divides-argentine-mining-players.

100 Climate Action Tracker - Argentina, https://climateactiontracker.org/countries/argentina/.

101 Ministry of Environment and Sustainable Development Second National Plan for Adaptation And Mitigation To Climate Change, https://www.argentina.gob.ar/normativa/nacional/resolución-146-2023-382506.

102 OEC (2022), Mineral Products, https://oec.world/en/profile/hs/mineral-products.

103 Renewable energy sources include hydro, wind and solar as well as biofuels and waste.

104 IEA World Energy Balances (2024), https://www.iea.org/data-and-statistics/data-product/world-energy-statistics-and-balances.

105 Rohan Fisher (2024), Vastly bigger than the Black Summer: 84 million hectares of northern Australia burned in 2023, published in The Conversation, https://theconversation.com/vastly-bigger-than-the-black-summer-84-million-hectares-of-northern-australia-burned-in-2023-227996.

106 UNFCCC National Inventory Submissions 2024, https://unfccc.int/ghg-inventories-annex-i-parties/2024.

107 Climate Action Tracker, Australia, https://climateactiontracker.org/countries/australia/policies-action/.

bilateral Renewable Energy Transformation Agreements[108] and announced an expansion of the Capacity Investment Scheme in 2023, which promotes investment in renewable energy generation and storage capacity to deliver an additional 32 gigawatt (GW) of capacity by 2030[109]. In addition, the 2022-2023 budget included an Australian Dollar (AUD) 20 billion grant for new transmission lines for renewable energy as part of the 'Rewiring the Nation' programme.[110]

Other efforts to reduce GHG emissions are the recently adopted National Electric Vehicle Strategy (Australian Government 2023), which aims to increase the uptake of electric vehicles across Australia, and a new Vehicle Efficiency Standard introduced in 2024[111]. These policies complement the recently expanded Driving the Nation Fund, which supports the roll-out of charging infrastructure and the electric car discount legislation (Australian Government 2023).

In addition to the above-mentioned policies, Australia joined several international initiatives that aim at contributing to meeting emission reduction targets by enhancing emission reductions and removals in the LULUCF sector.[112]

In its NDC, Australia commits to reducing GHG emissions by 43% by 2030 compared to 2005. In addition, it reaffirms its 2050 target of achieving net zero emissions, which covers all sectors in Australia's national inventory.

In 2023, Australia updated its long-term GHG emission reduction strategy with a Net Zero Plan that is aligned with the transition to a net zero economy and is informed by six sectoral decarbonisation plans towards 2050.[113]

Through the above-mentioned policies, Australia is contributing to several of the global efforts agreed at the Global Stocktake at COP28. The planned addition of 32 GW of renewable power generation capacity by 2030 is a substantive number in absolute terms. As Australia's renewable power generation capacity already amounted to approx. 49 GW in 2022 (IRENA 2024a), the planned addition translates into a factor of 1.7 (rather than a factor of 3) by 2030. In any case, Australia's renewable electricity policies can help in its efforts to phase down coal power, which in 2022 accounted for almost half of its electricity generation (see Table 4).

4.3. Brazil

Brazil will host COP30 in the Amazonian city of Belém, seeking to assert itself as a leader in the fight against climate change, particularly in the global effort to conserve forests.

Over the last 20 years, Brazil has become one of the world leaders of clean energy with a share of almost 50% of renewables in its energy mix in 2023. However, Brazil still highly depends on non-renewables

[108] Australian Government, Department of Climate Change, Energy, the Environment and Water (2024). Major expansion of Australia's energy grid capacity announced, https://www.dcceew.gov.au/about/news/major-expansion-australias-energy-grid-capacity-announced.

[109] Australian Government, Department of Climate Change, Energy, the Environment and Water (2024). Capacity Investment Scheme, https://www.dcceew.gov.au/energy/renewable/capacity-investment-scheme.

[110] Australian Government (2024). Department of Climate Change, Energy, the Environment and Water, Rewiring the Nation, https://www.dcceew.gov.au/energy/renewable/rewiring-the-nation.

[111] Australian Government (2024). Department of Infrastructure, Transport, Regional Development, Communications and the Arts, New Vehicle Efficiency Standard introduced, https://www.infrastructure.gov.au/department/media/news/new-vehicle-efficiency-standard-introduced.

[112] Climate Action Tracker (2023). Australia, https://climateactiontracker.org/countries/australia/policies-action/.

[113] Letter from Minister for Climate Change and Energy (2023), MS23-900962, https://unfccc.int/process/the-paris-agreement/long-term-strategies.

and is the largest oil producer in Latin America and the ninth largest global oil producer.[114] Over the last ten years, the share of oil and derivates in Brazil's energy mix decreased from 39.2% to 35.1%, while the natural gas share dropped from 13.5% to 9.6%[115].

According to the FAO, in 2020, 59% (497 million hectares – Mha) of Brazil was covered by forest. 44% of that forest was classified as primary forest, which is the most biodiverse and carbon-dense form of forest.[116] Even with signs of decline in primary forest loss in 2023, Brazil lost 2.73 Mha of natural forest in 2023 under the leadership of President Luiz Inácio Lula da Silva,.[117]

Brazil is the world's seventh-largest emitter of GHGs. In 2021, its total emissions reached 1.53 $GtCO_2eq$, corresponding to 3.1% of global emissions. The emissions were primarily concentrated in three key sectors: agriculture (~35%), energy (~32%) and land use, land-use change and forestry (~26). The remaining emissions originated from the waste sector (~5%) and the industrial processes and product use (IPPU) sector (~2%).[118]

Brazil is positioned as an emerging leader in the global energy transition and is working on reducing the dependence on fossil sources of energy. In 2023, Brazil's Ministry of Mines and Energy advanced efforts to accelerate the low-carbon hydrogen economy by releasing a three-year action plan (2023-2025) under the National Hydrogen Program. This plan aims to establish low-carbon hydrogen pilot plants across all five regions of Brazil by 2025.[119] In June 2024, the senate approved a regulatory framework for the production of low-carbon hydrogen with tax and financial incentives for the sector. To ensure international recognition of its hydrogen-related efforts, Brazil signed the 'Declaration of Intent on the Mutual Recognition of Certification Schemes' at COP28. Additionally, Brazil signed a declaration outlining public-private actions for international hydrogen trade.[120]

Moreover, in early 2024, the Brazilian government and the International Energy Agency (IEA) signed a cooperation agreement on Brazil's energy transition. This treaty aims to accelerate and expand Brazil's energy matrix in a clean, diversified and inclusive way.[121] While Brazil has not yet set a fossil fuel phase-out target, the drafted bills for National Energy Transition Policy and an attached Energy Transition Acceleration Program represent a commitment to energy sustainability.[122]

Brazil committed to achieving zero deforestation by 2030 in its Action Plan for the Prevention and Control of Deforestation in the Legal Amazon, which was launched in 2004. It reinforced this commitment in April 2024 by creating the 'Union with Municipalities for Reducing Deforestation and Forest Fires in the Amazon,' a programme which aims to support municipalities by means of prevention, monitoring

[114] Maiores produtores mundiais de petróleo em 2023, https://www.ibp.org.br/observatorio-do-setor/snapshots/maiores-produtores-mundiais-de-petroleo/.

[115] BEN Summary Report 2024, https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-819/topico-715/BEB_Summary_Report_2024.pdf.

[116] Global Forest Resources Assessment 2020, https://fra-data.fao.org/assessments/fra/2020.

[117] Dashboard-Global Forest Watch, https://www.globalforestwatch.org/dashboards/country/BRA/.

[118] Climate Watch Brazil, https://www.climatewatchdata.org/countries/BRA.

[119] Brazilian Ministry of Mines and Energy, https://www.gov.br/mme/pt-br/assuntos/noticias/PlanodeTrabalhoTrienalPNH2.pdf.

[120] Aprovado marco legal para a produção do hidrogênio de baixo carbono Fonte: Agência Senado, https://www12.senado.leg.br/noticias/materias/2024/06/19/aprovado-marco-legal-para-a-producao-do-hidrogenio-de-baixo-carbono.

[121] Acordo com agência internacional acelera transição energética-Correio Braziliense, https://www.correiobraziliense.com.br/economia/2024/02/6796025-acordo-com-agencia-internacional-acelera-transicao-energetica.html.

[122] Política Nacional de Transição Energética irá contribuir para maior articulação entre outras políticas de Governo, https://www.gov.br/mme/pt-br/assuntos/noticias/politica-nacional-de-transicao-energetica-ira-contribuir-para-maior-articulacao-entre-outras-politicas-de-governo.

and control actions.[123] A recent study[124] found that deforestation in indigenous-protected areas was up to 83% lower than in unprotected regions. These findings highlight the crucial role that indigenous communities play in environmental stewardship, effectively preventing deforestation on their lands.

Brazil is currently developing a new national climate change plan, which will be launched in 2025.[125] The plan will serve as the main guideline for achieving deforestation targets and the transition to a low- and net-zero carbon economy towards climate neutrality. The plan will present national mitigation targets divided into eight sectoral plans. As part of this new plan, Brazil's Ministry of Development, Industry, Commerce, and Services recently started to develop a comprehensive road map to decarbonise various industrial sectors.[126]

While Brazil has set a long-term goal of achieving climate neutrality by 2050 within its NDC, it has yet to submit a comprehensive Long-Term Strategy outlining the path to achieve this. The updated 2023 NDC establishes absolute limits for GHG emissions in 2025 and 2030 and commits to presenting a new NDC target for 2035 based on the 2023 Global Stocktake. However, there is a lack of clarity regarding the way in which the 2025 and 2030 emission reduction targets align with the 2050 climate neutrality goal and in which they contribute to the broader objectives of the UNFCCC and Paris Agreement.

Brazil's proactive stance on the global energy transition demonstrates a promising alignment with the Global Stocktake's call for accelerated decarbonisation efforts. However, the persistent reliance on fossil fuels and the concerning rates of deforestation pose challenges to its climate commitments. Brazil's hosting of COP30 presents a crucial opportunity to reconcile these contradictions and solidify its leadership in combating climate change, especially in the realm of forest conservation.

4.4. Canada

Canada is the country with the third largest forest cover[127]; many of its forests were affected by large-scale wildfires in the summer of 2023.[128] It is also amongst the top five largest producers of both oil and natural gas.[129] Combined, the share of crude oil and natural gas in Canada's total energy supply has increased in recent decades, reaching more than 72% in 2022. In contrast, the share of renewables in the total energy supply remained approximately constant at 17% between 1990 and 2022.[130]

In 2022, Canada's GHG emissions amounted to 708 Mt CO_2eq, excluding LULUCF. The energy sector accounts for the large majority of emissions (81%), followed by agriculture (8%), industrial processes and product use (7%), and waste (3%). The LULUCF sector is an emission source; it increases the net emissions by 7% to 759 Mt CO_2eq.[131] While net emissions declined in 2020 and 2021, its net emissions in 2022 are still at a level comparable to 2012.

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123 Governo oficializa programa para fortalecer municípios no combate ao desmatamento - Presidência da República, https://www.gov.br/secom/pt-br/assuntos/noticias/2024/04/governo-oficializa-programa-para-fortalecer-municipios-no-combate-ao-desmatamento.

124 Socio-economic and environmental trade-offs in Amazonian protected areas and Indigenous territories revealed by assessing competing land uses, https://doi.org/10.1038/s41559-024-02458-w.

125 Ministério do Meio Ambiente e Mudança do Climaa - Mitigação, https://www.gov.br/mma/pt-br/assuntos/mudanca-do-clima/mitigacao.

126 MDIC começa a elaborar plano para descarbonizar setores industriais, https://www.gov.br/mdic/pt-br/assuntos/noticias/2024/maio/mdic-comeca-a-elaborar-plano-para-descarbonizar-setores-industriais.

127 Vast and abundant forests, https://www.ccfm.org/healthy-forests/vast-and-abundant-forests/.

128 Canada's record-breaking wildfires in 2023: A fiery wake-up call, https://natural-resources.canada.ca/simply-science/canadas-record-breaking-wildfires-2023-fiery-wake-call/25303.

129 Oil and Natural Gas in Canada, https://www.capp.ca/en/oil-natural-gas-you/oil-natural-gas-canada/.

130 IEA Energy Statistics Data Browser, https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=CAN&fuel=Energy%20supply&indicator=DomesticProduction.

131 UNFCCC National Inventory Submissions 2024, https://unfccc.int/ghg-inventories-annex-i-parties/2024.

In 2022, Canada published its 2030 Emissions Reduction Plan, which includes cross-sector investments to decarbonise the economy. The plan foresees investments in decarbonising electricity generation and transport. This includes investing Canadian Dollar (CAD) 850 million in clean energy projects to achieve a net-zero electricity grid by 2035, and investing CAD 2.9 billion in charging infrastructure, thereby making it possible for only new zero-emission light-duty vehicles and passenger trucks to be sold by 2035.

Another CAD 1 billion were committed under a Green Buildings Strategy to meet net-zero emissions in the buildings sector by 2050 via buildings codes and retrofits. Furthermore, the Canadian government committed investments to reduce the carbon intensity of fossil fuels and to support sustainable agriculture programmes, community action, and natural carbon storage biotopes (e.g. oceans, wetlands, agricultural lands).[132]

Under the Canadian carbon pricing scheme, each province and territory must introduce a cap and trade system or carbon tax. The carbon price is raised annually by CAD 15 per tonne of CO_2eq, starting in 2023, increasing to CAD 170 per tonne in 2030. Canada also introduced a GHG offset system, under which emission reduction credits are generated that allow companies to compensate emissions exceeding the emission cap.[133]

Despite these efforts to curb domestic GHG emissions, Canada approved a new offshore oil and gas megaproject in the Atlantic in 2022 and continues to support the expansion of the Trans Mountain oil pipeline between Alberta and British Columbia.[134]

In 2021, Canada updated its NDC to include an emissions reduction of 40-45% by 2030 compared to 2005 levels. In addition, Canada committed to achieving net-zero emissions by 2050.[135]

Canada's 2030 Emission Reduction Plan is complemented by its Long-Term Strategy. This strategy explores multiple modelling scenarios for 2050 emissions (e.g. high electrification), which provide insights on the implications of different net-zero emissions futures for Canada. Canada does not have a particular pathway to meet its 2050 commitment in place but plans to define such a pathway based on further engagement with partners, stakeholder and experts (Government of Canada 2022).

As far as the global efforts agreed at COP28 in Dubai are concerned, Canada already has a high share of renewables in its electricity generation capacity (see Table 4). As these capacities are mostly provided by hydropower, there is potential to significantly step up the capacities of wind and solar power.

The protection of terrestrial and marine and ecosystems is another key component of mitigation action, which was highlighted in the decision on the Global Stocktake in Dubai. Related to this, Canada's 2030 Emissions Reduction Plan includes initiatives to protect, manage and restore its vast lands and waters, including a CAD 4 billion 'Natural Climate Solutions Fund'.[136]

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[132] Emissions Reduction Plan, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html.

[133] Climate Action Tracker – Canada, https://climateactiontracker.org/countries/canada/policies-action/.

[134] Ibid.

[135] UNFCCC NDC Registry, https://unfccc.int/NDCREG.

[136] 2030 Emissions Reduction Plan, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html.

4.5. China

In 2023, China was hit hard by climate extremes as the country experienced its hottest year on record but also recorded its lowest ever temperature on 22 January of the same year.[137] While the role of renewables is growing in the national energy mix, China continues to favour fossil fuels, with coal production reaching record levels for the third consecutive year in 2023.[138]

China has been a strong advocate for the 'common but differentiated responsibilities' principle in UNFCCC negotiations, arguing that Parties with higher cumulative historical emissions should bear greater obligations.[139]

In 2022, China's GHG emissions amounted to 14,400 Mt CO_2eq, excluding LULUCF. The energy sector accounts for the large majority of emissions (78%), followed by industrial processes and product use (13%), agriculture (6%) and waste (2%)[140]. The LULUCF sector is a net sink (The People's Republic of China 2023), thereby bringing about lower net emissions. Along with the strong growth of China's economy, GHG emissions excluding LULUCF increased by 16% between 2012 and 2022.

While the 14th Five-year Plan (2021-2025) set the target of generating 39% of electricity from non-fossil sources by 2025[141], the share of electricity generation from non-fossil fuels already reached approximately 36% in 2022 (IRENA 2024a).[142] At the same time, despite its intention to 'strictly control coal consumption' before 2025 and to 'phase down coal consumption' over the 15th Five-year Plan (2026–2030)[143], the government underscored the role of coal as a major source of energy in its Work Report 2023, noting that it has 'increased advanced coal production capacity and stepped up support for power plants and heat-supply enterprises to ensure energy supplies' (Government of China 2023, p. 4). This dual approach emphasises that energy security remains a top priority for China.

To balance energy security and renewable energy goals, China is working towards establishing a national electricity spot market by 2030. This market aims to maintain energy security and facilitate renewable energy penetration through increased interprovincial interconnectivity and real-time electricity price discovery.[144]

In terms of emissions, the 14th Five-Year Plan sets a target to reduce carbon dioxide emissions per unit of GDP by 18% by 2025 compared to 2020 levels. By now, all provinces have incorporated specific targets and tasks to achieve this goal in their individual 14th Five-Year Plans (Government of China 2022).

It is expected that China's national ETS, which commenced operation for the power sector in 2021, will be an important instrument for achieving the country's climate change mitigation targets. Entities currently covered by the eight regional schemes operating in parallel with the national ETS are expected

[137] World's biggest polluter just had its hottest year on record, marked by deadly extreme weather, https://edition.cnn.com/2024/01/05/china/2023-hottest-year-china-climate-intl-hnk/index.html.

[138] Statistical Communiqué of The People's Republic of China on the 2023 National Economic and Social Development, https://www.stats.gov.cn/english/PressRelease/202402/t20240228_1947918.html.

[139] See, for example, China's submission to the Global Stocktake, 2022, https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202212011137---China_s%20Submission%20on%20the%20Global%20Stocktake.pdf.

[140] Climate Watch, PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=CHN&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

[141] Climate Action Tracker (2023). China, https://climateactiontracker.org/countries/china/.

[142] China Electric Power Network (2024), http://mm.chinapower.com.cn/xw/zyxw/20240425/243764.html.

[143] Climate Action Tracker – China, https://climateactiontracker.org/countries/china/.

[144] Ibid.

to be integrated into the national scheme as it expands. In January 2024, China launched another market-based instrument, its domestic offsetting scheme 'Chinese Certified Emissions Reduction', after a six-year suspension during which it was undergoing reform.[145]

In its NDC, updated in 2022, China commits to peaking CO_2 emissions before 2030 and reducing CO_2 emissions per unit of GDP by over 65% by 2030 compared to 2005 levels.

The LTS, submitted in 2021, specifies that China aims to achieve carbon neutrality before 2060 (Government of China 2022). While the updated NDC lacks explicit reduction targets for non-CO_2 gases, one of the included measures indicates an objective to accelerate the control of these gases.[146]

Given the size of its economy, China plays a key role in contributing to the global effort of trebling renewable energy capacity by 2030. As shown in Table 4, China's annual growth in installed renewable electricity generation capacity (2020-2023) amounted to 17.6 %. If this annual growth rate is sustained, it would result in a trebling of overall capacity within less than a decade.

4.6. European Union

The European Union is a Party to the UNFCCC and the Paris Agreement. Each of its Member States is also a Party to the Convention and Paris Agreement. The EU and its Member States communicated one NDC, which they committed to achieving jointly.

In 2022, the European Union's GHG emissions amounted to 3.37 Gt CO_2eq excluding LULUCF, which is 30.6% below the level of 1990. The energy sector accounts for 77% of total emissions, followed by agriculture (11%), industrial processes and product use (9%), and waste (3%). The LULUCF sector is a net sink, and overall GHG emissions including LULUCF amounted to 3.13 Gt CO_2eq.[147]

Climate policies are adopted at EU level and implemented by Member States, which complement these EU policies with their own national policies and measures. Since 2021, EU climate policy has been guided by the European Climate Law, which sets out a binding objective of climate neutrality by 2050 in pursuit of the temperature goal of the Paris Agreement. It also provides a framework for achieving progress in pursuit of the Paris Agreement's adaptation goal.[148]

The main building blocks of the EU mitigation policy are the EU ETS, the Effort Sharing Regulation and the LULUCF Regulation. The EU ETS covers emissions from stationary energy and industrial sources and from international aviation and navigation.[149] The cap for emissions allowed in these sectors is tightened from year to year and will be reduced by 62% by 2030 compared to 2005. Under the Effort Sharing Regulation, EU Member States must collectively reduce emissions not covered by the EU ETS by 40% by 2030 compared to 2005.[150] Additional EU and national policies help Member States in achieving this

[145] ICAP (2024). China national ETS, https://icapcarbonaction.com/en/ets/china-national-ets.

[146] Climate Action Tracker – China, https://climateactiontracker.org/countries/china/.

[147] European Environment Agency, Greenhouse gas emissions and removals, https://www.eea.europa.eu/en/datahub/datahubitem-view/3b7fe76c-524a-439a-bfd2-a6e4046302a2.

[148] Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), https://eur-lex.europa.eu/eli/reg/2021/1119/oj.

[149] 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, as amended, https://eur-lex.europa.eu/eli/dir/2003/87/2024-03-01.

[150] Regulation (EU) 2018/842 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, as amended, http://data.europa.eu/eli/reg/2018/842/2023-05-16.

target. Finally, the LULUCF Regulation requires Member States to contribute to an EU-wide net carbon removal target of 310 Mt CO_2eq by 2030.[151]

In its NDC, the European Union commits to a net GHG emission reduction by 2030 that is at least 55% below 1990 levels. This reduction is to be achieved domestically, without the use of international credits. The latest update of the NDC, which was communicated in October 2023, summarises the main climate policies which had been introduced and/or strengthened in order for the EU and its Member States to achieve their NDC target.[152] The NDC states that the EU's legislative framework, when fully implemented, could enable the EU and its Member States to overachieve the -55% target. However, projections data from EU Member States indicate a remaining gap on the way to reaching the EU's 2030 target.[153]

In 2019, the EU was the first major economy to commit to climate neutrality by 2050. The conclusions of the European Council on climate neutrality were communicated as the EU's Long-Term Strategy in 2020.[154] While this communication does not provide details on the EU's path towards climate neutrality, the milestones towards this goal are governed by the European Climate Law. In February 2024, the European Commission presented its assessment for a 2040 climate target for the EU and recommended a net GHG emission reduction of -90% compared to 1990.[155] The European Parliament and Council are now tasked with adopting a climate target for 2040, which will also feed into the EU's next NDC, to be communicated early in 2025.

The European Union's climate policies contribute to several global efforts agreed at COP28 in Dubai. For example, the Renewable Energy Directive[156] prescribes an at least 42.5% share of renewable energy in gross final energy consumption by 2030, and the Energy Efficiency Directive[157] requires EU Member States to increase annual energy savings in final energy consumption from 0.8% (up to 2023) to 1.9% from 2028 onwards. As far as reductions of non-CO_2 emissions are concerned, these are addressed by the F-Gas Regulation[158] and the Methane Regulation[159]. The latter focuses on methane emissions from the energy sector. However, for the main methane sources within the EU, agriculture and waste, no major mitigation policies have been introduced in recent years.

[151] Regulation (EU) 2018/841 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, as amended, https://eur-lex.europa.eu/eli/reg/2018/841/2023-05-11.

[152] Submission by Spain and the European Commission on behalf of the European Union and its Member States: The update of the nationally determined contribution of the European Union and its Member States, https://unfccc.int/sites/default/files/NDC/2023-10/ES-2023-10-17%20EU%20submission%20NDC%20update.pdf.

[153] European Environment Agency, Trends and projections in Europe 2023, https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2023. A new report is expected to be published at the end of October 2024.

[154] Communication of long-term strategies, https://unfccc.int/process/the-paris-agreement/long-term-strategies.

[155] Communication from the Commission: Securing our future – Europe's 2040 climate target and path to climate neutrality by 2050, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2024%3A63%3AFIN.

[156] Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (recast), as amended, https://eur-lex.europa.eu/eli/dir/2018/2001/2024-07-16.

[157] Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast), http://data.europa.eu/eli/dir/2023/1791/oj

[158] Regulation (EU) 2024/573 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014, https://eur-lex.europa.eu/eli/reg/2024/573/oj.

[159] Regulation (EU) 2024/1787 on methane emissions reductions in the energy sector and amending Regulation (EU) 2019/942, https://eur-lex.europa.eu/eli/reg/2024/1787/oj.

4.7. India

India, the most populated country in the world, is projected to experience 7% real GDP growth in 2024[160]. The demand for clean energy to foster economic growth has led to increased investments in the renewable energy sector. India now ranks fourth globally in installed renewable electricity capacity with 169 GW, which represents about 42% of its total power capacity. However, dependence on coal (~72%) and gas (~4%) for electricity generation continue to pose challenges to India's emission reduction efforts[161,162]. The country is also battling the impacts of climate change; in 2023 alone witnessing 318 days of extreme weather events across all regions of the country (CSE 2024).

The heavily fossil-fuel-dependent Indian economy is ranked as the third largest emitter with emissions of 3.5 Gt CO_2eq and contributed approx. 7% of global emissions in 2022.[163] Energy contributes 73% of the emissions, agriculture 14%, industrial processed and product use 9% and waste 3% of total emissions excluding LULUCF. LULUCF is a net sink with -331 Mt CO_2eq (2016).[164] When comparing the emission growth between 2000 and 2021, the emissions from IPPU has increased by 211% while those from the energy sector have increased by 147%. The waste sector has also increased its emissions by 40% during the same time frame[165]. The data highlights the need for concerted action to mitigate these rising emissions from these sectors which are integral to the economic growth pathway of the country. Despite being the third-largest emitter in absolute terms, India's per capita emissions (approx. 2.5 t CO_2eq in 2022) remain well below the global average of 6.3 t CO_2eq.

One of the most significant policies adopted by the Indian government has been the National Electricity Plan (NEP) 2022-2032. While India admits that coal will remain the source of energy, the NEP commits to not adding any new coal power plants for the next 5 years aside from allowing plants already under construction. The non-fossil-based capacity is likely to increase from 42.5% in 2023 to 57.4% by the end of the fiscal year 2026-27 and further increase to 68.4% by the end of the fiscal year 2031-32[166].

To encourage green energy, the Renewable Purchase Obligations in the electricity source mix for distribution licensees is to be increased to 43% by the fiscal year 2029-2030 compared to the 21% set in 2021-2022. Also, the Green Open Access Policy 2022, allows consumers to purchase green energy directly from power generators. The aim, which is to encourage small industries and commercial business to shift towards green energy, is also incentivised through green certificates [167,168]. In February 2024, India launched the rooftop solar subsidy programme targeting 10 million households. On this basis, the country aims to meet the 40 GW target it had set for 2022 in its NEP, the deadline for which has now been extended to 2026.

The recently submitted budget for 2024-2025 emphasised India's prioritisation of energy security and self-sufficiency. Pumped energy storage as an alternative to battery storage has been mentioned, and

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160 International Monetary Fund - India, https://www.imf.org/en/Countries/IND.

161 IRENA Country Rankings, https://www.irena.org/Data/View-data-by-topic/Capacity-and-Generation/Country-Rankings.

162 IEA50 – India, https://www.iea.org/countries/india/energy-mix.

163 Climate Watch – Historical GHG Emissions, https://www.climatewatchdata.org/ghg-emissions?breakBy=sector&chartType=area&end_year=2022&regions=IND&source=PIK&start_year=1850.

164 India. Biennial update report (BUR). BUR3, https://unfccc.int/documents/268470.

165 Climate Watch – Historical GHG Emissions. https://www.climatewatchdata.org/ghg-emissions?breakBy=sector&chartType=area&regions=IND&source=PIK.

166 Central Electricity Authority notifies the National Electricity Plan for the period of 2022-32, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1928750.

167 A Framework for Climate Change Mitigation in India, https://www.imf.org/en/Publications/WP/Issues/2023/10/20/A-Framework-for-Climate-Change-Mitigation-in-India-535854.

168 Shri R. K. Singh exhorts industry leaders to set targets for going green, https://pib.gov.in/PressReleasePage.aspx?PRID=1923863.

nuclear energy has been brought to focus. India's long-term low-carbon development strategy (India 2022b) included a trebling of current nuclear capacities by 2032. The electro-voltaic sector has seen a change from demand-side subsidies to enhancing supply side with allocations increasing by 140% for production-linked incentives on automobile and its components and battery storage.[169]

Despite these ambitious policies, implementation remains a key challenge. The decentralised nature of India's governance means that state-level buy-in and action are crucial for successful policy implementation.

India's most significant step in 2022 was to commit to net zero by 2070. This has required the country to include more ambitious targets under its updated NDC. Thus, India has pledged to cut its GDP emission intensity by 45% by 2030 compared to 2005 levels. It has also set a target of 50% non-fossil fuel installed capacity, corresponding to 500 GW, by 2030. India has also committed to increasing its carbon sink through additional planting and maintaining forest cover which would create an additional sink of 2.5-3 Gt CO_2 by 2030 (India 2022a).

The Long-Term Strategy of 2022 lays the pathway for the transition from fossil fuels and for the renewable energy target. It includes the creation of a green hydrogen hub (production target set at 5 Mt by 2030), increased use of bio-fuels with an ethanol blending target of 20% by 2025, and increasing nuclear energy, demand side management through increased efficiency and modal shift in transport.

While these targets are ambitious, their feasibility has been questioned by some experts given current trends and implementation challenges. However, international observers have generally praised India's increased ambition, particularly in renewable energy deployment.

Related to actions contributing to the Global Stocktake, India has committed to 50% of its installed electric power to be based on non-fossil fuels by 2030. Current policies and initiatives indicate that India appears to be exceeding this target, with non-fossil fuel capacity reaching 42.5% in 2023[170], and an annual growth of approx. 9% in installed renewable electricity generation capacity in recent years (Table 4). Also, India has increased its forest and tree cover to 24.6% of its geographical area, representing an increase of 2,261 square kilometres (0.28%) compared to the 2019 assessment.[171] India is aiming to create an additional carbon sink of 2.5-3 bn t CO_2eq by 2030.[172] India faces significant challenges in balancing development needs with climate action, including financing the transition and ensuring a just transition for coal-dependent communities. However, there are opportunities in becoming a global leader in clean technologies and developing climate-resilient infrastructure.

4.8. Indonesia

Indonesia is the fourth largest country in the world with approx. 280 million people[173] and has been the largest global coal exporter, based on metric tons exported, since 2017.[174],[175] Although the Indonesian Government has pledged to phase out domestic coal use by 2040 (subject to international financing), coal production in 2023 rose by 12% from 2022 and hit a record high of 775 Mt, with coal exports

[169] Budget 2024: New Direction for India's green energy future, https://www.orfonline.org/expert-speak/budget-2024-new-directions-for-india-s-green-energy-future.

[170] Climate Action Tracker – India, https://climateactiontracker.org/countries/india.

[171] Total forest and tree cover increased by 2261 square kilometre in India as per the India State of Forest Report (ISFR) 2021, https://pib.gov.in/PressReleasePage.aspx?PRID=1906388.

[172] Creation of additional carbon sink, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2004010.

[173] Countries in the world by population, https://www.worldometers.info/world-population/population-by-country/.

[174] The Carbon Brief Profile: Indonesia, https://www.carbonbrief.org/the-carbon-brief-profile-indonesia/.

[175] Leading coal exporting countries worldwide in 2022, https://www.statista.com/statistics/270952/global-hard-coal-exports-2009/.

reaching a record high of 508 million Mt in 2023[176]. Moreover, the Indonesian Energy and Mineral Resources Ministry approved a record quota of 922 Mt of coal production for 2024. As of 2021, coal accounted for 30% of Indonesia´s total energy supply[177]. However, Indonesia has also rapidly scaled up nickel mining operations (approx. 22% of global nickel reserves) and produced 40% of global nickel in 2023[178]. Nickel is a metal primarily used for stainless steel and e-mobility technology crucial in powering the energy transition.

In 2022, Indonesia's GHG emissions reached 1,16 $GtCO_2eq$ excluding LULUCF, which is a 21% year-on-year increase[179]. The energy sector emissions amounted to 68%, agriculture to 12%, waste to 13% and IPPU to 6%. The LULUCF sector is an important net source of emissions.[180]

In November 2022, a group of international partners, co-led by the United States and Japan and including the EU and several European countries, launched a Just Energy Transition Partnership (JETP) with Indonesia, which aims to mobilise USD 20 billion of public and private financing to decarbonise the energy sector[181]. A JETP Comprehensive Investment and Policy Plan (CIPP)[182] was unveiled in November 2023. This plan defines pathways to reaching net-zero power sector emissions by 2050, whilst scaling up solar power from less than 1 GW to 29 GW by 2030, and 265 GW in 2050 and total power sector emissions peaking by 2030[183].

In 2022, a Presidential Regulation mandated the state electricity company to prioritise the purchase of renewable energy and simplify procurement processes, and instructed the Minister of Energy and Mineral Resources to develop a road map for the acceleration of the retirement of coal plants. However, this decree does outline specific exemptions whereby coal power plants could still be built. Indeed, according to a 2024 update of the 'Indonesian Taxonomy for Sustainable Finance' from the Indonesian Financial Services Authority, new coal power plants could be considered as transition activities and benefit from green financing opportunities[184] if the coal plants are 'captive to a unit involved in the processing or mining of minerals deemed critical to the energy transition'[185].

The government of Indonesia released a Presidential Regulation establishing the framework for implementation of Carbon Capture and Storage (CCS) in the country in January 2024[186]. This is part of the government initiative (and in line with the CIPP) to scale up the use of CCS with an ambitious plan for 15 CCS projects slated for completion by 2030[187].

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176 Coal Production and Exports Indonesia, https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/coal/012224-indonesias-2023-coal-output-exports-hit-record-high-amid-robust-demand.

177 IEA – Indonesia Energy Mix 2021, https://www.iea.org/countries/indonesia/energy-mix.

178 ASEAN Briefing: Nickel Production Indonesia, https://www.aseanbriefing.com/news/unleashing-nickels-potential-indonesias-journey-to-global-prominence/.

179 Climate Watch, GHG Emissions Indonesia, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=IDN&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

180 Indonesia. Biennial update report (BUR). BUR3, https://unfccc.int/documents/403577.

181 The EU and International Partners launch ground-breaking Just Energy Transition Partnership with Indonesia, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6926.

182 Indonesia JETP CIPP, https://jetp-id.org/cipp.

183 Just Energy Transition Partnership (JETP), https://web.pln.co.id/pln-jetp/jetp-home.

184 Green Financing Guidebook, Indonesia Financial Services Authority, https://www.ojk.go.id/id/berita-dan-kegiatan/info-terkini/Pages/Taksonomi-untuk-Keuangan-Berkelanjutan-Indonesia.aspx.

185 Green Taxonomy, https://ieefa.org/resources/will-new-indonesian-taxonomy-sustainable-finance-really-serve-its-national-interest.

186 Indonesia CCS Presidential Regulation 2024, https://peraturan.bpk.go.id/Details/276843/perpres-no-14-tahun-2024.

187 Indonesia CCS targets 2030, https://www.argusmedia.com/en/news-and-insights/latest-market-news/2584804-indonesia-aims-to-launch-15-ccus-projects-by-2030.

In early 2023, the Ministry of Energy and Mineral Resources announced the development of fuel economy standards for trucks[188]. In December 2022, it unveiled incentives for the purchase of electric motorbikes and electric cars produced in Indonesia and for the conversion of a combustion engine motorbike to an electric one[189]. Although the uptake of electric vehicles has remained at low levels[190], the Vietnam-based VinFast AutoLtd unveiled plans in early 2024 to invest USD 1.2 billion in a battery electric vehicle manufacturing plant in Indonesia[191].

Indonesia submitted its updated NDC and Long-Term Strategy in 2021, and an enhanced NDC in November 2022 (Government of Indonesia 2022). The Long-Term Strategy states that Indonesia will reach peak GHG emissions in 2030, that the forest and land use sectors will become net emission sinks and that it will reach a net-zero target by 2060 at the latest.[192] The enhanced NDC contains an unconditional target of reducing GHG emissions by 31.89% by 2030 compared to a business-as-usual scenario, and a conditional target of a 43.2% reduction compared to business-as-usual. As the business-as-usual scenario assumes a strong growth in GHG emissions, reaching the NDC target would still result in levels above current emission levels (Government of Indonesia 2022, Table 9).

In terms of the Global Stocktake outcomes from COP28, Indonesia's performance shows a mixed picture of progress and challenges to date. The country has made significant strides in some areas while facing hurdles in others. Indonesia's role as the world's largest nickel producer contributes to global efforts in renewable energy and sustainable transportation, thereby contributing to the Global Stocktake's call for accelerating emissions reduction in road transport.[193] However, the country's energy transition faces large obstacles, particularly in moving away from coal dependency. Despite commitments under the JETP to transition from fossil fuels, Indonesia's energy plans still include controversial elements such as not counting emissions from off-grid coal-fired power plants that supply industrial users.[194] Such approaches could potentially undermine emission reduction efforts. On the renewable energy front, Indonesia has increased its target for renewables in the energy mix to 44% by 2030, but critics argue that the focus on large-scale, centralised projects may overlook more cost-effective and community-oriented solutions.[195] To fully align with the outcome of the Global Stocktake, Indonesia needs to address these contradictions, accelerate its transition away from fossil fuels, and implement more comprehensive and inclusive renewable energy strategies.

188 Ministry of Energy and Mineral Resources of Indonesia to Develop Fuel Economy Standards for Trucks, https://simebtke.esdm.go.id/sinergi/page/content/59/ministry-of-energy-and-mineral-resources-of-indonesia-to-develop-fuel-economy-standards-for-trucks.

189 Will Indonesia's ambitious plan to subsidize EVs and hybrids benefit everyone?, https://theicct.org/asean-indonesia-evs-mar23/.

190 Conversion of vehicles, https://www.thejakartapost.com/opinion/2024/01/24/analysis-govt-sets-ambitious-ev-target-for-2024-as-adoption-below-par.html.

191 VinFast Indonesia Investments: https://vinfastauto.us/investor-relations/news/indonesian-president-visits-vinfast-manufacturing-complex.

192 Long-Term Strategy for Low Carbon and Climate Resilience 2050-Indonesia, https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf.

193 Indonesia pushes carbon-intensive 'false solutions' in its energy transition, https://news.mongabay.com/2023/12/indonesia-pushes-carbon-intensive-false-solutions-in-its-energy-transition/.

194 Ibid.

195 Ibid.

4.9. Japan

Japan continues to rely on coal as an important energy source; in 2022, it accounted for 27% of its total energy supply[196]. In order to achieve its NDC target for 2030, Japan intends to make use of cooperative approaches under Article 6 of the Paris Agreement (Government of Japan 2021a).

In 2022, Japan's GHG emissions amounted to 1,170 Mt CO_2eq, excluding LULUCF. The energy sector accounted for the majority of emissions (87%), followed by industrial processes and product use (9%), agriculture (3%), and waste (1%)[197]. The LULUCF sector is a sink (MoEJ 2024) and thereby brings about lower net emissions. Between 2012 and 2022, GHG emissions excluding LULUCF declined by 16%.

The Green Transformation (GX) Basic Policy, which was adopted in February 2023, aims to drive decarbonisation through public-private investments totalling Japanese Yen (JPY) 150 trillion (approx. EUR 0.9 trillion) over the next decade. A core element of this policy is the GX League, a voluntary group of industries setting individual decarbonisation targets in alignment with the national reduction targets. Furthermore, the GX Basic Policy envisages an emissions trading scheme that covers GX League industries, and the promotion of hydrogen and ammonia technologies (METI 2023a; 2023b).

There are concerns that the policy's focus on CCS technologies, and ammonia and hydrogen co-firing in the electricity sector suggests that Japan may remain reliant on coal. Lacking emissions reduction targets for 2030 or 2050, the GX Basic Policy has been further criticised for prioritising economic growth and energy security over ambitious decarbonisation. As of 2023, the GX ETS operates as a voluntary baseline-and-credit system, which is planned to become mandatory by 2026, comprising around 570 companies that make up for more than 50% of national emissions.[198]

In a notable policy shift, Prime Minister Fumio Kishida announced in 2023 that Japan will move to restart its currently idle nuclear reactors and construct new generation reactors as part of its GX Basic Policy.[199] Nonetheless, according to the Climate Action Tracker, 'nuclear power is not likely to help Japan meet its 2030 targets' due to regulatory and political hurdles.[200]

Japan's Hydrogen Strategy, which was revised in April 2023, aims to supply 12 million tonnes of hydrogen annually by 2040. The strategy aims at reducing costs, expanding supply chains, and promoting hydrogen-based energy systems. Investments will support technological innovation, infrastructure development, and international collaboration to position Japan as a global leader in hydrogen energy (Agency for Natural Resources and Energy 2023).

Japan submitted its updated NDC and its LTS in 2021. In its updated NDC, the country commits to reducing its greenhouse gas emissions by 46% by 2030 compared to 2013 levels (Government of Japan 2021a). The LTS incorporates Japan's commitment to achieving carbon neutrality by 2050 (Government of Japan 2021b).

Japan puts a focus on a range of zero- and low-emission technologies, including CCS, hydrogen and nuclear power. Hence, it contributes to the global efforts agreed in Dubai of 'accelerating zero- and low-emission technologies'.

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196 IEA – Japan, https://www.iea.org/countries/japan/energy-mix.

197 Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=JPN&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

198 ICAP – Japan, https://icapcarbonaction.com/en/ets/japan.

199 Cabinet approves policy shift to permit new nuclear reactors, https://www.asahi.com/ajw/articles/14836865.

200 Climate Action Tracker – Japan, https://climateactiontracker.org/countries/japan/.

4.10. Mexico

On 1 October 2024, Claudia Sheinbaum assumed the presidency of Mexico. As an energy engineer and lead author of the industry chapter of the Working Group III contribution to the IPCC's Fifth Assessment Report (IPCC 2014), she is expected to complement her predecessor's policies of state stewardship in the energy sector by mobilising public resources for renewables. While her predecessor and mentor, Andrés Manuel López Obrador, put a strong focus on promoting fossil energies, it remains to be seen how Sheinbaum will change this policy.[201]

In 2022, Mexico's GHG emissions amounted to 792 Mt CO_2eq, excluding LULUCF. Energy is the main emission source (65%), followed by agriculture (17%), industrial processes and product use (10%), and waste (7%)[202] The LULUCF sector is a net sink.[203] With an increased reliance on fossil fuels for energy generation[204], its GHG emissions excluding LULUCF increased by 18% between 2012 and 2022.

Mexico is the first major emerging economy that adopted a law on climate change. Its General Climate Change Law established the basis for the creation of institutions, legal frameworks and funding the transition to a low carbon economy.[205] Embedded in this law, the Special Programme on Climate Change 2021-2024 provides targets for 2030 and 169 specific actions under four priority objectives (adaptation, mitigation, synergies between adaptation and mitigation, and climate governance).[206]

At the same time, the last administration prioritised fossil fuel extraction in an effort to end fossil fuel imports and achieve energy sovereignty for Mexico. For example, to strengthen the state-owned oil producer Pemex, the administration not only injected USD 3.5 billion into the company, but also reduced Pemex's utility tax rate (SEI et al. 2023). The central role that the state has assumed in the energy sector has elsewhere led to issues with respect to expanding renewables. For example, as it lacks resources to rapidly scale up renewable power production, the Federal Electricity Commission – a state agency in charge of power generation and distribution – has increasingly turned to fossil fuels to meet the growing demand for electricity.[207]

By introducing the pilot phase of its national ETS in 2020,[208] Mexico has become one of only a few countries that implemented an ETS and a carbon tax to operate simultaneously at the same governance level. In addition, several Mexican states have their own carbon pricing instruments, the number of which is expected to increase to eight by the end of 2024 (World Bank 2024).

Having experienced a net loss of 1.2% of its tree cover between 2000 and 2020[209], the government has the goal of planting 1 billion trees through the 'Sowing Life Programme,' which offers financial incentives for farmers to plant trees on small areas of land.[210]

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201 Mexico elects a climate scientist as president – but will politics temper her green ambition?, https://www.climatechangenews.com/2024/06/03/mexico-elects-a-climate-scientist-as-president-but-will-politics-temper-her-green-ambition/.

202 Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=MEX&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

203 Mexico. Biennial update report (BUR) BUR3, https://unfccc.int/documents/512231.

204 Climate Action Tracker – Mexico, https://climateactiontracker.org/countries/mexico/.

205 General Law on Climate Change, https://climate-laws.org/document/general-law-on-climate-change_14c5.

206 Climate Action Tracker – Mexico, https://climateactiontracker.org/countries/mexico/.

207 A simmering conflict over one of Latin America's biggest wind hubs confronts Mexico's next president, https://www.climatechangenews.com/2024/07/09/a-simmering-conflict-over-one-of-latin-americas-biggest-wind-hubs-confronts-mexicos-next-president/.

208 Mexican Emissions Trading System, https://icapcarbonaction.com/en/ets/mexican-emissions-trading-system.

209 Global Forest Watch – Mexico, https://www.globalforestwatch.org/dashboards/country/MEX/.

210 Climate Action Tracker – Mexico, Policies & action, https://climateactiontracker.org/countries/mexico/policies-action/.

Mexico submitted its updated NDC in 2022, in which it commits to reducing its GHG emissions by 35% (unconditionally), and by 40% (conditionally) by 2030 compared to a BAU scenario. The updated NDC also comprises the implementation of the National Strategy for the Reduction of Emissions from Deforestation and Forest Degradation, which aims to contribute to reaching a net-zero deforestation rate by 2030 (Gobierno de México 2022).

Mexico was among the first Parties to the Paris Agreement that submitted a Long-Term Strategy, in 2016. The LTS states the goal of reducing national GHG emissions by 50% between 2000 and 2050 (Government of Mexico 2016). Mexico has not yet committed to reaching net-zero GHG emissions.[211]

As far as the efforts agreed under the Global Stocktake are concerned, Mexico is among those G20 members that have a relatively low growth in installed renewable capacity (see Table 4), and is largely reliant on gas for electricity generation. In order to substantially contribute to the agreed global efforts, a transition of Mexico's economy away from its current reliance on oil and gas will be necessary.

4.11. Republic of Korea

Among OECD countries, the Republic of Korea currently has the lowest share of renewable energy in its power mix. In 2022, renewables only contributed 8.9% to the country's electricity generation, while coal and gas had a combined share of 60%. After a government change in 2022, the country revised some of its renewable energy targets downwards and the country's 10th Basic Plan for Long-Term Electricity Supply and Demand, adopted in January 2023, now prioritises a revitalisation of the Korean nuclear energy industry. [212]

In 2022, the Republic of Korea's GHG emissions amounted to 670 Mt CO_2eq, excluding LULUCF. The energy sector accounts for most emissions (86%), followed by industrial processes and product use (7%), agriculture (3%), and waste (3%)[213]. The LULUCF sector is a sink, thereby bringing about lower net emissions (Republic of Korea 2023). GHG emissions excluding LULUCF reached their peak in 2018 and declined by 9% between 2018 and 2022.

In 2020, the government announced a Green New Deal which set high-level targets of achieving, by 2025, 42.7 GW renewable energy power capacity, 1.13 million electric cars, 200,000 hydrogen cars and phasing out 2.2 million of diesel cars[214].

The main policy framework that applies across various sectors is the Korea Emissions Trading Scheme, which was launched in 2019. Phase III of the scheme covers 73.5% of national GHG emissions and increases the share of allowances that will be auctioned from 3% to 10% - only, however, for 41 of the 69 sub-sectors covered by the scheme. In addition, companies may meet up to 5% of their obligations by purchasing carbon credits.[215]

The current government plans to increase the share of renewable energy in electricity generation from 8.9% in 2022 to 21.6% in 2030 and 30.6% in 2036. These targets are lower than the targets communicated in the 2021 NDC, which included a target of 30.2% for 2030. The GHG reduction ambition of the

[211] Net Zero Tracker – Data Explorer, https://zerotracker.net/.

[212] South Korea – Low Renewable Energy Ambitions Result in High Nuclear and Fossil Power Dependencies, https://www.renewable-ei.org/pdfdownload/activities/REI_SKoreaReport_202311_EN.pdf.

[213] Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=KOR&source=PIK&start_year=1850.

[214] Government Announces Overview of Korean New Deal, https://english.moef.go.kr/pc/selectTbPressCenterDtl.do?boardCd=N0001&seq=4940.

[215] Climate Action Tracker – South Korea, https://climateactiontracker.org/countries/south-korea/sources/.

NDC remains untouched by this shift in domestic policies, however, as the lower renewable target is compensated by a higher target for the share of nuclear energy in the energy mix, which should reach 32.4% in 2030 (compared with 23.9% communicated in the 2021 NDC).

The Republic of Korea is a member of the Global Methane Pledge and has committed to reducing methane emissions by 22.7% in the energy sector, 34.2% in the agriculture sector and 49% from the waste sector by 2030.[216]

The Republic of Korea submitted its updated NDC to the UNFCCC in December 2021. It sets a target of reducing GHG emissions by 40% by 2030 compared to 2018 levels. It is an absolute reduction target with an economy wide-coverage. The updated NDC marked a substantial increase in ambition from the previous NDC, which aimed at reducing emissions by 24.4% below 2017 levels. The Republic of Korea plans to achieve parts of the updated 2030 target by purchasing international credits and increasing the LULUCF sink.[217]

The updated NDC further introduces a commitment to achieve carbon neutrality by 2050, which is also reflected in the country's Long-Term Strategy. In contrast to its 2030 NDC target the Republic of Korea plans to achieve its carbon neutrality target only with domestic actions. The target was enshrined in national law through the Carbon Neutrality Act, which was adopted in August 2021. The scenarios underpinning the target foresee a coal phase-out by 2050. All scenarios include a 25 Mt CO_2eq sink from forestry.[218,219]

The Republic of Korea's climate policies contribute to several global efforts agreed at COP28 in Dubai. For example, the Long-Term Strategy foresees phasing out coal from the national energy mix by 2050, with a target of reducing the share of coal to 21.1% in 2030. The share of renewables in electricity generation capacity has seen double-digit annual growth rates in recent years (see Table 4) and the Republic of Korea can hence make important contributions to the global effort of trebling current capacities. Through the participation in the global methane pledge the Republic of Korea further committed to substantially reducing non-CO_2 emissions in the relevant sectors energy, agriculture and waste.

4.12. Russian Federation

The Russian Federation is one of the world's largest oil and gas producers and the world's fourth-largest greenhouse gas emitter. In previous years, the country has been, at best, a passive participant in the UNFCCC negotiations.

In 2022, the Russian Federation's GHG emissions amounted to 2,033 Mt CO_2eq, excluding LULUCF. The energy sector accounts for the large majority of emissions (76%), followed by industrial processes and product use (13%), agriculture (6%), and waste (5%)[220]. The LULUCF sector is an important net sink.[221] GHG emissions excluding LULUCF remained comparatively stable between 2012 and 2022, with only a 3% reduction over the past decade.

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[216] Republic of Korea's 2030 Methane Emissions Reduction Roadmap, https://www.ccacoalition.org/sites/default/files/resources/files/2030%20Methane%20Emissions%20Reduction%20Roadmap%28RoK%29.pdf.

[217] 2030 National Greenhouse Gas Reduction Goals (NDC), https://www.korea.kr/news/pressReleaseView.do?newsId=156475821.

[218] Ibid.

[219] 2050 Carbon Neutral Scenario, https://www.korea.kr/common/download.do?fileId=196125955&tblKey=GMN.

[220] Climate Watch. PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=MEX&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

[221] GHG Profiles – Annex I, Russia, https://di.unfccc.int/ghg_profile_annex1.

In 2021, the Russian Federation made a notable shift in its climate policy by adopting the Federal Law on Limiting Greenhouse Gas Emissions. This law sets up a framework for regulating emissions, including requirements for large emitters to report their greenhouse gas outputs, and considers the potential creation of a carbon trading system.[222] However, it was pointed out that the law lacks ambitious targets and provides only weak enforcement mechanisms, which limits its effectiveness.[223]

On a sub-national level, the Sakhalin region has pioneered a carbon quota system, which initially applies to 35 large companies and aims to reduce emissions by about 2% by 2025. This initiative is seen as a testing ground for potentially implementing a carbon regulation framework across the country. However, there is criticism that the penalties are too low to effectively incentivise emission reductions and that the initiative relies heavily on forest carbon absorption.[224]

The country's Strategy for Low-Carbon Development, adopted in 2022, outlines its approach to reducing emissions while maintaining economic growth. Key components of the strategy include increasing energy efficiency and enhancing natural carbon sinks through improved forest management (Russian Federation 2022). However, the strategy indicates that the country will continue to rely on fossil fuels rather than embracing renewable alternatives.[225]

In 2021, the Russian government emphasised the role of its vast forests in mitigating climate change and adjusted its accounting methods to calculate the size of its forest sink for internal purposes more favourably. At the same time, the capacity of the LULUCF sector for significant carbon sequestration is threatened by increasing forest fires and other climate impacts, which highlights the need for more proactive and well-resourced forest management strategies.[226]

In its first NDC, submitted in 2020, the Russian Federation pledges to reduce emissions by 70% by 2030 compared to 1990 levels. However, the target factors in the maximum possible absorption capacity by forests and other ecosystems and is further 'subject to sustainable and balanced socio-economic development' (Russian Federation 2020).

The LTS was submitted in 2022 and provides for achieving an 80% emissions reduction by 2050 compared to 1990 levels. It states that the country will reach 'a balance between anthropogenic emissions of greenhouse gases and their absorption no later than 2060' (Russian Federation 2022).

As far as the efforts agreed under the Global Stocktake are concerned, it is noteworthy that the Russian Federation was of the view at COP28 that each Party can choose its own path of the energy transition (IISD 2023). The Russian Federation has not actively pursued the agreed mitigation efforts, and among G20 members it has the lowest growth in installed renewable electricity generation capacity (see Table 4). While the recent growth of wind and solar capacity is considerable, it starts at a very low base – only 0.7% of the Russian Federation's electricity was generated from wind and solar in 2022.

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[222] Climate Change Laws of the World. Federal Law No. 296-FZ On limiting greenhouse gas emissions, https://climate-laws.org/document/federal-law-no-296-fz-on-limiting-greenhouse-gas-emissions_1d0b.

[223] Climate Action Tracker – Russian Federation, https://climateactiontracker.org/countries/russian-federation/.

[224] Sakhalin Region Aims to Chart Russia's Climate Neutrality Course With Carbon Quotas, https://www.themoscowtimes.com/2023/10/26/sakhalin-region-aims-to-chart-russias-climate-neutrality-course-with-carbon-quotas-a82875.

[225] Climate Action Tracker – Russian Federation, https://climateactiontracker.org/countries/russian-federation/policies-action/.

[226] Russia Says Its Forests Neutralize Billions of Tons of Greenhouse Gases. Scientists Have Their Doubts, https://www.themoscowtimes.com/2021/07/05/russia-says-its-forests-neutralize-billions-of-tons-of-greenhouse-gases-scientists-have-their-doubts-a74428.

4.13. Saudi Arabia

Saudi Arabia is the largest economy in the Middle East and North Africa Region with a GDP of more than USD 1 trillion. As the world's largest exporter of oil, its economy remains highly dependent on fossil fuels. While this poses significant challenges to decarbonisation, the government's commitment to diversification, embodied in its 'Vision 2030' plan, and the potential for collaboration with other countries on renewable energy and green hydrogen present opportunities for progress.

In 2021, Saudi Arabia contributed 1.5% to global emissions, thereby ranking as the 11th largest emitter globally. [227] In 2022, the country released 741 Mt CO_2eq, marking a 6% increase from the previous year and a substantial 27% increase compared to 2012. While emissions briefly dipped between 2015 and 2020, they have since rebounded, nearing the previous peak recorded in 2015.[228] This trajectory underscores the scale of the challenge facing Saudi Arabia as it strives to decouple economic growth from GHG emissions. The share of renewable energy in electricity generation remains below 1%,[229] and Saudi Arabia has one of the highest levels of per capita CO_2 emissions globally, at approx. 21 tons in 2022.[230] All sectors except agriculture recorded increased emissions in 2022. [231]

Saudi Arabia's emissions profile reflects its fossil fuel-dependent economy, with the energy sector responsible for approx. 74% of GHG emissions, followed by industrial processes and produce use (18%), waste (5%), and agriculture (2%).[232] The land use and land use change sector acts as a sink of approx. -1% of the emissions. [233]

Saudi Arabia has implemented various policies and initiatives towards the goal of achieving net-zero emissions by 2060. These efforts span broad strategies, sector-specific programs, and technological advancements.

The 'Vision 2030,' which was launched in 2016, forms the basis of Saudi Arabia's climate strategy. The vision seeks to diversify the economy and foster sustainable development. Underpinning this vision are two major initiatives: the 'Saudi Green Initiative' and the 'Middle East Green Initiative'.[234] The former, a national strategy, prioritises renewable energy, energy efficiency, and environmental conservation, setting ambitious targets that include the planting of 40 billion trees, restoring 200 million hectares of degraded land and achieving a 50% renewable energy share in the electricity mix by 2030. The 'Middle East Green Initiative,' on the other hand, is a regional endeavour aimed at reducing emissions from hydrocarbon production in the Middle East by a significant 60%. This initiative centres around afforestation, land restoration, and the promotion of a circular carbon economy.

[227] Climate Watch – Saudi Arabia, https://www.climatewatchdata.org/countries/SAU?end_year=2021&start_year=1990#commitments-overview.

[228] EDGAR - The Emissions Database for Global Atmospheric Research, https://edgar.jrc.ec.europa.eu/report_2023.

[229] Climate Watch – Saudi Arabia, https://www.climatewatchdata.org/countries/SAU?end_year=2021&start_year=1990#commitments-overview.

[230] Ibid.

[231] Ibid.

[232] EDGAR - The Emissions Database for Global Atmospheric Research, https://edgar.jrc.ec.europa.eu/report_2023.

[233] Saudi Arabia. Biennial update report (BUR). BUR2, https://unfccc.int/documents/637725.

[234] Saudi & Middle East Green Initiatives, https://www.greeninitiatives.gov.sa/about-mgi/mgi-targets/reducing-emissions/?csrt=12122572191236754206.

To drive a clean energy transition, Saudi Arabia has introduced the Saudi Energy Efficiency Program (SEEP)[235] and the National Renewable Energy Program (NREP)[236]. SEEP targets a 20% reduction in energy consumption and a 30% reduction in power intensity by 2030. NREP, meanwhile, aims to source 50% of electricity from renewables and install 58.7 GW of renewable energy capacity by 2030.

Recognising the need for technological innovation, Saudi Arabia is actively positioning itself as a future leader in both green and blue hydrogen production.[237] This ambition leverages the country's existing energy infrastructure and vast renewable energy potential. Carbon Capture and Storage (CCS) technology plays a central role in the national net-zero strategy, especially in tackling emissions from hard-to-abate sectors.[238]

In 2021, Saudi Arabia submitted its updated NDC, committing to an annual emissions reduction of 278 million tonnes by 2030, relative to a 2019 baseline. However, the NDC lacked clarity on the baseline calculation methodology. Research by the King Abdullah Petroleum Studies and Research Centre in 2023 (Gasim et al., 2023) shed light on this, suggesting the NDC target equates to approx. 429 Mt CO_2eq in 2030, corresponding to a 42% reduction from 2022 levels.[239] While this updated NDC demonstrates increased ambition, it has been criticised for being far from a fair share contribution to limiting global warming to 1.5 °C.[240] While Saudi Arabia has not submitted an official Long-Term Low Greenhouse Gas Emission Development Strategy, its existing climate policies and initiatives, such as Vision 2030 and the Saudi Green Initiative, provide a framework for long-term climate action. The absence of a formal Long-Term Strategy submission to the UNFCCC represents a gap in the country's alignment with international climate processes.

Assessing Saudi Arabia's contributions to the global efforts agreed under the Global Stocktake reveals a mixed picture. On the one hand, the country has committed to international initiatives such as the Global Methane Pledge[241] and aligns with the focus of the Global Stocktake on curbing non-CO_2 greenhouse gases. Similarly, the country has committed to the above-mentioned national and regional initiatives for afforestation, land restoration targets, enhancing natural carbon sinks, contributing to energy efficiency and renewable energies. However, further details on concrete actions and their projected impact are needed to fully assess the contribution of these initiatives while the country continues to rely on fossil fuels. Moreover, Saudi Arabia's stance within UN climate negotiations, including its resistance to calls for a fossil fuel phase-out and its energy minister's portrayal of the COP28 global efforts as a 'set of choices' only[242], raises concerns about the country's commitment to global climate goals. Transparency in implementation, robust monitoring mechanisms, and a willingness to engage constructively in the global climate regime will be crucial for Saudi Arabia to solidify its role as a responsible stakeholder in the fight against climate change.

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235 Sustainable green energy transition in Saudi Arabia: Characterizing policy framework, interrelations and future research directions, https://www.sciencedirect.com/science/article/pii/S2949821X24000668.

236 Fostering Effective Energy Transition 2023, https://www.weforum.org/publications/fostering-effective-energy-transition-2023/in-full/saudi-arabia/.

237 Saudi Arabia's Green Hydrogen Production Efficiency Positions it as a Global Leader: Report, https://www.kapsarc.org/news/saudi-arabias-green-hydrogen-production-efficiency-positions-it-as-a-global-leader-report/.

238 Construction of Neom green hydrogen plant progresses, https://renewablesnow.com/news/construction-of-neom-green-hydrogen-plant-progresses-report-856827/.

239 Using Satellite Technology to Measure Greenhouse Gas Emissions in Saudi Arabia Discussion Paper, https://www.researchgate.net/publication/376271323_Using_Satellite_Technology_to_Measure_Greenhouse_Gas_Emissions_in_Saudi_Arabia_Discussion_Paper.

240 Climate Action Tracker – Saudi Arabia, https://climateactiontracker.org/countries/saudi-arabia/.

241 Leading methane action since 2004, https://www.globalmethane.org/index.aspx.

242 "A la carte menu": Saudi minister claims Cop28 fossil fuel agreement is only optional, https://www.climatechangenews.com/2024/01/10/a-la-carte-menu-saudi-minister-claims-cop28-fossil-fuel-agreement-is-only-optional/.

4.14. South Africa

South Africa is the largest economy in Africa in 2024, surpassing both previous leading nations of Egypt and Nigeria according to the International Monetary Fund[243]. South Africa is a major exporter of gold, platinum, iron ore and other metals. South Africa's per capita emissions are relatively high for a developing country due to an overreliance on coal for electricity production (ca. 70-80% of the total system load) with renewable energy contributing only 8.7% to the energy mix in 2023/2024.[244]

Peak total emissions seem to have been reached in 2014 (581 Mt), with a gradual decrease since then. This decrease in energy intensity is highlighted by the decrease in per capita emissions since 2007. South Africa's GHG emissions currently stand at 528 Mt CO_2eq in 2022[245]. Current yearly emissions remain above the 2025 targets as outlined in the updated 2021 NDC of (conditionally) 398 and (unconditionally) 510 Mt CO_2eq for 2025 and 350 and 420 Mt CO_2eq for 2030. 78% of emissions derive from the energy sector, 9% from agriculture and 7 % from industrial processes and product use.

In 2021, South Africa launched a Just Energy Transition Partnership[246] aimed at decarbonising the energy sector by mobilising an initial commitment of USD 8.5 billion in the next 3 to 5 years. A detailed Just Energy Transition Implementation Plan was presented at COP28 as was a Just Energy Transition grants registry which tracks the allocation of funding. The current disbursement of funding, as tracked by the grants registry, has been criticised for containing 'funds/projects that are neither new nor additional', nor allocating funding where it is most needed[247]. Recommendations from the Presidential Climate Commission published in May 2023 highlighted critical issues to be addressed for the effective Just Energy Transition Investment Plan[248]. More positively, funding pledges to the JETP currently amount to USD 11.6 billion. Re-skilling and economic diversification projects have been initiated and energy policy reforms are being developed[249].

Though natural gas only covers 2.6% of energy needs, the 2021 Gas Master Plan aims to increase the local production and use of natural gas[250], targeting up to double-digit yearly growth in the mid-2020s. Extensive oil and gas exploration is currently being undertaken offshore in South Africa[251]; in October 2023, the South African government allowed Total Energy to start offshore drilling for oil and gas. South Africa has launched its Green Transport Strategy 2018-2050 (Department of Transport South Africa 2018), which sets a target of a 5% reduction of transport emissions by 2050, shifting 30% of freight transport from road to rail, and 20% of passenger transport from private cars to public transport[252]. In addition, the South African government is pursuing energy reforms. The Electricity Regulation Act

[243] IMF GDP Per country Map 2024, https://www.imf.org/external/datamapper/NGDPD@WEO/AFQ/DZA/ZAF/MAR/NGA/EGY?year=2024.

[244] 2024 South Africa Energy Mix, https://www.crses.sun.ac.za/sa-energy-stats/#:~:text=The%20majority%20of%20South%20Africa's,i.e.%2C%20mainly%20load%20shedding.

[245] Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=ZAF&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

[246] France, Germany, UK, US and EU launch ground-breaking International Just Energy Transition Partnership with South Africa, https://ec.europa.eu/commission/presscorner/detail/cs/ip_21_5768.

[247] What happened to the Just Energy Transition grant funding?, https://www.wits.ac.za/news/latest-news/research-news/2024/2024-03/what-happened-to-the-just-energy-transition-grant-funding.html.

[248] Recommendations from the Presidential Climate Commission: A Critical Appraisal of South Africa´s Just Energy Transition Investment Plan May 2023 Report, https://pccommissionflow.imgix.net/uploads/images/PCC-analysis-and-recommenations-on-the-JET-IP-May-2023.pdf.

[249] COP28 update on progress in advancing the South Africa Just Energy Transition Partnership, https://www.gov.uk/government/news/advancing-the-south-africa-just-energy-transition-partnership.

[250] Gas Master Plan Basecase Report, https://www.energy.gov.za/files/media/explained/Gas_Master_Plan_Basecase_Report.pdf.

[251] South Africa: Total Energies expands its presence in the Orange Basin with a new offshore Exploration license, https://totalenergies.com/media/news/press-releases/south-africa-totalenergies-expands-its-presence-orange-basin-new-offshore.

[252] South Africa's disintegrating freight railway is crippling firms, https://www.economist.com/middle-east-and-africa/2023/01/17/south-africas-disintegrating-freight-railway-is-crippling-firms.

Amendment Bill was approved by the National Assembly in March 2024[253] and will facilitate ongoing reform, establishing an open market platform for the competitive trading of electricity which will substantially decrease loadshedding[254] issues[255]. This issue is crucial, considering 2023 was a record year for loadshedding in South Africa.

South Africa was the first African country to implement a carbon tax in 2019, covering approx. 37% of GHG emissions[256]. Currently, the price is set at USD 8.3 per tonne CO_2eq and is expected to rise to USD 20 per tonne by 2025. However, the effective tax rate is 94% lower based on carbon tax revenue collected and is expected to remain low for the next few years (Qu et al. 2023).

Although South Africa has committed to the vision of climate neutrality by 2050 in its Low Emissions Development Strategy (Government of South Africa 2020), its current climate measures are not ambitious enough to reach the targets set in the updated NDC, which itself does not align with a net-zero 2050 target. However, in October 2023, South Africa's National Assembly approved the Climate Change Bill, which was subsequently approved by the National Council of Provinces in April 2024[257]. This will ensure that its NDC is legally binding, requiring the government to set sectoral emission targets and to allocate carbon budgets to GHG emitting companies[258].

South Africa's commitment to the JETP is an important element among the efforts agreed under the Global Stocktake. The JETP, with its initial USD 8.5 billion commitment and current pledges reaching USD 11.6 billion, aims to accelerate South Africa's transition away from coal while addressing social and economic impacts.[259] This aligns with the Global Stocktake's emphasis on just transition and increased climate finance. The Just Energy Transition Implementation Plan further outlines concrete steps for decarbonisation, including re-skilling programmes and economic diversification projects. However, challenges remain, such as the allocation of JETP funds (which has been criticised) and the need for more ambitious climate measures to meet the NDC targets.[260] The recent approval of the Climate Change Bill, which makes South Africa's NDC legally binding, represents a crucial step towards enhancing accountability and aligning national policies with global climate goals.

4.15. Türkiye

Under the Convention, Türkiye is included in Annex I along with those countries that were considered developed countries in the 1990s. However, Türkiye's government regards the country to be comparable to countries such as China or Brazil, which are classified as developing countries under the Convention. When Türkiye submitted its instrument of ratification of the Paris Agreement, it included a declaration stating that it will implement the Paris Agreement as a developing country (United Nations 2024b). The distinction between developed and developing countries is relevant under the Convention and the Paris Agreement because the latter group of countries is eligible for support.

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253 National Assembly passes Electricity Regulation Amendment Bill, https://www.sanews.gov.za/south-africa/national-assembly-passes-electricity-regulation-amendment-bill.

254 Loadshedding is the shutdown of power in parts of the electricity grid at times of supply shortage.

255 Fact Sheet on The Electricity Regulation Amendment (Era) Bill, https://www.stateofthenation.gov.za/assets/downloads/Fact_Sheet_Electricity_Regulation_FAQ_V2-17Nov.pdf.

256 Carbon pricing in South Africa, https://www.oecd.org/tax/tax-policy/carbon-pricing-south-africa.pdf.

257 National Council of Provinces (NCOP) approves the Climate Change Bill, https://www.dffe.gov.za/mediareleases/ncop_climatechange-bill#:~:text=The%20Bill%20sets%20out%20to,current%20institutions%20and%20planning%20processes.

258 Climate Action Tracker – South Africa, https://climateactiontracker.org/countries/south-africa/.

259 Just Energy Transition Partnerships, https://dgap.org/en/research/glossary/climate-foreign-policy/just-energy-transition-partnerships.

260 Indonesia Just Energy Transition Partnership, https://www.undp.org/indonesia/projects/indonesia-just-energy-transition-partnership-jetp.

In 2022, Türkiye's GHG emissions amounted to 559 Mt CO_2eq, excluding LULUCF. The energy sector accounted for the majority of emissions (72%), followed by agriculture (13%), industrial processes and product use (12%), and waste (3%)[261]. The LULUCF sector is a net sink[262]. Due to a large increase in energy demand and continued reliance on fossil fuels[263], GHG emissions excluding LULUCF increased by 24% between 2012 and 2022.

Türkiye's national climate change mitigation policies are identified in the National Climate Change Action Plan. This contains specific measures for each main source sector. As an example, the Renewable Energy Sources Support Mechanism requires retail companies to purchase electricity from renewable energy sources at pre-defined prices (Türkiye 2023).

For the industry sector, the 'Green Deal Action Plan' was published in 2021, with the aim to harmonise mitigation actions in industry with those implemented in the European Union. It is planned that an emissions trading system will be established in 2025 (Türkiye 2023).

In its NDC, Türkiye commits to reducing its GHG emissions by 41% through 2030 compared to a business-as usual scenario. As this scenario assumes a large increase in emissions by 2030, achievement of the NDC target would still result in higher emissions compared to current levels.[264] While the most recent NDC refers to Türkiye's long-term objective of achieving net-zero emissions by 2053, a Long-Term Strategy has not yet been communicated under the Paris Agreement.

Türkiye has one of the highest shares of renewables in electricity generation among G20 members, mostly from hydropower. In recent years, wind and solar capacities have been added at a rate of approx. 14% (see Table 4), which would result in a trebling of capacities in less than a decade. However, Türkiye faces numerous challenges in contributing to the global efforts agreed under the Global Stocktake, most notably the phase-down of unabated coal power, which contributes about a third of overall electricity generation – a share which has been rising in recent years.

4.16. United Kingdom

The United Kingdom (UK) has been a frontrunner in domestic climate action for several years; for example, it was one of the first countries to adopt a legally binding net zero target in 2019. In the past two years, however, the UK government has weakened some crucial policies, e.g. by delaying the planned stop of registration of new petrol and diesel cars from 2030 to 2035. The new Labour government elected in July 2024 pledged to revoke some of the policy rollbacks by the previous government. Its manifesto included plans to treble solar capacity, double onshore wind, quadruple offshore wind and to create a new state-owned energy company called 'Great British Energy'.[265] However, the transition to a zero-carbon electricity system, which Labour aims to achieve by 2030 according to its manifesto, faces multiple barriers. These include a lack of grid capacity and a shortage of skilled workers, while supply chains are stretched, and public planning is slow.[266]

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[261] Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?end_year=2022&regions=TUR&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

[262] Türkiye. 2023 National Inventory Report (NIR), https://unfccc.int/documents/627786.

[263] Climate Action Tracker – Türkiye, https://climateactiontracker.org/countries/turkey/.

[264] Ibid.

[265] Interactive: Labour government's in-tray for climate change, energy and nature, https://www.carbonbrief.org/interactive-labour-governments-in-tray-for-climate-change-energy-and-nature/.

[266] Clean power by 2030: How could a Labour government achieve its mission for power sector decarbonisation?, https://www.instituteforgovernment.org.uk/publication/clean-power-2030-labour.

In 2022, the UK's GHG emissions amounted to 422 Mt CO_2eq, excluding LULUCF. The energy sector accounted for the large majority of emissions (80%), followed by agriculture (10%), industrial processes and product use (8%), and waste (3%)[267]. The LULUCF sector is an emissions source, and thereby brings about an increase in the net emissions[268]. The GHG emissions excluding LULUCF saw a pronounced decline of 27% over the past decade, which was due, among other things, to the shift away from coal in electricity generation.

The main overarching framework document that is guiding domestic climate change policies at sectoral level is the 2023 'Carbon Budget Delivery Plan'.[269] This plan is an update of the 2021 Net Zero Strategy and has been criticised for being less ambitious than the previous document. A key sectoral target is phasing out coal from the power sector by 2024. Coal made up only 2% of UK electricity generation in 2021 – a substantial reduction from a share of 40% one decade earlier – and on 1 October 2024, the last coal power station in the United Kingdom closed.[270]

In the transport sector, the UK plans to stop registering new petrol and diesel cars by 2035. The newly elected Labour government has pledged to re-launch the Net Zero Strategy and to re-establish the country as a leader on climate action.[271]

The UK has a domestic reduction target of at least 68% below 1990 levels by 2030, which is the strongest GHG emission reduction target among G20 members. The Climate Action Tracker (CAT) rates this target as almost sufficient to limit global warming to 1.5 °C when modelled against domestic pathways but insufficient when compared to the CAT fair share emissions allocation.[272]

In 2019, through an amendment of the Climate Change Act, the UK was one of the first developed countries to adopt a legally binding net zero target that commits the country to a 100% reduction of greenhouse gas emissions by 2050 compared to 1990 levels.[273] The 2021 Net Zero Strategy was submitted to the UNFCCC as the UK's Long-Term Strategy.

The UK's climate policies contribute to several global efforts agreed at COP28 in Dubai. For example, the country aims at phasing out coal from power generation by the end of 2024. With the British Energy Security Strategy, the UK outlined its plans to increase wind energy capacity to 50GW by 2030 and solar energy capacity from 75GW by 2035; both targets contribute to the efforts agreed at COP28 to treble global renewable energy capacity by 2030.[274] The UK further aims to stop the registration of petrol and diesel cars by 2035. The UK has also signed the Global Methane Pledge to collectively reduce global methane emissions by at least 30% by 2030 compared to 2020 levels.

4.17. United States

The US presidential election, which takes place on 5 November 2024, will be decisive for the direction of climate policy in the United States. As the president has wide executive power, national and international climate policy depends to a large extent on the administration which is in power at a given

[267] Climate Watch – PIK data, https://www.climatewatchdata.org/ghg-emissions?breakBy=sector&end_year=2022&gases=kyotoghg&regions=GBR&sectors=total-excluding-lulucf&source=PIK&start_year=1850.

[268] GHG Profiles – Annex I – United Kingdom, https://di.unfccc.int/ghg_profile_annex1.

[269] Carbon Budget Delivery Plan, https://www.gov.uk/government/publications/carbon-budget-delivery-plan.

[270] The end of an era – Ratcliffe-on-Soar power station ends coal generation, https://www.uniper.energy/united-kingdom/news/the-end-of-an-era---ratcliffe-on-soar-power-station-ends-coal-generation/.

[271] Energy Secretary Ed Miliband sets out his priorities for the department https://www.gov.uk/government/news/energy-secretary-ed-miliband-sets-out-his-priorities-for-the-department

[272] Climate Action Tracker – UK, https://climateactiontracker.org/countries/uk/.

[273] The Climate Change Act 2008 (2050 Target Amendment) Order 2019, https://www.legislation.gov.uk/uksi/2019/1056/contents/made.

[274] British energy security strategy, https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy.

point in time. This is exemplified historically by United States' approach to the Paris Agreement: the US accepted the agreement in 2016 by an executive order of President Barack Obama, withdrew from it in 2020 under President Donald Trump and accepted it again in 2021 by an executive order of President Joe Biden.

The United States is the second-largest emitter of greenhouse gases. Its total emissions (without LU-LUCF) amounted to 6,343 Mt CO_2eq in 2022 (United States 2024). The energy sector contributed 82% to total emissions, agriculture contributed 9%, industrial processes and product use 6%, and the waste sector 3%. The LULUCF sector is a net sink.

The total GHG emissions of the US showed a downward trend in most years after peaking in 2007, which can be explained, among other things, by a shift in power generation from coal to natural gas (United States 2024). While coal production decreased in recent years, domestic gas and oil production saw huge increases. In 2022, the United States was the largest gas and oil producer worldwide.[275]

The Inflation Reduction Act (IRA) of 2022 is the most important national climate change mitigation policy (The White House). The act sets forth large tax credits for clean energy production, grants for GHG emission reduction projects and loan guarantees for innovative clean energy technologies. The IRA builds on the Infrastructure Investment and Jobs Act of 2021, which provides funds, inter alia, for the modernisation of the electricity grid, for a network of electric vehicle chargers, and for the expansion of public transport.

While the priorities of the future president will not directly affect the IRA and other federal laws, the president controls the agencies that provide funding under this legislation, such as the Environmental Protection Agency (EPA). In addition, the EPA issues emission standards for a range of major GHG emission sources. In 2021, new GHG emission standards for passenger cars and light-duty vehicles were introduced,[276] and, in 2024, CO_2 emission standards for power plants were issued, including carbon capture and sequestration/storage provisions for new gas-fired power plants and for coal-fired plants that plan to run in the long-term.[277]

While a Harris/Walz administration can be expected to continue the implementation of current climate change policies, a Trump/Vance administration can be expected to revise the EPA rules. At the international level, the US may once again withdraw from the Paris Agreement and may reduce, rather than scale up, the provision of climate finance to developing countries.

In its NDC, the United States set a target of reducing its net GHG emissions by 50-52 percent below 2005 levels in 2030 (United States of America 2021). As net GHG emissions in 2022 were 16.7% below 2005 levels (United States 2024), the US has so far reached one third of its reduction target, and substantive reductions are still needed up to 2030. Projections by the Climate Action Tracker suggest that with current climate policies a significant gap remains, and additional policies are needed for the US to meet its NDC target.[278] Beyond 2030, the Long-Term Strategy of the United States sets the goal of achieving net-zero emissions by 2050 (US Department of State 2021).

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[275] Energy Institute, Statistical Review of World Energy 2024, https://www.energyinst.org/statistical-review/resources-and-data-downloads.

[276] Final Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions.

[277] Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions.

[278] Climate Action tracker – USA – Policies & action, https://climateactiontracker.org/countries/usa/policies-action/.

Relating to the global efforts agreed at COP28, coal power has been decreasing in recent years, and the EPA has introduced rules to reduce methane emissions from oil and natural operations in 2023.[279] However, with one of the highest per-capita GHG emissions of major economies, and as the world's largest gas and oil producer, the US is still at the very beginning of a transition away from fossil fuels.

4.18. Policy and priorities of the COP host country – Azerbaijan

Azerbaijan is a major oil and gas exporter. As such, it faces numerous challenges to a rapid transition away from fossil fuels. Current mitigation policies aim at reducing GHG emissions from the production and transport of oil and gas and are complemented by various sectoral policies. Despite the implementation of these polices, its total GHG emissions are projected to increase until 2030 and beyond (Republic of Azerbaijan 2021).

In the run-up to COP29, Azerbaijan is pursuing additional green energy initiatives in the areas of wind, hydro, solar and green hydrogen.[280] At the same time, it is still a sought-after supplier of natural gas, and natural gas production has doubled between 2017 and 2023.[281]

For the upcoming conference in Baku, the team of **COP29** President-Designate Mukhtar Babayev set the **two key priorities** of enhancing ambition and enabling action. Under '**enhancing ambition'** the presidency aims to **support Parties in their preparation of NDCs with the highest possible ambition**.

The presidency also made **adaptation** a priority and addresses it in thematic days during the COP. It aims at **supporting the implementation of the UAE Framework for Global Climate Resilience** and points out the urgent need to increase **adaptation finance**. Finally, the presidency supports Parties in the **finalisation** of their **first Biennial Transparency reports** through workshops and online sessions (Babayev 2024).

Under the priority of 'enabling action', the presidency has been active in the months ahead of the COP to find possible **solutions** among Parties **for the new collective quantified goal for climate finance**, the single most important issue to be negotiated in Baku. The presidency also sees the agreement on **additional rules for carbon markets** under Article 6, and **coordination and coherence in addressing loss and damage**, as key enablers for action (Babayev 2024).

Azerbaijan, together with the United Arab Emirates and Brazil, form the Troika of COP28 to COP30 presidencies. The 'Road map to Mission 1.5' was launched under the guidance of this Troika in the decision on the Global Stocktake (see section 3.7).

[279] EPA's Final Rule for Oil and Natural Gas Operations Will Sharply Reduce Methane and Other Harmful Pollution, https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-operations/epas-final-rule-oil-and-natural-gas.

[280] Azerbaijan's Green Energy Transition Initiatives, https://cop29.az/en/green-energy-transition-initiatives.

[281] Energy Institute, Statistical Review of World Energy 2024, https://www.energyinst.org/statistical-review/resources-and-data-downloads.

5. STAKEHOLDERS IN THE NEGOTIATIONS

5.1. Groups of Parties

The five United Nations regional groups (African States; Asia-Pacific States; Eastern European States; Latin American and the Caribbean States; and Western European and other States) play a role in appointing representatives to various bodies under the Convention, and the COP presidency rotates between them. Additionally, for the negotiations under the UNFCCC there are groups of Parties formed by shared interests instead of only the geographical location. These groups regularly coordinate their positions and, if these align, they speak with one voice in the negotiations. Although there is some fluctuation and groups are not active at the same level at each conference, we can distinguish between twelve groups, as presented below. Parties can only belong to one regional group, but it is possible for them to belong to several of the other Party groupings.

As far as the influence of the various negotiating groups is concerned, it is important to note that all COP, CMP and CMA decisions and all conclusions of Subsidiary Bodies are made unanimously. Hence, every single Party can influence the outcome of the negotiations. Nevertheless, the larger groups have an advantage because they have a sufficient number of experts available in their delegations to cover all topics in-depth and to reach out to delegates from other groups to discuss and find compromises.

5.1.1. Umbrella Group

The Umbrella Group is a coalition of developed countries comprising **Australia, Canada, Iceland, Israel, Japan, New Zealand, Kazakhstan, Norway, Ukraine and the US**. The United Kingdom joined the Umbrella Group in 2023 (UNFCCC 2024a). Most of its members have high per-capita greenhouse gas emissions. Hence, some of the members of this group are cautious about ambitious mitigation actions and the group generally calls for developing countries to contribute to mitigation action.

In the negotiations, members of the Umbrella Group aim at overcoming the differentiation between developed and developing countries which was introduced in the Convention. In general, the group calls for high standards of transparency in reporting, both for developed and developing country Parties and opposes ambitious climate finance commitments.

5.1.2. Environmental integrity group

The Environmental Integrity Group (EIG) consists of three small, developed countries (**Liechtenstein, Monaco and Switzerland**) and three developing/emerging countries (**Mexico, the Republic of Korea and Georgia**). Members of the EIG call for ambitious mitigation action, including from developing countries, and they are proponents of transparent reporting.

The majority of EIG members plans to make use of voluntary cooperation under Article 6 of the Paris Agreement to achieve their NDCs. The group therefore shows a strong interest in the current negotiations on Article 6 and calls for high transparency standards and the promotion of environmental integrity in the cooperative approaches and the mechanism under Article 6.

5.1.3. Independent Alliance of Latin America and the Caribbean (AILAC)

The Independent Alliance of Latin America and the Caribbean (Asociación Independiente de Latinoamérica y el Caribe – AILAC) comprises **Chile, Colombia, Costa Rica, Guatemala, Honduras, Panama and Peru**. Paraguay, is a former member, it left the group in 2023.

AILAC aims at bridging divides between developing and developed countries. Its members call for ambitious mitigation action, not only from developed, but also from developing countries. AILAC also

supports an effective transparency framework for all countries. Like other groups of developing countries, AILAC also points out the importance of adaptation action and of financial, technological and capacity building support.

5.1.4. Alliance of Small Island States (AOSIS)

The Alliance of Small Island States (AOSIS) comprises **39 small island and low-lying coastal developing states** (AOSIS 2024). **Most SIDS** are AOSIS members. Specifically, AOSIS comprises all SIDS which are UN Member States except Bahrain and, in addition, two SIDS which are not UN Member States but Parties to the UNFCCC, namely the Cook Islands and Niue. As these countries and territories are affected disproportionately by rising sea levels and by extreme weather events, AOSIS is a proponent of ambitious mitigation action. In the negotiations for the Paris Agreement, the introduction of the 1.5 °C temperature limit constituted one of the achievements of AOSIS.

In current negotiations, the group calls for high levels of transparency and environmental integrity, while being mindful about the limited capacities available to developing countries. Consisting of mostly low-income and small countries, the group calls for support, e.g. financial support and capacity building in the area of adaptation.

However, as the possibilities for adapting to impacts such as global sea level rise is limited for low-lying islands and coastal areas, members of AOSIS also show high interest in the topic of loss and damage.

5.1.5. Least Developed Countries (LDCs)

The Least Developed Countries (LDCs) are a group of **46 low-income countries**. Affiliation to this group follows specific criteria and is reviewed regularly by the Committee for Development under the United Nations Economic and Social Council (UN Economic Analysis & Policy Division 2023).

Similarly to AOSIS countries, the LDCs have limited capacity to respond to the impact of climate change. In the negotiations, the group stresses the importance of adaptation action and of addressing loss and damage. LDCs are also vocal in the negotiations on support for developing countries.

5.1.6. African Group of Negotiators (AGN)

The African Group of Negotiators (AGN) comprises all **54 African countries**. Like other groups of developing countries, the AGN points out the challenges faced by their members in adapting to the adverse impacts of climate change. Hence, the AGN calls for giving the same level of importance in the negotiations to adaptation as to mitigation. In addition, the AGN points out the limited capacities available in African countries and calls for financial, technological and capacity building support. Within the AGN, **South Africa** is an important country that supports high transparency standards.

5.1.7. Group Sur (GS)

The group encompasses **Argentina, Brazil and Uruguay** and also, as of 2023, **Paraguay**. It was previously known as ABU due to its three initial members. The group comprises four important agricultural producers. For these countries, it is important to recognise the specific role of agriculture in mitigation and adaptation. As agricultural activities lead to the emission of specific greenhouse gases (methane and nitrous oxides) besides carbon dioxide, GS has shown a specific interest in the discussions about the global warming potentials (GWPs) of various greenhouse gases.

Another area in which GS (mostly Brazil) is vocal is the discussion about Article 6 of the Paris Agreement. Brazil has been very active in the Clean Development Mechanism under the Kyoto Protocol.

5.1.8. Bolivarian Alliance for the Peoples of Our America (ALBA)

The Bolivarian Alliance for the Peoples of Our America (Alianza Bolivariana para los Pueblos de Nuestra América – ALBA) is an association of **ten Latin American and Caribbean countries** with socialist/social democratic governments, **e.g. Bolivia, Cuba, Venezuela and Ecuador**. Although the group is less active at present, it has played a prominent role in supporting the interests of indigenous peoples in the climate negotiations.

The group was also a proponent of introducing concepts such as 'climate justice' in the Paris Agreement and supports the development of non-market approaches to cooperation between Parties.

5.1.9. Like-Minded Developing Countries (LMDC)

The group of Like-Minded Developing Countries (LMDC) comprises 24 developing countries (**Algeria, Bangladesh, Bolivia, China, Cuba, Ecuador, Egypt, El Salvador, India, Indonesia, Iran, Iraq, Jordan, Kuwait, Malaysia, Mali, Nicaragua, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria, Venezuela and Vietnam**). This group insists on the importance of the principle of common but differentiated responsibilities and calls foremost for ambitious action and support from the part of developed countries. The group stresses the historical responsibility of developed countries as they have been responsible for the majority of greenhouse gas emissions in past decades.

The LMDCs point out the importance of taking into account sustainable development and poverty eradication when addressing climate change. The topic of loss and damage is also on the group's agenda.

5.1.10. Arab Group

The Arab Group comprises **22 Parties from the Arab Peninsula and Northern Africa**. As some of these Parties are important oil and gas producers, the Arab Group pays particular attention to the possible impacts of mitigation measures (such as a shift away from fossil fuels) on their economies. The topic of 'impacts of the implementation of response measures' is a regular item on the agenda at climate change negotiations (see section 3.8.6). The Arab Group and other oil producing countries point out the challenges of diversifying their economies in response to mitigation actions; **Saudi Arabia** is the most vocal member of the group. The Group was successful in including the concept of 'mitigation co-benefits of adaptation actions' into Article 4 of the Paris Agreement.

5.1.11. Group of G-77 and China

In addition to being a member of one of the groups introduced above, most developing countries are members of the 'G-77 and China' group. The 'Group of 77 at the United Nations' (G-77) was founded by 77 developing countries at the United Nations Conference on Trade and Development in 1967. Since then, the group has grown to **134 members**, and in climate change negotiations, **China** also associates itself with the group. Hence, the G-77 and China group is the largest group of Parties at UNFCCC negotiations.

Like other groups of developing countries, the G-77 and China emphasise the common but differentiated responsibilities and respective capabilities in the Convention. Representatives of the group point out that developed countries are responsible for a large share of historical emissions and should take the lead in climate change mitigation.

Another focus of G-77 and China is the call for support to developing countries. On specific technical topics, however, there are diverse views among the members of G-77 and China. On such topics, G-77

and China holds a general position, while other groups of developing countries bring forward more nuanced positions.

5.1.12. European Union

Among the groups of Parties, the European Union constitutes a special case. The EU is a Party to the UNFCCC and to the Paris Agreement, and the same is true for each of its 27 Member States. Delegates from the EU and its Member States coordinate their position throughout the year and prepare shared positions before each negotiating session. For each agenda item negotiated at a climate change conference, a representative is selected (from a Member State or from the European Commission) who negotiates on behalf of the EU and its Member States. Member States do not speak for themselves in the negotiations.

The focus of the EU in the negotiations is on increasing mitigation ambition. The EU also acknowledges the importance of support for developing countries and points out the related efforts by the EU and its Member States. It calls for transparent reporting on both action and support. Although the EU intends to achieve its NDC target without contributions from international credits, it is a proponent of strict and transparent rules for voluntary cooperation under Article 6 of the Paris Agreement in order to preserve the environmental integrity of such approaches.

5.2. Observers

In the UNFCCC process, observer organisations comprise different types of actors: The United Nations System and its Specialised Agencies, intergovernmental organisations (IGOs) and non-governmental organisations (NGOs). IGOs and NGOs must obtain observer status from the UNFCCC Secretariat to register delegates. As of COP28, there were 3,631 NGOs and 173 IGOs registered as observer organisations, representing a wide array of topics and interests. These include business and industry, environmental groups, agriculture, indigenous populations, local governments, research institutes, labour unions, women and gender groups, and youth organisations.[282] The number of observer organisations has been steadily growing since COP1 with 615 new admissions for COP29.[283]

NGOs in the UNFCCC process organise themselves into constituencies based on shared interests or perspectives. These constituencies reflect the nine 'Major Groups' established in Agenda 21 and reaffirmed by the Rio+20 Summit: business and industry NGOs (BINGO), environmental NGOs (ENGO), farmers and agricultural NGOs (Farmers), indigenous peoples' organisations (IPO), local government and municipal authorities (LGMA), research and independent NGOs (RINGO), trade union NGOs (TUNGO), women and gender constituency (WGC), youth NGOs (YOUNGO). In addition, faith-based organisations (FBOs), education, communication and outreach stakeholders (ECOS) and parliamentarians have been recognised as informal NGO groups by the Secretariat since 2016.[284] The largest constituency is ENGO, which comprises approx. 42% of all admitted NGOs, followed by RINGO (24%) and BINGO (12%).[285]

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[282] UNFCCC - Observer organisations, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/observer-organizations.

[283] UNFCCC - Statistics on non-Party stakeholders, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/statistics#Statistics-on-admission.

[284] UNFCCC - Admitted NGOs, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/side-events-and-exhibits/admitted-ngos#eq-2.

[285] UNFCCC, statistics on admission, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/statistics#Statistics-on-admission.

The following sections describe the activities of various observer organizations. We distinguish between (a) civil society, (b) local and regional governments (even though they are also a constituency under the UNFCCC), and (c) international organisations.

5.2.1. Civil society

The current list of admitted NGOs[286] denotes more than 1,500 organisations as part of the constituency of **environmental NGOs (ENGO)**. The most prominent voice representing environmental NGOs in the international climate negotiations is **the Climate Action Network (CAN)**.[287] It is a worldwide network of over 1900 civil society organisations in more than 130 countries that consists of numerous regional and national networks. During the UNFCCC negotiation sessions, CAN publishes the well-known daily 'Eco' Newsletters, which provide an NGO perspective on the negotiation process. Furthermore, CAN awards the daily 'Fossil of the Day,' which is given to countries or stakeholders in the negotiations that it regards as obstructing progress or acting unsustainably. CAN also coordinates advocacy and communications of civil society groups at the Intergovernmental Panel on Climate Change (IPCC), the Green Climate Fund (GCF), the Group of Seven (G7) and the G20 as well as the World Bank, the International Monetary Fund meetings and other diplomatic fora. CAN is organised in regional and national nodes as well as in thematic working groups covering the main topics of the negotiations.

The group of **youth NGOs (YOUNGO)** covers more than 180 admitted NGOs. They elect two focal points (one for the global north and one for the global south) to coordinate communication with the UNFCCC Secretariat. In the days preceding COPs, the youth NGOs organise so-called conferences of the youth (COY) as a forum for exchange and establishing common strategies. During UNFCCC sessions, YOUNGO provides a daily space, called Spokes Council where youth can learn about the process, network with other youth, collaborate and strategise.[288]

More than 100 **indigenous peoples NGOs** are included in the constituency of indigenous peoples' organisations. Through the International Indigenous Peoples Forum on Climate Change,[289] they elaborate common strategies for the UNFCCC process. The Local Communities and Indigenous Peoples Platform (LCIPP, cf. section 3.8.3) has been established under the UNFCCC framework as a basis for strengthening the knowledge, technologies, practices and efforts of local communities and indigenous peoples related to addressing and responding to climate change, to facilitate the exchange of experience and sharing of best practices and lessons learned on mitigation and adaptation and to enhance the engagement of local communities and indigenous peoples in the UNFCCC.

More than 70 NGOs are listed as part of the constituency of **women and gender NGOs (WGC)**. The constituency is a platform for exchange of NGOs working on gender issues in the context of climate change and to promote the rights of women as they are particularly affected by the adverse impacts of climate change. **A Gender Action Plan** seeking to advance women's full, equal and meaningful participation and to promote gender-responsive climate policy and the mainstreaming of a gender perspective in the implementation of the Convention was adopted by the COP (see section 3.8.4).

Research and independent NGOs (RINGO) comprise organisations engaged in independent research and analysis in order to develop sound strategies to address the causes and consequences of global climate change. More than 850 organisations belong to the RINGO constituency under the UNFCCC.

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286 UNFCCC - List of admitted NGOs, https://unfccc.int/process/parties-non-party-stakeholders/non-party-stakeholders/admitted-ngos/list-of-admitted-ngos.

287 Climate Action Network: Tackling the climate crisis, https://climatenetwork.org/.

288 YOUNGO, https://youngoclimate.org/.

289 Indigenous Peoples Forum on Climate Change, http://www.iipfcc.org/.

RINGO representatives play an active part in climate change conferences, e.g. by organising side events to address a wide range of topics, and are considered strong in providing ideas and expertise, evaluating consequences, and proposing solutions (Nasiritousi et al. 2014).

Activities by more than 450 **business and industry NGOs** in over 170 countries under the **BINGO** constituency are coordinated by the **International Chamber of Commerce (ICC)** which undertakes efforts to help businesses take climate action and to achieve net-zero emissions by 2050. In 2020, the ICC and the Exponential Roadmap Initiative (ERI) launched **the Small and Medium-sized Enterprises (SME) Climate Commitment**. This global initiative aims to mainstream climate action within the small-to-medium-sized business community and help SMEs build resilient businesses for the future.[290]

Box 2: Industry organisations and initiatives

Industrial activities are a significant contributor to GHG emissions, accounting for approx. 34% of total emissions as of 2019 (IPCC 2022a, chapter 11). This substantial impact underscores the crucial need for robust emission reduction strategies within the industrial sector to meet the goals of the Paris Agreement. Climate initiatives that are industry-led and -focused play a pivotal role in driving corporate climate action and advancing global climate objectives. These initiatives can be broadly categorised into cross-sector alliances, sector-specific coalitions, thematic initiatives, and collaborative international groups, each addressing distinct aspects of industrial decarbonisation.

Cross-sector alliances facilitate broad collaboration across multiple industries to promote sustainable practices and ambitious climate action. Examples include the **We Mean Business Coalition**, which brings together over 7,000 companies committed to reducing their environmental footprint[291], and the **World Business Council for Sustainable Development (WBCSD)**, a CEO-led organisation encompassing more than 200 international companies dedicated to fostering sustainable development and innovation.[292]

Sector-Specific Coalitions target the unique challenges and opportunities within particular industries. The **Oil and Gas Climate Initiative (OGCI)** addresses emission reductions in the energy sector by fostering the deployment of low-carbon technologies and collaborative projects among major oil and gas companies.[293] Similarly, the **Fashion Industry Charter for Climate Action** focuses on reducing the carbon footprint of the apparel industry through sustainable sourcing, production practices, and circular economy principles.[294] Notably, the **Industrial Deep Decarbonisation Initiative (IDDI)**, led by the United Kingdom and India with support from Germany and Canada, concentrates on creating markets for low-carbon industrial materials, particularly within the steel and cement sectors, thereby driving substantial emission reductions in these high-impact industries. [295]

Thematic Initiatives concentrate on specific dimensions of climate action, providing frameworks and tools to guide emission reduction efforts. The **Science Based Targets initiative (SBTi)**[296] assists companies in setting emissions reduction targets that are scientifically aligned with climate goals, ensuring that corporate strategies contribute effectively to mitigating climate change.

[290] SME Climate Hub, https://smeclimatehub.org/.

[291] We Mean Business Coalition, https://www.wemeanbusinesscoalition.org/about/.

[292] WBCSD – Who we are, https://www.wbcsd.org/who-we-are/.

[293] About Oil and Gas Climate Initiative (OGCI), https://www.ogci.com/about.

[294] Fashion Industry Charter for Climate Action, https://unfccc.int/climate-action/sectoral-engagement-for-climate-action/fashion-charter.

[295] Industrial Deep Decarbonisation, https://www.unido.org/IDDI.

[296] About us- Science Based Targets initiative, https://sciencebasedtargets.org/about-us.

The '**RE100'**[297] and '**EV100'**[298] initiatives promote the adoption of 100% renewable energy and electric vehicle usage respectively, encouraging businesses to transition away from fossil fuels and enhance energy efficiency. Additionally, the **Carbon Pricing Leadership Coalition (CPLC)** advocates for the implementation of effective carbon pricing policies, providing economic incentives for emissions reduction across various sectors.[299]

The **First Movers Coalition (FMC)** [300], launched at COP26, brings together global companies to create early markets for innovative clean technologies in hard-to-abate sectors, accelerating the commercialisation and scaling of breakthrough solutions. Additionally, **public-private partnerships** like Breakthrough Energy Ventures, founded by Bill Gates, invest in innovative clean energy technologies.[301]

On a **governmental level**, the **Climate Club**, initiated by the G7 under Germany's presidency in 2022, aims to accelerate the decarbonisation of industries by coordinating and strengthening climate action among its members.[302]

As the umbrella organisation for **trade unions**, **the International Trade Union Confederation (ITUC)** lists climate justice and industrial transformation as one of its central priorities. Its aim is to implement global climate action 'on the basis of just transition principles and plans: national and industry/enterprise plans that protect and create new jobs by investing in the necessary industrial transformation'.[303] 22 NGOs are listed as part of the trade unions' constituency under the UNFCCC.

The farmers' constituency comprises more than 70 NGOs. In 2017, COP23 initiated **the Koronivia Joint Work on Agriculture**, which requests that the SBSTA and SBI jointly address issues related to agriculture. COP27 marked an important new milestone with the adoption of the four-year work programme **'Sharm el-Sheikh joint work on implementation of climate action on agriculture and food security'** (see section 3.8.2). The farmers' constituency and a number of individual NGOs with a stake in agriculture have regularly expressed their views in submissions on topics discussed under the work programmes on agriculture.

5.2.2. Local and regional governments

The constituency of **local government and municipal authorities (LGMA)** is coordinated by 'ICLEI – Local Governments for Sustainability'. **ICLEI (International Council for Local Environmental Initiatives)** is a global network of more than 2,500 local and regional governments committed to sustainable urban development that are active in more than 125 countries.[304] In the UNFCCC negotiations, ICLEI aims to ensure that the needs, interests and priorities of local and regional governments are represented and taken up in official decisions. At the same time, it engages in spreading information on developments at the international level and peer exchange through their networks to the local and regional level.[305]

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297 Climate Group RE100, https://www.there100.org/about-us.

298 Climate Group EV100, https://www.theclimategroup.org/ev100.

299 Carbon Pricing Leadership, https://www.carbonpricingleadership.org/about.

300 First Movers Coalition, https://www.weforum.org/first-movers-coalition.

301 Break through Energy, https://www.breakthroughenergy.org/about.

302 Make The World A Better Plate, https://www.g7germany.de/g7-en/current-information/g7-statement-climate-club-2058696.

303 International Trade Union Confederation – Climate justice and industrial transformation, https://www.ituc-csi.org/climate-justice-and-industrial?lang=en.

304 ICLEI, https://iclei.org/.

305 ICLIE – Our approach, https://iclei.org/our_approach/.

ICLEI launched a **'Climate Neutrality Framework'** in 2020, aiming to accelerate climate action by local and regional governments[306]. It is part of the **Green Climate Cities Program** which offers cities a process methodology for addressing integrated climate action and walking step-by-step toward climate neutrality.[307] The '**Malmö Commitment'** outlines ICLEI´s Commitment and Strategic Vision 2021-2027 regarding the progress on sustainable urban development worldwide. Concrete actions of ICLEI local and regional governments are outlined in the Malmö Action Plan 2021-2024.[308]

In June 2024, ICLEI and the City of São Paulo hosted the 'ICLEI World Congress 2024' to address critical issues in local climate action, resilience, multilevel governance, and the Amazon region's unique role in global sustainability, setting the stage for **city and region significance at COP30 in Belém**.[309] In the forefront of the event. the 'Malmö Commitment Tour' featured five webinars, each focusing on a specific region, promoting the integration of social equity into local sustainable development.[310]

Another important initiative from cities is the **Global Covenant of Mayors for Climate and Energy (GCoM)**. It is the largest alliance for city climate leadership and covers over 13,000 cities and local governments from 144 countries, representing more than 1 billion people. With a secretariat based in Brussels, GCoM has also established regional/national covenants, which serve as local chapters of the global alliance. The three main initiatives of the GCoM are: 1) **data4cities** initiative, which aims to collect data on cities' climate action and implement common ways of reporting among cities; 2) **invest4cities** initiative, which offers a platform to facilitate and mobilise cities' access to climate finance and technical assistance for critical investment in urban climate change mitigation and resilience projects; and 3) **innovate4cities** initiative, which is a research and innovation initiative to identify specific data, information and technology priorities and drive investment in these areas.[311] The GCoM brings together the EU's Covenant of Mayors[312] and the former Compact of Mayors.

The world's **megacities** have joined forces in the **network C40**, connecting nearly 100 of the world's largest cities to take bold climate action.[313] Through networks on central climate-related topics, city practitioners exchange experiences with the successes and challenges of implementing climate action. The Cities and Climate Change Initiative by UN-Habitat supports and connects cities in emerging and developing countries to share experiences on addressing climate change.[314]

Additionally, local and regional actors have launched sub-national initiatives on climate change such as initiatives of US state governments that join forces in the US Climate Alliance founded in 2017. Under this alliance, which represents 54% of the US population and 57% of the US economy, states pursue common initiatives aimed at collaborating in combating climate change by, for example, enhancing carbon sinks, reducing hydrofluorocarbons, energy efficiency standards and international cooperation, including with Mexico and Canada.[315]

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306 The ICLEI Climate Neutrality Framework, https://iclei.org/climate_neutrality/.

307 Green Climate Cities Program, https://iclei.org/GreenClimateCities/.

308 ICLEI in the urban era, https://iclei.org/publication/iclei-in-the-urban-era/

309 ICLEI World Congress 2024 in São Paulo demonstrates the collective power of cities and regions to address sustainability, https://iclei.org/press_release/iclei-world-congress-2024-in-sao-paulo-demonstrates-the-collective-power-of-cities-and-regions-to-address-sustainability/.

310 From Malmö to São Paulo: The Malmö Commitment Tour-ICLEI, https://iclei.org/news/from-malmo-to-sao-paulo-the-malmo-commitment-tour/.

311 Global Covenant of Mayors, https://www.globalcovenantofmayors.org/.

312 Covenant of Mayors, https://www.covenantofmayors.eu/.

313 About C40, https://www.c40.org/about.

314 UN Habitat Cities and Climate Change Initiative, https://unhabitat.org/programme/cities-and-climate-change-initiative.

315 United States Climate Alliance, https://www.usclimatealliance.org/.

5.2.3. International organisations

The UNFCCC provides that representatives of the United Nations system may be represented as observers at the negotiations. ICAO (see section 2.3.1), IMO (see section 2.3.2) and the **Intergovernmental Panel on Climate Change** (**IPCC**) are among these UN organisations.

Established in 1988, the IPCC assesses scientific, technical, and socio-economic information to understand human-induced climate change. Its work encompasses the physical science of climate change, the vulnerability of socio-economic and natural systems, and mitigation options. The IPCC produces comprehensive **assessment reports** every five to seven years, along with **special reports** and technical papers on specific issues, often requested by the COP or SBSTA, which inform COP decisions.

In 2023, the IPCC completed its sixth assessment cycle, producing the Sixth Assessment Report (AR6). This report includes contributions from three Working Groups, and a synthesis report. It summarises the current scientific knowledge on climate change drivers, impacts, and strategies for mitigation and adaptation. The Seventh Assessment cycle formally began in July 2023 and is expected to run until 2029 (see Box 3).[316]

Box 3: The IPCC's workplan

In January 2024, the 60th session of the Intergovernmental Panel on Climate Change (IPCC-60) took place and was the first substantive meeting of the Panel for its seventh assessment cycle (IISD 2024a). Lessons learned were drawn from the previous assessment cycle and decisions on the work plan for the years ahead, which focuses on advancing the understanding of climate change and providing policymakers with actionable insights were taken. Key elements include:

1. **Seventh Assessment Report (AR7)**: AR7 will continue to assess the latest scientific, technical, and socio-economic information on climate change with input from the three Working Groups. The Synthesis Report of the Seventh Assessment Report will be produced after the completion of the Working Group reports and released by late 2029.
2. **Special Reports**: Developing special reports on emerging and critical topics such as the role of cities in climate mitigation until early 2027. Furthermore, two methodology reports on a) short-lived climate forcers (by 2027) and b) on carbon dioxide removal technologies, carbon capture Utilisation and storage (by the end of 2027), will be developed.
3. **Guidelines**: The 1994 IPCC Technical Guidelines on impacts and adaptation and adaptation indicators, metrics and methodologies will be developed and reviewed in conjunction with the Working Group II report and published as a separate product.

During IPCC-61, which convened in Sofia/Bulgaria from 27 July to 2 August 2024, agreements regarding the outlines for the **special report on cities and climate change** and the methodological **report on short-lived climate forcers** were reached. Although work advanced on the Strategic Planning Schedule for the entire seventh assessment cycle, it was postponed for further consideration to the Panel´s next meeting, which is tentatively scheduled for the fourth week of February 2025 (IISD 2024b). At this point in time, it is still open when the Working Group reports of AR7 are scheduled to be completed, and hence whether they will become available in due time for the second Global Stocktake, which is to be completed by 2028.

[316] Activities – IPCC, https://www.ipcc.ch/activities/.

In addition, intergovernmental organisations (IGOs) outside the UN system may be admitted by the COP as observers to the UNFCCC. 173 IGOs have observer status, including a great variety of organisations, e.g. the Secretariat of the Pacific Community, the Permanent Secretariat of the Alpine Convention, the Islamic or the European Investment Bank or the Gas Exporting Countries Forum.[317]

Like other observer organisations, representatives from international organisations may participate in sessions open to observers, make submissions, make statements at high-level segment sessions, organise side events and present their work in the exhibition area.

[317] UNFCCC - Admitted IGOs, https://unfccc.int/process/parties-non-party-stakeholders/non-party-stakeholders/admitted-igos/list-of-admitted-igos.

6. OUTLOOK

At COP29, the **key outcome is expected** to be the decision on the **new collective quantified goal (NCQG)**. The developments after this COP will depend to an important extent on this outcome, notably whether it is perceived by Parties and stakeholders as fair and ambitious. A comprehensive and ambitious new goal on climate finance can create trust among Parties and provide reassurance to developing country Parties that they are supported in their mitigation and adaptation efforts.

Such reassurance is particularly important because **Parties will be finalising their next NDCs** in the months immediately following COP29. According to the COP decision on the Paris Agreement (UNFCCC 2015a, paragraph 25), Parties shall submit their NDCs at least nine to twelve months in advance of the relevant session of the CMA. The relevant session for the next round of NDCs is the conference in Brazil, which is scheduled to start on 10 November 2025. Hence, the deadline for Parties to submit their next NDCs is 10 February 2025 – a time limit which may be challenging for some to meet.

As far as the contents of these NDCs are concerned, Parties are **guided by the outcome of the Global Stocktake**, including the mitigation efforts which were agreed at the COP in Dubai. However, it is important to note that the contribution to these efforts depends on the Parties' national circumstances. While it may be difficult for some to **treble renewable energy capacity**, others may be able to exceed this target. While some face challenges in **phasing down coal power** in the short term, others already went beyond the agreement of Dubai by implementing or planning a complete phase-out of coal power.[318] In fact, in order to keep the temperature goal of the Paris Agreement within reach, it will be crucial for all Parties to go beyond contributing to the global efforts agreed in Dubai and to explore all possible mitigation actions, reflecting their highest possible ambition (Moosmann and Pischke 2024).

The year 2024 is distinguished by **elections** having been held or coming up in three of the four largest GHG emitters. For India and the European Union, gradual rather than major shifts in climate policy can be expected following the recently held elections. Climate policy in the United States, however, will crucially depend on the outcome of its election on 5 November 2024. While a win by Kamala Harris can be expected to lead to a continuation of current policies, a second Donald Trump administration would not only reduce domestic climate action but would also affect the support provided to developing countries. As a consequence, this could curb the ambition of other countries at a time when high ambition is critically needed.

Another development to watch after COP28 will be the **implementation of Article 6** of the Paris Agreement on international carbon markets. If Parties manage to agree on the envisaged rules, it can be expected that many will proceed with engaging in **cooperative approaches** and in the Paris Agreement **crediting mechanism**, and they will start reporting the required information to the UNFCCC Secretariat.

Parties will also submit their first **Biennial Transparency Reports** under the Paris Agreement, which are due by the end of 2024. While many Parties face individual challenges in finalising their reports on time, it will be key for building trust among Parties that each one makes every effort to meet the reporting deadline. The submitted reports will provide important insights, including: Where do Parties stand with regard to their NDC targets? What lessons can be learned from their mitigation policies and measures? Which Parties provide voluntary information on adaptation, loss and damage, or support

[318] The United Kingdom and several other European countries already phased out coal power, and more than 20 European countries have announced that they will phase out coal power, see Europe's Coal Exit, https://beyondfossilfuels.org/europes-coal-exit/.

needed and received? How can the provided information help in the further implementation of the Paris Agreement?

Looking ahead to COP30, which will be held in November 2025: The Brazilian Government has picked Belém as the host city to highlight the critical role of the Amazon Basin in a changing climate, and it is expected that the conference will put a special focus on biodiversity. As pointed out by the IPCC in its Sixth Assessment Report, safeguarding biodiversity and ecosystems is fundamental to climate resilient development (IPCC 2022c). With many ecosystems under threat by a changing climate, climate action and the protection of biodiversity need to go hand in hand, and Parties need to make every effort to implement the Kunming-Montreal Global Biodiversity Framework (CBD 2022) alongside the Paris Agreement.

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This study provides an overview of the status of international climate negotiations and issues at stake at the COP29 climate change conference. It also addresses the current implementation of the Paris Agreement, the climate policies of key Parties and the stakeholders in the negotiations.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on the Environment, Public Health and Food Safety (ENVI).

PE 754.220
IP/A/ENVI/2024-01

Print ISBN 978-92-848-2326-0 | doi:10.2861/3520764 | QA- 01-24-050-EN-C
PDF ISBN 978-92-848-2325-3 | doi:10.2861/0354657 | QA- 01-24-050-EN-N